University of Alberta

The Development of Boys' Aggressive Behaviour: A Process-Person-Context-Time Model

by

Diane Joyce Dennis

A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

Human Ecology

Spring 2010
Edmonton, Alberta

Examining Committee

Deanna Williamson, Human Ecology

Linda Reutter, Nursing

Leslie Hayduk, Sociology

Berna Skrypnek, Human Ecology

Laurie Schnirer, Faculty of Extension

Tracy Vaillancourt, Psychology, University of Ottawa

To my family

Chris, Sarah, Nils, and Rachel

ABSTRACT

Bronfenbrenner's Process-Person-Context-Time model was used to examine the relationships among the *process* of negative parenting, the *person* characteristics of child temperament and early aggressive behaviour and the *contexts* of family income (in)adequacy and maternal depression from infancy to school entry and their effects on the outcome of aggressive behaviour in boys at school entry. The sample included 361 boys in two-parent families who participated in the Canadian National Longitudinal Survey of Children and Youth (NLSCY). Structural equation modeling was used with a repeated measures longitudinal design. The model explained 43% of the variance in boys' aggressive behaviour at school age. The results indicated that, by preschool age, boys' and mothers' behaviours are well established, and that process, person, and context variables all influence the persistence of boys' aggressive behaviour. The strength of the effects of these variables increased with their proximity to the developing child and decreased over time. By school age, concurrent effects were not significant.

The addition of the contextual variables resulted in ill-fitting models. Modification indices suggested the ill fit was localized in modeling the persistence of maternal depression, and not in the relationship between maternal depression and the other variables in the model. Modification indices also suggested there may be reciprocal effects between boys' aggressive behaviour and both negative parenting and maternal depression, but this was not tested. Future research using a cross-lagged panel design could clarify these relationships.

This study contributes to a growing body of research on the development of aggressive behaviour in children and underscores the importance of examining the contribution of the multiple levels of process, person, context, and time to the development of aggressive behaviour. Findings of this study provide evidence that the effects of proximal processes and proximal contexts on the development of boys' aggressive behaviour are strongest in infancy and toddlerhood, and their consequences extend through to school entry. Initiating prevention and intervention efforts in early childhood that provide parents-to-be and parents of young children with practical direction in ways to engage in positive and responsive interactions with their children would do more to reduce the development of aggressive behaviour in children than would later interventions aimed at changing entrenched behaviours in both parents and children.

Acknowledgements

The completion of this dissertation represents a long journey along a path with countless turns, and I have received encouragement and support from many people along the way.

I would like to thank my supervisory committee for their guidance through this process: Dr. Deanna Williamson for her enthusiasm and encouragement as I began the journey, Dr. Linda Reutter for her support, and Dr. Leslie Hayduk for patiently guiding me as I learned structural equation modeling.

I would also like to thank my fellow doctoral students in the Department of Human Ecology for their camaraderie in the first few years. Our regular meetings were a source of encouragement that stayed with me even after all of you had finished, and I still was plugging away. I would also like to thank Irene Wong at the RDC for listening to my musings and helping me navigate through the NLSCY. In addition, I would like to thank my colleagues in the Early Childhood Initiatives Unit, particularly Deborah Hopkins, for their support and encouragement as I inched toward the finish.

My family has been my greatest support through this process, and I am grateful to all of you for listening to my discussions of covariance matrices and parameter estimates – I know you did not care about them, but you did care about me.

A special thanks to Dr. Richard (Butch) Nutter who mentored me through the process, reading numerous drafts, providing valuable critiques of my work, and offering support and encouragement. I would also like to thank Carolyn Nutter whose admonishment to "just finish it" stayed with me for the last couple of years of getting to the end.

In my personal life, there are too many to mention, but to each of you who helped me turn another corner, I know who you are and am grateful to you.

My research was made possible in part by the Social Sciences and Humanities Research Council through a doctoral fellowship, the Alberta Heritage Foundation for Medical Research through a Studentship Incentive Award, by the Social Sciences and Humanities Research Council/Human Resources Development Canada through a Research on Canadian Children and Youth Doctoral Fellowship Supplement, and a Walter H. Johns graduate fellowship, and an M. Ruth Elliot scholarship. I am grateful for the financial support I received.

TABLE OF CONTENTS

List of tables

List of Figures

Chapter 1: Introduction and Statement of the Problem

Introduction

Over 14 percent of two to five year-old children in Canada show signs of physical aggression or conduct problems (Government of Canada, 2006). Researchers have found that high levels of physical aggression in the preschool years are predictive of violent and antisocial behaviour in youth and adulthood (Alink et al., 2006; Baillargeon, Zoccolillo, Keenan, Campbell, 1995; Campbell, Shaw, & Gilliom, 2000; Côté, Perusse, Wu, Boivin, & Tremblay, 2007; Côté, Vaillancourt, Leblanc, Nagin, & Tremblay, 2006; Keenan, Shaw, Delliquadri, Giovannelli, & Walsh, 1998; Lahey, Waldman, & McBurnett, 1999; Nagin & Tremblay, 1999; Shaw, Owens, Vondra, Keenan, Winslow, 1996; Tremblay et al., 2004). Throughout their lives, these children will face challenges that range from ongoing difficulty in personal relationships to serious antisocial behaviours that affect not only themselves, but also those who are victims of their antisocial behaviour (Cummings, Davies & Campbell, 2002; Tremblay et al., 2004). Findings from the research suggest that by the time children reach school age aggressive behaviour is already strongly entrenched, and children become more resistant to treatment, which emphasizes the importance of identifying and addressing children's problems in the preschool years (Shaw, Winslow, Owens, Vondra, Cohn, & Bell, 1998a; Tremblay, 2006). Given the evidence of the stability of physical aggression and the negative consequences of this behaviour, it is important to understand the processes that lead to the development of aggressive behaviours in young children. Knowledge gained from research on the development of aggressive behaviour in infancy and early childhood can be used to guide policies and programs aimed at prevention of antisocial behaviour in youth and adults.

Child behavioural development evolves through a complex interplay between genetic and environmental influences (Rutter et al., 1997). Multiple pathways, usually beginning in early childhood and stemming from interactions between children and their environments, lead to the development of competence or problems in children's behaviour (Cummings et al., 2000; Hertzman, 2000; Rubin & Burgess, 2002). Researchers have examined the effects of a wide range of variables as predictors of aggressive behaviour: child characteristics including genetics, sex, temperament, verbal ability, and self-control; parents' characteristics including mental health and marital relationships; environmental factors including prenatal and perinatal circumstances, family demographics (e.g., number of siblings, family economic conditions, family structure), child care settings, community settings, and cultural settings, and socialization processes including infant attachment, parenting behaviours, and peer relationships (Dodge, Coie & Lynam, 2006). The effect of these factors on the persistence of physically aggressive behaviour may vary at different stages of development (Campbell, 1995; Keenan et al., 1998; Rubin, Burgess, Dwyer, & Hastings, 2003). Research on the development of persistent aggressive behaviour in early childhood commonly focuses on children's sex, children's temperament, maternal depression, parenting behaviour and family economic conditions. In the current study, using Bronfenbrenner's Process-Person-Context-Time (PPCT) model of development (Bronfenbrenner, 1995; 2001; Bronfenbrenner & Ceci, 1994; Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris, 2006) as a framework for the research design, I examined the relationships among these factors and their effect on the development of persistent aggressive behaviour in boys from infancy to school entry.

CHILDREN'S AGGRESSIVE BEHAVIOUR

There is a wide body of research on the development of aggressive behaviour in school-aged and adolescent children (Campbell, 1995; Lahey et al., 1999; O'Connor, 2002; Tremblay, 2000, 2004); however, research that addresses how individual and environmental factors in early childhood influence the development of children's physically aggressive behaviour is limited. Only within the past 10 years have researchers begun to systematically examine predictors of the development of aggressive behaviour in preschool children (Miller-Lewis et al., 2006; Shaw, Lacourse & Nagin, 2005; Tremblay, 2004). Dodge, Coie and Lynam (2006) offer a broad definition of aggression as "behaviour aimed at harming or injuring another person or persons" (p. 722). In this study, I examined the development of physical aggression specifically. This fits into the broader definition of aggression above, but is limited to engaging in behaviours such as hitting, fighting, or reacting with other forms of physical aggression.

For most children, levels of physically aggressive behaviour peak between two and four years of age, and there is a steady decline in this behaviour as children mature (Côté et al., 2006; Owens & Shaw, 2003). The peak in physical aggression beginning at age two is part of the normal developmental process related to children's expression of autonomy (Campbell, 2002; Campbell, Shaw & Gilliom, 2000); however, some children do not experience the normative decline in physically aggressive behaviour. Recently, researchers studying trajectories of physical aggression have discovered a range of distinct developmental patterns beginning in early childhood. These patterns are consistent across several different samples: Alink et al., 2006 (n=2,253, representative Dutch sample, maternal and paternal report); Campbell, Spieker, Burchinal, & Poe, 2006 (n=1,195, U.S. regional samples, maternal report); Côté et al., 2006 (n = 10,658, representative Canadian sample, maternal report); Shaw, Gilliom, Ingoldsby, & Nagin, D., 2003 (n=284, low-income, U.S. regional sample, maternal report); Tremblay et al., 2004 (n=572, Québec random sample, maternal report). The most common patterns found in these samples were for children to exhibit moderate levels of physical aggression in toddlerhood that decline as they approach school age, or for children to exhibit low levels of physical aggression across early childhood. By school age, children exhibiting these patterns maintain low levels of physical aggression. In contrast, around 15 percent of children exhibit moderate to high levels of physical aggression in toddlerhood that persist through to school age (Campbell et al., 2006; Côté et al, 2006; Tremblay et al., 2004). Furthermore, researchers examining trajectories of aggressive behaviour in children from age five through to age 13 have found, based on teacher reports, that these same patterns of trajectories persist through to adolescence, suggesting that children maintain their trajectory group status as they mature (Broidy et al., 2003).

The findings from studies of developmental trajectories of physical aggression indicate there are serious implications for the children who maintain high levels of aggressive behaviour. These children are at risk for engaging in delinquent behaviours, for poor academic achievement, and for poor social relationships as they move toward adulthood (Broidy et al., 2003; Campbell et al. 2006; Tremblay, 2006). While those children who maintain high levels of aggressive behaviour over time are at greatest risk for later social and emotional problems, Campbell et al. (2006) found that even those children who follow a stable trajectory of engaging in moderate or low levels of physically aggressive behaviour are at greater risk for having social and academic limitations than children who desist using physically aggressive behaviour by age five or six.

The serious consequences associated with maintenance of physical aggression emphasize the need to understand what contributes to the development and maintenance of problem behaviours in children. Researchers have identified many factors associated with children's aggressive behaviour, which are outlined below.

Individual characteristics of the child include

- difficult temperament (Guerin, Gottfried & Thomas, 1997; Sanson, Hemphill & Smart, 2004), and
- sex, (Archer, 2004; Baillargeon et al., 2007b).

Proximal processes in development such as

- the nature of the parent-child relationship (Miller-Lewis et al., 2006; Patterson, 1986; Scaramella & Leve, 2004; Snyder, Cramer, Afrank, &

Patterson, 2005; Stright, Gallagher, & Kelley, 2008; Van Zeijl et al., 2007); and

- parenting behaviours (Côté et al., 2006; Shaw et al., 2005; Thomas, 2004; Vitaro, Barker, Boivin, Brendgen, & Tremblay, 2006).

Proximal contexts including

- maternal depression (Campbell et al., 2006; Dawson et al., 2003; Lavigne et al., 1998b; Shaw, Owens, Vondra, Keenan, & Winslow, 1996; Tremblay et al., 2004);
- home environment (Roberts, Smith, & Nason, 2001; Yeung, Linver, & Brooks-Gunn, 2002); and
- marital conflict (Conger, Ge, Elder, Lorenz, & Simons, 1994; Cummings, Keller & Davies, 2005; Eamon, 2001a; Ingoldsby, Shaw, Owens, & Winslow, 1999).

More distal contexts that do not involve the child directly, such as

- parents' education (Dearing, McCartney, & Taylor, 2006; Tremblay et al. 2004);
- parental employment patterns (Dearing eta al. 2006; Harland, Reijneveld, Brugman, Verloove-Vanhorick, & Verhulst, 2002; Sourander, 2002);
- family income (McLeod & Shanahan, 1993; McLeod & Shanahan, 1996; Mistry, Biesanz, Taylor, Burchinal, & Cox, 2004; National Institute of Child Health and Human Development (NICHD) Early Child Care Research Network, 2005; Phipps & Lethbridge, 2006; Strohschein, 2005); and
- source of income (Beiser, Hou, Kaspar, & Noh, 2000; Dunifon, Kalil & Danziger, 2003; McLoyd, Jayaratne, Ceballo, & Borquez,1994; Miller-Lewis et al., 2006).

In the current study, I combined Conger and Elder's model of family economic stress (Conger & Elder, 1994; 1994a) and Patterson's theory of coercive cycles (Reid & Patterson, 1989; Patterson, 2002) to direct my examination of potential pathways leading to the development of aggressive behaviour in early childhood within the framework of Bronfenbrenner's Process-Person-Context-Time model. The key variables in this combined model are economic (in)security, maternal mental health, parenting behaviour, and children's temperament and behaviour. The rationale for using this combined model and the relationships among these variables is further addressed in following chapter on the conceptual framework for this study as well as in the literature review in chapter three.

Findings from the studies mentioned above, that have examined factors influencing the development of aggressive behaviour support Bronfenbrenner's hypothesis that the effect of these factors increases with their proximity to the developing child. In other words, variables associated with personal characteristics and proximal processes have larger effects on children's behavioural development than distal contextual factors (Bronfenbrenner & Morris, 2006; Dodge, Coie & Lynam, 2006; Romano, Tremblay, Boulerice, & Swisher, 2005).

Tremblay and his colleagues (Baillargeon et al., 2007a; Baillargeon, et al., 2007b; Côté, Vaillancourt, Barker, Nagin, & Tremblay, 2007; Côté et al., 2006; Nagin & Tremblay, 1999; Romano, et.al., 2005; Tremblay, et al., 2004; Vitaro et al., 2006) have focused specifically on the development of physical aggression in early childhood (Tremblay, 2006). While many of contributing factors have been identified in the research on the development of physically aggressive behaviour, a significant shortcoming is the lack of consistency in defining it, and researchers often aggregate different types of aggressive behaviour, such as disobedience, arguing, and stubbornness, or combine physically aggressive behaviour with other forms of antisocial behaviour, such as delinquency or substance abuse (Tremblay, 2000). There is high comorbidity among problem behaviours (Egger & Angold, 2006); however, this aggregation of different types of behaviour makes it difficult to identify the processes and contexts that contribute to the development and maintenance of specific types of behaviour.

In a few recent studies, researchers have found evidence that supports the need to disaggregate types of behaviour to distinguish developmental patterns. Vaillancourt, Brendgen, Boivin, and Tremblay (2003), using an accelerated longitudinal design with a sample of children aged four to 11 years (n = 3,089) from the NLSCY, provide evidence that indirect aggression (socially manipulative behaviours such as peer group exclusion, spreading rumours, telling secrets) and physical aggression are distinct forms of aggression that are stable across time, sex, and cohorts. Côté et al. (2007), in a follow-up to the previous study (Vaillancourt et al., 2003), using a longitudinal sample of 1,183 children between age two and eight years, found the probability was .93 that children with high trajectories of physical aggression were likely to also follow a high trajectory of indirect aggression . The probability of the reverse relationship, that children with high trajectories of indirect aggression would follow a high trajectory of physical aggression was much lower at .42. In addition, boys were more likely to follow the high physical aggression and indirect aggression trajectory, while girls were more likely to follow a desisting physical aggression and rising indirect aggression trajectory. In another study, Shaw and his colleagues (2005) examined different types of externalizing behaviours and found a similar relationship pattern in the trajectories for hyperactivity problems and conduct problems of 284 boys from a low-income sample. Fifty-five percent of children following high trajectories of conduct problems also followed a persistent trajectory for hyperactivity; however, only 19 percent of those following a persistent hyperactivity trajectory also followed a high trajectory of conduct problems. The findings of different patterns of development and comorbidity for different types of aggression and externalizing behaviours from these studies emphasize the need for differentiating behaviour subtypes. Thus, I limited the focus of the current study to the development of physically aggressive behaviour in children.

Most researchers examining the contributions of individual and environmental factors on children's behavioural development have focused on broader constructs of problem behaviours that may include physical aggression or aspects of physical aggression, but they have not specifically addressed the development of physical aggression. Some researchers have used conduct problems (Bor & Sanders, 2004; Shaw et al., 2003; Shaw et al., 2005), conduct disorder (e.g., cruel to animals, physically attacks people, temper tantrums, steals, destroys others' property, frequently fights, and bullies other children) (Morrell & Murray, 2003), or "antisocial behaviour" (McLeod & Shanahan, 1996; Strohschein, 2005), which has been defined as behaviours that "inflict physical or mental harm or property loss or damage on others..." (Loeber, 1985, as cited in Dodge et al. 2006, p. 720). These constructs are usually used in research with older children (Dodge et al., 2006). Other researchers distinguish between internalizing (e.g., depression, anxiety) and externalizing (e.g., physical aggression and hyperactivity) behaviours (Bor, Najman, Andersen, O'Callaghan, Williams, & Behrens, 1997; NICHD, 2005; Owens & Shaw, 2003; Shaw et al., 1998a; Shaw et al., 2001). Still others have used broad composite measures that include both internalizing and externalizing behaviours (Dearing, McCartney, & Taylor, 2001; Mistry, Biesanz, Taylor, Burchinal, & Cox, 2004). The research using these broader constructs has provided useful direction for further research, and I have used much of it to guide the present study. However, the broader conceptualizations make it difficult to identify specific effects related to specific behavioural outcomes.

The current study is unique in that it examines not only how the development of physically aggressive behaviour is influenced by children's external environments but also includes the individual characteristics and behaviours of the child as contributing factors in the developmental process. Moreover, I examined the relationships among all of these factors systematically over time. As such, the study includes multiple predictors that were outcomes at earlier points in the period over which these relationships were examined. In sum, I systematically examined the relationships among the following variables over time: income, income (in)stability, employment (in)stability, source of income, maternal depression, negative parenting, boys' difficult temperament, and boys' aggressive behaviour. The studies I review in the literature review address each of these variables, alone or in combination with others, as influences on developmental contexts, parenting behaviours and the development of aggressive behaviour in children.

This dissertation is organized in the following manner. The next chapter provides an overview of the conceptual frameworks I used to guide my research. A review of the literature follows in Chapter 3. In Chapter 4, I outline the methods I used for data analysis. In Chapter 5, I describe the specification of the research model. Chapter 6 is a review of the results of the analyses and, in Chapter 7, I discuss my findings and their implications for research, policy, and practice.

Chapter 2: Conceptual Framework

Theoretical overview

Child development has been conceptualized as an interactive process between the characteristics of the individual child and his or her environment over time (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006; Cicchetti & Aber, 1998; Sameroff, 1994). This conceptualization is consistent with theoretical descriptions of child behavioural development (Bronfenbrenner & Morris, 2006; Cicchetti, 1988; Rutter, 2002) as well as with theoretical descriptions of child development generally (Bronfenbrenner, 1995; Magnusson, 1995). For instance, Cicchetti (1988) claims that

> [n]ormal development is defined in terms of a series of interlocking socioemotional, cognitive, and representational competencies. Competence at one period of development, which tends to make persons broadly adapted to their environments, prepares the way for competence at the next. ...[N]ormal development is marked by the integration of earlier competencies into later modes of functioning. It follows then that early adaptation promotes later adaptation and integration (p. 265).

By extension, incompetence and problems with adaptation at one stage will contribute to continued difficulties in later adaptation. Current behaviour is both an outcome of previous behaviour as well as a predictor of later behaviour (Bronfenbrenner, 1995; Bronfenbrenner & Morris, 2006; Magnusson, 1995). The bioecological model outlined by Bronfenbrenner (1995; 2001; Bronfenbrenner & Ceci, 1994; Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris, 2006) provides a holistic approach for understanding the developmental process within environmental contexts and is the framework I used for this study.

The bioecological model addresses generally the intensity and direction of relationships among elements that contribute to the developmental process according to their proximity to the developing child. The model provides a common framework for generating hypotheses and interpreting results of investigations of specific developmental outcomes (Bronfenbrenner, 1995; Magnusson, 1995) rather than identifying any specific outcome and the potential pathways leading to that outcome. To identify specifically the pathways leading to the development of aggressive behaviour in children, I drew on two additional models to complement the bioecological model. The first was Patterson's model of coercive cycles (Patterson, 2002; Reid & Patterson, 1989), which addresses the proximal process of parenting and the influence of person characteristics on this process. The second was Conger and Elder's (1994a) model of family economic stress, which situates the proximal process of parenting within the context of maternal depression and family economic (in)security. I further extended these models by examining these relationships over time, from infancy to school entry. I provide an overview of these theoretical perspectives in the following sections.

The Bioecological Model of Human Development

Bronfenbrenner places the bioecological model within the framework of developmental science, which he defines as the "systematic scientific study of the conditions and processes producing **continuity and change over time** in the biopsychological characteristics of human beings..." (Bronfenbrenner & Evans, 2000, p. 117, emphasis in original). The principal characteristic of the theory is that the unit of analysis is the person in context, rather than the person and context. That is, the developing person plays a central role in the developmental process, and development takes place only through interaction of the developing person and the physical, social, and historical space that she or he occupies throughout the life span (Bronfenbrenner, 1995). The bioecological model of development places emphasis on the importance of the developmental environment and the interaction between the individual and his or her environment. The four defining properties of the bioecological model are process, person, context, and time. These four properties form the basis of the Process-Person-Context-Time (PPCT) model, and the concepts are explained below.

"Proximal processes" form the foundation of the bioecological model. Bronfenbrenner considers these processes the "engines of development." Proximal processes are the day to day interactions of children with their environments, and particularly with the people in those environments. For most young children the relationship with their mother is a fundamental proximal process, and the interactions between mothers and their children can significantly affect children's developmental path (Bronfenbrenner & Morris, 2006). Depending on their nature, proximal processes may lead to competence or dysfunction in development (Bronfenbrenner & Evans, 2000). Proximal processes that involve "patterns of day-to-day behavior reflecting and conveying long-range commitment to the well-being of other persons" (Bronfenbrenner & Evans, 2000 p. 120) contribute to developmental competence, but proximal processes in which these patterns are absent or disrupted can lead to developmental dysfunction.

"Person" refers to the individual biological, cognitive, emotional and behavioural characteristics of the developing person. Bronfenbrenner and Morris (2006) note that most researchers treat cognitive, emotional, and behavioural characteristics as developmental outcomes, but in the bioecological model, these characteristics are examined both as influences on proximal processes and as outcomes of those processes. Person characteristics have the capacity to affect the direction and power of the proximal processes, and their inclusion in the bioecological model draws attention to the role they play in shaping developmental environments and the proximal processes that take place within those environments. For example, curious and outgoing children may invite positive engagement, while irritable children may evoke frustration or annoyance (Bronfenbrenner & Morris, 2006). Thus, children's characteristics may contribute to establishing patterns of response between themselves and others that can promote or discourage positive interactions within the proximal process.

Demographic personal characteristics such as sex and age also influence development (Bronfenbrenner & Morris, 2006). According to Bronfenbrenner and Morris (2006), these demographic characteristics are pervasive in affecting development. Children's age is a standard indicator for developmental status, and children's rapid development from dependence on caregivers in infancy to a relatively autonomous socially engaged individual by school entry means that behavioural expectations of children must change accordingly. For example, the peak in aggressive behaviour at age two is expected as children begin to express their autonomy, but a corresponding decline in this behaviour is expected once children begin to develop empathy and social understanding in their third and fourth years. Children's sex also affects their socialization and development. As noted in the discussion of trajectories of aggressive behaviour in the previous chapter, girls are more likely to reduce their use of physical aggression and increase their use of indirect aggression as they move into middle childhood and adolescence, while boys are more likely to follow a high trajectory of physical aggression combined with indirect aggression (Côté et al., 2007). These age-related and sex-related changes in the patterns of use of different forms of aggression underscore the important role of age and sex in developmental research.

Proximal processes are influenced not only by the personal characteristics of the developing person but also by the contexts in which the processes occur. These contexts include individual characteristics of the persons engaging in the proximal processes with the developing person and the physical and social settings in which the proximal processes occur. For young preschool children, who are still dependent on others for meeting their developmental needs, the proximal contexts in which children participate are usually limited to the physical and social features of family and childcare settings and the personal characteristics of the persons they interact with in those settings (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006). In this study, I examined the effect of the proximal context of maternal depression on the process of mothers' negative parenting behaviour.

Contexts that are more distal exert an influence on proximal processes and proximal contexts through their effects on others engaging in proximal processes with the developing person. For example, parents' employment and income are contexts in which parents participate, but children usually have no direct agency in shaping these environments. Nevertheless, the extent to which these contexts affect the parents influences parents' interactions with their children.

"Time" is also a key element in the study of behavioural development because, although time does not necessarily imply development, development can only take place over time. In the bioecological model, the element of time may refer to episodes in the proximal processes: the period in which interactions take place; the periodicity or frequency of these episodes over broader time intervals; stability and change in the individual over the life course; or even more broadly to changes in the state and structure of society over generations (Bronfenbrenner, 2001).

Patterson's Coercive Cycles

Building on the framework of the PPCT model, I used Patterson's model of coercive cycles to elucidate how the relationship between individual characteristics of the child and the proximal process of negative parenting contribute to the development of children's aggressive behaviour. Children's characteristics and negative parenting have been posited to contribute to the development of aggressive behaviour in ways that are not mutually exclusive. Children may model the punitive and rejecting behaviours they experience, or the negative behaviours they experience may evoke frustration that leads them to express hostility and anger (Dodge et al., 2006; Rubin & Burgess, 2002). The child's aggressive behaviour may also provoke parents' negative response and lead to coercive cycles of interaction between the parent and the child through repeated patterns of antagonism (Dodge et al., 2006; Maccoby, 1992; Patterson, 2002; Reid & Patterson, 1989). Patterson's model of the coercive cycle provides a description of a process involving the parent and child that can lead to establishing patterns of aggressive behaviours in children (Patterson, 2002; Reid & Patterson, 1989). According to the model, the coercive process unfolds when a child's demonstration of irritability and aggressive behaviour elicits irritability and a harsh response from a parent, and this parental response serves to escalate the child's negative behaviour. If the parent is unsuccessful in subduing the child, the parent becomes more irritable and defeated, which reinforces the child's negative behaviour in the short term. The extent of repetition of this pattern of the child behaving in an aggressive manner and eliciting irritable and ineffective response from others contributes to the maintenance of that behavioural pattern with others (Reid & Patterson, 1989). Tremblay et al. (2004) argue that the normative decline in children's physically aggressive behaviour is the result of children learning not to aggress through early socialization. While this seems contradictory to Patterson's view that children learn to maintain aggressive behaviour through the coercion process, these are actually complementary views. That is, an established pattern of coercive interaction between parent and child means that children will not learn how to regulate themselves and reduce physical aggression (Patterson, 2002; Reid & Patterson, 1989), whereas a pattern of positive, responsive interaction will help children develop self-regulation (Belsky, Hsieh, & Crnic, 1998; Trentacosta & Shaw, 2007). Thus, despite the discrepancies in their theoretical expressions regarding the relationship between parenting and the development of aggressive behaviour, both Patterson and Tremblay agree that negative parenting, particularly hostile and punitive behaviours, is a significant contributor to the development of aggressive behaviour (Patterson, 2002; Reid & Patterson, 1989; Romano et al., 2005; Tremblay et al., 2004; Vitaro et al., 2006).

Family Economic Stress Model

The individual characteristics of the parent and child are key motivators in the coercive process described by Patterson. He argues that contexts, such as economic stress, family conflict, or maternal depression may act as instigators for the development of the coercive process, but that once the coercive process is established, the effects of these instigators on the process and the outcomes of the process are likely to diminish (Patterson, 2002; Reid & Patterson, 1989). To frame how contextual factors might contribute to the coercive process and the development of aggressive behaviour, I turned to Conger and Elder's (1994) family economic stress model. The family economic stress model (Conger & Elder, 1994a) fits well within the broad framework of bioecological theory, and conceptualizes how contexts of economic stress and parental states influence the proximal process of parenting and how parenting, in turn, influences children's behaviour. Conger and Elder (1994a) proposed that the financial stress of low income, unstable work, high debt, and declining income leads to family economic pressure that arises from the inability to acquire necessities, and pay bills, and the need to cut back on expenditures. According to the model, economic pressure is linked to children's behaviour through mediating contextual variables. Increases in economic pressure contribute to poor parental mental health and to parental conflict. These contexts of poor mental health and parental conflict lead to less responsive and more negative parenting behaviours that are associated with compromised social development and intensification of conduct and emotional problems in children.

Conger and Elder (1994a) developed their model to examine the relations among family economic stress, parental mental health, parenting, and adolescents' behaviour in Iowa farm families experiencing economic hardship during a recession in the U.S. in the 1980s. Although researchers initially used this model for predicting only adolescent behaviour (Conger & Elder, 1994b; Conger et al., 1994; Bolger, Patterson, Thompson, & Kupersmidt, 1995; McLoyd et al., 1994), researchers have begun to use this model to examine the associations between economic hardship and early child behaviour and have demonstrated the mediated relationship of economic stress to family contexts and processes and behavioural outcomes in early childhood (Eamon, 2001; Mistry, Vandewater, Huston, & McLoyd, 2002; Yeung et al., 2002).

Summary of Theoretical Framework

The purpose of this study was to examine how individual and contextual factors work in combination to contribute to the development and maintenance of aggressive behaviour from infancy to school entry to provide direction for prevention and intervention efforts in early childhood. I employed the Process-Person-Context-Time (PPCT) model (Bronfenbrenner, 1995; 2001; Bronfenbrenner & Ceci, 1994; Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris, 2006) to form the overarching framework. To specify the direction and nature of the relationships among the elements representing person, process, context, and time, I used Patterson's model of coercive cycles and Conger and Elder's family economic stress model. Patterson's model of coercive cycles focuses on the contributions of person characteristics to proximal processes, while Conger and Elder's family economic stress model focuses on the influence of context on proximal processes. The combination of the main elements of these two models examined over time fulfills the requirement of the PPCT design for studying the process of development.

In this study, I examined factors corresponding to person, process, and context that commonly have been examined as contributors to the development of physical aggression in early childhood: child temperament (Dodge et al., 2006; Guerin et al., 1997; Keenan et al., 1998; Rothbart & Bates, 2006; Smeekens, Riksen-Walraven, & Van Bakel, A. 2007), negative parenting (Bor & Sanders, 2004; Guerin et al., 1997; Olson et al., 2000; Reid & Patterson, 1989; Rubin & Burgess, 2002; Rubin et al., 2003; Thomas, 2004; Vitaro et al., 2003), maternal depression (Bor et al., 1997; Lavigne et al., 1998b; Luoma, Kaukonen, Mantymaa, Puura, Tamminen, & Salmelin, 2004; Munson, McMahon & Spieker, 2001; Shaw, Winslow, Owens, & Hood, 1998b; Shaw et al. 2001; Shaw et al. 2003; Shaw et al. 2005), and income adequacy (Dodge, et al., 2006; McLeod & Shanahan, 1996; Strohschein, 2005; Tremblay et al. 2004). In addition, drawing from Conger and Elder's (1994) model of family economic stress, I included elements associated with income (in)adequacy, specifically, employment (in)stability, source of income, and (in)stability of income, to examine whether they play a role in the extent to which income affects children's behavioural development.

Researchers have found that person, process, and context variables each contribute to the development of physical aggression; however, very few researchers have included elements from each of these levels in a single research model. The current study will contribute to understanding how these factors work together to increase the risk for children to develop problem behaviours (Ackerman, Brown, & Izard, 2003; Conger & Elder, 1994; Cummings et al., 2000).

CHAPTER 3: REVIEW OF THE LITERATURE

In the research for this dissertation, I employed the PPCT model (Bronfenbrenner, 1995; 2001; Bronfenbrenner & Ceci, 1994; Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris, 2006) to guide a longitudinal study of the development of aggressive behaviour in boys between infancy and school entry, as influenced by individual and contextual factors. I specifically examined the contributions of children's difficult temperament and negative parenting behaviours in the context of maternal depression and economic (in)security. The literature review is organized as follows. In the first section, I review the research that examines the contribution of children's individual characteristics (Person) to the development of aggressive behaviour. In the second section, I review perspectives and research on the contribution of negative parenting (Process) to the development of aggressive behaviour. In the third section, I address elements of the developmental environment (Context) and their influence on parenting and the development of aggressive behaviour in children. I specifically focus on the contexts of maternal depression and economic (in)security, which comprises income (in)adequacy, (in)stability of income, (in)stability of employment, and source of income. The literature that I review addresses the relationships among these contexts and their influences on parenting and children's aggressive behaviours. In the fourth section, I briefly address current perspectives on the importance of time in research on developmental processes. This is followed by a summary of the literature review, and, in the last section, I outline the model and conceptual hypotheses that guided this study.

PERSON - CHILD

"Person" refers to the individual characteristics of the developing person and the important role these characteristics play in the developmental process. According to the bioecological perspective, the individual biological and emotional characteristics of the child, such as physical health, temperament, and sex are major contributors to children's behavioural outcomes both directly and through interaction with the developmental environment (Bronfenbrenner, 1979; Magnusson, 1995). The child is viewed, not as a passive recipient of environmental effects, but as an agent within the developmental environment in which he or she engages in reciprocal interaction with caregivers, explores the physical and social environment, and develops relationships with others. As discussed in Chapter 1, high levels of early aggressive behaviour in preschool children are predictive of later aggressive behaviour (Campbell, 1995, 2002; Côté et al., 2006; Lavigne et al., 1998a; Shaw et al. 2001; Shaw et al., 2003; Tremblay et al., 2004). In addition, difficult temperament (Guerin et al., 1997; Rothbart & Bates, 2006; Vitaro et al., 2006) and children's sex (Alink et al., 2006; Archer, 2004; Dodge et al., 2006) are individual characteristics that have been associated with the development of aggressive behaviour in children.

Children's Difficult Temperament

Rothbart and Bates (1998) define temperament as "constitutionally based individual differences in emotional, motor, and attentional reactivity and self-regulation" (p.109). Researchers have found that children's temperament exhibits moderate stability over time (Caspi, Roberts & Shiner, 2005; Rothbart & Bates, 2006; Rothbart, Derryberry & Hershey, 2000; Sanson, Hemphill & Smart, 2004), and evidence from twin studies shows that genetic differences account for between 20 to 60 percent of the variability in temperament among individuals (Saudino, 2005). Bates (1989) outlines five conceptual elements of temperament: negative emotionality (negative affect, distress, fear, anger), difficultness (frequent and intense expression of negative emotion), adaptability (adaptation to novelty), reactivity (stimulus and response intensity), and activity (frequency and intensity of motor activity).

High levels of negative emotionality, difficultness, reactivity and activity, and low levels of adaptability form a cluster of temperamental qualities that has been labelled "difficult temperament" (Dodge et al., 2006). These qualities have consistently been linked to the development of externalizing behaviours, such as physical aggression, hyperactivity, impulsivity, oppositional or deviant behaviour and conduct problems (Bates, 2001; Guerin et al., 1997; Olson et al., 2000; Rubin et al., 2003; Rothbart & Bates, 2006; Sanson et al., 2004; Shaw et al., 2001; Shaw et al., 2003; Shiner & Caspi, 2003; Vitaro et al., 2006). For example, Guerin, Gottfried and Thomas (1997) found that children rated as having difficult temperaments at 18 months of age were almost four times more likely to be above the cut point for clinical referral for hostile-aggressive behaviour at three and a half years of age, and this relationship between difficult temperament and behaviour problems was maintained throughout childhood. In their ten-year longitudinal study of the long-term consequences of early difficult temperament, Guerin and her colleagues found that maternal reports of difficult temperament in early childhood accounted for 32 percent of the variance in maternal and teacher reports of externalizing behaviour of four, five, and six year olds and 18 percent of the variance in externalizing behaviour of 10, 11, and 12 year-old children (Guerin et al., 1997).

Although researchers consistently have found significant associations between children's difficult temperament and the development of aggressive behaviour, most have found that these associations are modest (Rothbart & Bates, 2006; Shiner & Caspi, 2003). In some studies, when researchers added family environment variables to their models, the strength of the effect of difficult temperament on aggressive behaviour diminished (Rubin et al., 2003; van Aken, Junger, Verhoeven, Van Aken, & Dekovic, 2007) or became non-significant (Tremblay et al., 2004). Keenan et al. (1998) found that although difficult temperament, aggression, and noncompliance were associated with later problems, there was also a significant amount of positive change in children who initially presented with negative temperamental qualities. These findings of positive change are consistent with Guerin et al.'s (1997) findings. Guerin et al. (1997) pointed out that, although temperamentally difficult children were at greater risk for developing behavioural problems, most of the children who were perceived as difficult in early childhood did not exhibit behavioural problems in later childhood. These findings suggest that difficult temperament works in combination with other factors to contribute to the development of aggressive behaviour (Rothbart & Bates, 2006; Sanson et al., 2004).

Temperament has been shown to be an important antecedent of behaviour, not only because of its influence on how children respond to their environments, but also in terms of how it influences how others respond to them (Bates, 2001; Bates, Petit, Dodge, & Ridge, 1998; Belsky et al., 1998; Miller-Lewis et al., 2006; Shiner & Caspi, 2003; Sanson et al., 2004; Thomas & Chess, 1989). Researchers have found that difficult temperament predicts later externalizing behaviour, but the effect is stronger when it is coupled with negative parenting behaviours (Bates, 2001; Belsky et al., 1998; Dodge et al. 2006; Olson et al., 2000; Van Aken et al., 2007). Children with difficult temperaments are easily disturbed by changes in their environments and are slow to adapt to changes in routines, new people, or situations. They have frequent reactive outbursts of crying and fussing, and they are difficult to soothe. In addition, they often do not sleep well and can be fussy eaters. Although difficult children may not be intentionally aggressive, they often manifest their reactivity with aggressive behaviours (Muris & Ollendick, 2005). The reactive nature of “difficult” children means that they are more susceptible to influences of proximal processes and contexts in which they participate (Belsky, Bakermans-Kranenburg, & van IJzendoorn, 2007; Rothbart & Bates, 2006). Parenting seems to be a particularly important process, and more research is required for understanding this relationship (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000).

SEX

Research on the development of aggressive behaviour has shown that, over time, boys and girls follow different trajectories that involve different types of aggressive behaviour, and that these differences begin to emerge in the preschool years (Alink et al., 2006; Baillargeon et al, 2007b; Côté et al., 2006; Dodge et al., 2006). Dodge et al. (2006) point out that boys more frequently engage in physical aggression, exhibit antisocial behaviour, or have a conduct disorder (behaviours that cause physical harm or damage to people, animals, or objects), whereas girls more frequently engage in relational, indirect, or social aggression (behaviours that are socially manipulative). Archer (2004) in a meta-analytic study of research on sex differences in aggressive behaviour found these sex differences in physical aggression are evident from two years of age or younger, and that these differences remain stable through adolescence. Differences between boys' and girls' levels of parent-rated physical aggression have been found as early as 12 months of age (Alink et al., 2006) and these differences are significant by 17 months of age (Alink et al., 2006; Baillargeon et al., 2007b). These differences between boys and girls in the development of aggressive behaviour prompted me to limit the examination in the current study to the development of physically aggressive behaviour in boys.

Summary – Person

Children's temperament and sex are characteristics of the "Person" that consistently have been linked with the development of aggressive behaviour (Dodge et al., 2006). In this study, I focused on the development of aggressive behaviour. The empirical evidence that difficult temperament is an early precursor to the development of aggressive behaviour supports its inclusion in models that attempt to understand processes that lead to this outcome. From the bioecological perspective, it makes sense to include difficult temperament in a study examining the development of aggressive behaviour, because it is a characteristic of the child that has consistent associations with the development of aggressive behaviour. The inclusion of difficult temperament in this model along with the process of negative parenting and the contexts of maternal depression and economic (in)security in a longitudinal model will add to existing research as there have been no previous studies that have employed a complete PPCT model to examine the development of physically aggressive behaviour in children. In addition, I limited the sample of the current study to boys because my investigation focused on identifying the processes contributing to the development of physically aggressive behaviour and high levels of physically aggressive behaviour are more prevalent for boys than for girls.

Process

Bronfenbrenner (1995) describes proximal processes as "the mechanisms of organism-environment behavioural interaction that drive development, and the profound ways in which these mechanisms are affected by characteristics of the developing person and of the environmental context in which the interaction takes place" (p. 626). Proximal processes require the engagement of the developing person long enough and regularly enough to become "increasingly more complex" (Bronfenbrenner & Morris, 2006).

The first social relationship that children develop is usually with their mother. As such, it is a central proximal process in children's early development. This relationship is shaped by the individual characteristics of mothers and their children (Bronfenbrenner & Morris, 2006, Collins et al., 2000; Maccoby 1992; 2000; O'Connor, 2002). Mothers and their children develop reciprocal patterns of interaction that are adapted over time to accommodate development and changes in the individual characteristics and behaviours that each brings to the relationship (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006, Cummings et al., 2000). This dynamic relationship between mothers and their children continually evolves over the life course, and it is a major contributor to the socialization of children, of which behavioural development is a key element (Belsky, 1984; Bronfenbrenner & Morris, 2006; Campbell, 1997, 2002; Maccoby, 1992; O'Connor, 2002; Thompson, 1993). If this relationship is not adaptive to the developmental needs of the child, it can set processes in motion that do not foster positive development. Patterson's model of coercive cycles describes a maladaptive proximal process that contributes to the development of aggressive behaviour in children (Patterson, 2002; Reid & Patterson, 1989), and I employed this model to guide my study. In Patterson's model, negative parenting, children's difficult temperament, and children's aggressive behaviour are primary contributors to coercive cycles that have been linked to the development of aggressive behaviour in preschool children (Côté et al., 2006, 2007; Miller et al., 2002; Miller-Lewis et al., 2006; Romano et al., 2005; Smith, Calkins, Keane, Anastopoulos, & Shelton, 2004; Vitaro et al., 2006). In the following sections, I review the research that addresses these components of coercive cycles. First, I review the literature that focuses on the relationship between negative parenting and aggressive behaviour. Then, I review the research that has addressed the relationship between children's characteristics and negative parenting and the subsequent effect on the development of aggressive behaviour in children.

Negative Parenting

Negative parenting includes a cluster of behaviours such as yelling, scolding, and physical punishment and expressions of negativity and annoyance to the child (Campbell, 1995; Collins et al., 2000; Olson et al., 2000; Rubin & Burgess, 2002; Shaw et al., 2003). Yelling, scolding, and physical punishment have also been classified by researchers as punitive (Paterson & Sanson, 1999; Romano et al., 2005; Thomas, 2004), harsh (Eamon, 2001; Miller et al., 2002), controlling (Smith et al., 2004), or overreactive (O'Leary, Slep & Reid, 1999; Miller-Lewis et al., 2006). Expressions of negativity and annoyance to the child have been classified as hostile parenting behaviours (Côté et al., 2006, 2007; Morrell & Murray, 2003; Vitaro et al., 2006).

There is ample evidence that negative parenting behaviours are associated with the development of aggressive behaviour in children (Côté et al, 2006, 2007; Miller et al., 2002; Romano et al., 2005; Thomas, 2004; Vitaro et al., 2006). Cross-sectional studies using correlation and regression analyses show strong concurrent associations between negative parenting and aggressive behaviour (Brenner & Fox, 1998; Eamon, 2001; Miller et al., 2002). Gershoff (2002), in a meta-analysis of 88 studies on the effects of corporal punishment, found a significant correlation with aggressive behaviour, particularly in boys. In a longitudinal study spanning two years, Rubin et al. (2003) found that aggression at age two predicted externalizing behaviours at age four, and this relation was strongest for children whose mothers exhibited high levels of negativity towards the child. The effects of negative parenting on children's aggressive behaviour also appear to be long-term, and experiencing negative parenting in infancy and toddlerhood has been found to predict aggressive behaviour in school-aged children (Côté et al, 2006, 2007; Morrell & Murray, 2003; Romano et al., 2005; Rubin et al., 2003; Vitaro et al., 2006). Vitaro et al. (2006) using combined mother and teacher ratings from the Québec Longitudinal Study (N=1516) found that harsh parenting in early childhood predicted higher levels of children's aggressive behaviour at age six. Côté et al. (2006) found that hostile parenting at age two was a strong predictor of a high physical aggression trajectory through to age 11. In addition, Côté et al. (2007) examined predictors of joint trajectories of indirect aggression and physical aggression that included child's early verbal ability, mothers' early childbearing, family structure, mothers' education, family income, family functioning, positive interaction, and consistent parenting, in a hierarchical regression analysis. They found that hostile parenting at age two was the only significant predictor of a high joint aggression trajectory between the ages of two and eight years.

According to Patterson's model of coercive cycles (Patterson, 2002; Reid & Patterson, 1989), a pattern of negative parenting and aggressive child behaviour develops, and is maintained over time. In the studies mentioned above, which show long-term effects of negative parenting (Côté et al., 2006; Côté et al., 2007; Vitaro et al., 2006), the researchers used prospective measures of negative parenting in early childhood to predict children's later aggressive behaviour or maintenance of aggressive behaviour over time. This type of research design does not account for concurrent relationships between the negative parenting and aggressive behaviour or the longitudinal relationships between the equivalent parenting and behaviour variables at each measurement period. In contrast, Thomas (2004) examined the relationship between aggressive behaviour and negative parenting both prospectively and concurrently and found that the persistent effect of experiencing negative parenting in early childhood is dependent on maintenance of the negative parenting behaviour over time, lending support to Patterson's model. Thomas (2004) examined the relationship between punitive parenting and aggressive behaviour when children were two to three years old, and six years later when they were eight to nine years old. She found that, at both ages, children who experienced punitive parenting behaviour had higher levels of aggressive behaviour than those children who did not experience punitive parenting. She also found that changes in parenting behaviour over time resulted in changes in children's levels of aggressive behaviour. The findings from her linear regression analyses showed that when punitive parenting behaviour decreased over time, children's aggressive behaviour also decreased. However, when children experienced an increase in punitive parenting over the six-year period, their aggressive behaviour increased. Thomas (2004) also found that the concurrent effect of punitive parenting at eight to nine years of age was the same for children regardless of whether the children had experienced punitive parenting when they were younger.

Thomas' (2004) findings support Patterson's perspective by showing that the reduction of negative parenting was associated with a reduction in aggressive behaviour. However, Thomas (2004) examined only the effect of punitive parenting on aggressive behaviour and did not examine whether children's characteristics contributed to parenting behaviours. Patterson hypothesizes that coercive processes involve a cycle of interactions between negative parenting and children's difficult temperament and behaviour. The research I review in the following section addresses more complex models that have been used to examine the contributions of parenting behaviours and children's characteristics to coercive processes and to the development of aggressive behaviour in children.

Children's Difficult Temperament, Negative Parenting, and Children's Aggressive Behaviour

Children's temperament influences not only how they respond to their environments, but also how others respond to them (Bates, 2001; Bates & McFadyen-Ketchum, 2000; Campbell, 1995; Collins et al., 2000; Owens, Shaw & Vondra, 1998; Rothbart & Bates, 2006; Sanson et al., 2004; Shiner & Caspi, 2003; Smith et al., 2004; Thomas & Chess, 1989; Trentacosta & Shaw, 2008). The reactive nature of children with difficult temperaments can make it difficult for parents to develop or maintain positive and responsive parenting behaviours. Researchers have found that parents who engage in hostile parenting behaviours are more likely than those who do not to rate their children as difficult (Normand, Zoccolillo, Tremblay, McIntyre, Boulerice, McDuff, Pérusse, & Barr, 1996; Olson et al. 2000). In addition, research linking temperament to parenting behaviour has shown that children identified as having difficult temperaments (irritability, fearfulness, negative emotionality, high activity levels, low adaptability) or as being unresponsive tend to evoke negative parenting behaviour such as controlling discipline, hostility, and negativity (Campbell, 1995; Collins et al., 2000; Olson et al., 2000; Trentacosta & Shaw 2008). This combination of difficult temperament and negative parenting can contribute to the development of children's aggressive behaviour (Dodge et al., 2006).

In a recent study, Trentacosta and Shaw (2008) used structural equation modeling to examine the longitudinal effects of temperament and rejecting parenting in toddlerhood on boys' antisocial behaviour (which includes aggressive behaviour) at age 12. The structural model fit the data well (χ^2 = 2.92 *ns*) and it explained 45 percent of the variance in rejecting parenting when children were toddlers, and 12 percent of the variance in 12 year olds' antisocial behaviour. Parent-reported measures of boys' difficult temperament, mothers' empathy, mothers' aggressive personality when the children were 18 months old, and mother's age at first birth were significant predictors of observed rejecting parenting (expressed annoyance, hostility, criticism and punitiveness) when the children were 24 months old. Rejecting parenting at 24 months had a direct effect on boys' antisocial behaviour when boys were 12 years old. However, difficult temperament had only an indirect effect on the 12-year outcome through its effect on rejecting parenting, suggesting that the effect of difficult temperament may be mediated by parenting behaviour.

Other researchers examining the effects of temperament and parenting on the development of children's problem behaviours have focused on whether it is the interaction of temperament and parenting that predicts different outcomes for children with different temperamental characteristics (Bates, 2001; Bates, Pettit, Dodge, & Ridge, 1998; Bates et al., 2000; Belsky et al., 2007; Campbell, 2002; Gallagher, 2002; Miller-Lewis et al., 2006; Morris et al., 2002; Paterson & Sanson, 1999; van Zeijl et al., 2007). This research has shown that negative parenting behaviours seem to exacerbate the development of aggressive behaviour, particularly for children with difficult temperaments (Bates, 2001; Rothbart & Bates, 2006). In an observational study of Australian children, Miller-Lewis et al. (2006) found that the combination of higher than average levels of difficult temperament and "over-reactive" parenting at age four predicted higher than average levels of externalizing behaviours at age six. In a cross-sectional study of six and seven year old children, Morris et al. (2002) found that maternal hostility (yelling and spanking) was associated with externalizing problems in children with irritable temperaments. In addition, Morris et al. (2002) and other researchers have found that children who do not exhibit temperamental difficultness tend to be more resistant to the effects of negative parenting (Belsky et al., 1998; Morris et al., 2002; van Zeijl et al., 2007). However, in contrast to findings from the studies above, Vitaro et al. (2006) found that although both harsh parenting and negative emotionality at 17 months contributed to aggressive behaviour at six years of age, the effects of harsh parenting on children's aggressive behaviour was independent of negative emotionality, supporting an additive model for the prediction of aggressive behaviour.

Process Summary

The research reviewed above underscores the validity of Bronfenbrenner's bioecological model and highlights the importance of including both parents' and children's characteristics when attempting to discover the processes leading to the development of aggressive behaviour in children. The research also supports Patterson's (2002; Reid & Patterson, 1989) model of coercive cycles in which both children's and parents' characteristics contribute to the development and persistence of a maladaptive process that contributes to the development of aggressive behaviour in children.

Differences in theoretical approach and methods contribute to differences in interpretation of the processes through which children's temperament and mothers' parenting behaviours lead to children's problem behaviours. Some studies showed that difficult temperament (Trentacosta & Shaw, 2008) and non-compliant behaviour (Smith et al., 2004) contributed to higher levels of negative parenting behaviours, which subsequently predicted aggressive or externalizing behaviour. However, other studies tested and found support for assertions of children's differential susceptibility to environmental influences (Belsky, Hsieh, & Crnic, 1998; Miller-Lewis et al., 2006; Morris et al., 2002; Rubin et al. 2003; Rutter, 2002). In those studies, it was the interaction of characteristics of the children with mothers' parenting behaviour that predicted later behaviour problems for the children (Miller-Lewis et al., 2006; Morris et al., 2002; Rubin et al. 2003). Other researchers have found that child temperament and parenting behaviours make independent contributions to the development of aggressive behaviour in children (Shaw et al., 2001; Shaw et al., 2003; Vitaro et al., 2006). These variations in findings about the way interactions between parenting and temperament predict behavioural outcomes highlight the need for continued investigation into the relationships between parenting and temperament in the development of aggressive behaviour (Bates, 2001; Bates et al., 2000; Sanson et al., 2004). In the current study, I focus on how difficult temperament influences negative parenting and the effect of both difficult temperament and negative parenting on the development of aggressive behaviour. This research will add to the current body of research examining the contribution of children's characteristics to proximal processes influencing behavioural development. Increased understanding of the antecedents and processes that contribute to negative parenting and children's aggressive behaviour can be used to provide direction for policies and programs focusing on promoting positive development in early childhood.

CONTEXT

In the section above, I discussed the importance of the proximal process of the relationship between the mother and the child as a major contributor to the socialization and behavioural development of the child. While the relationship between the mother and her child is central to the coercive cycle, "[a]nything that increases the likelihood of a child or parent acting in a coercive and irritable manner can keep the coercive cycle in motion" (Reid & Patterson, 1989, p. 109). Bronfenbrenner and Morris (2006) note that the extent to which these contexts affect the developing child is directly related to the proximity of these contexts to the developing child and the proximal processes in which the child is engaged. Thus, it is also important to consider the contextual influences on the development of aggressive behaviour.

Characteristics of the people participating in proximal processes that involve the child comprise a proximal context that can have a significant impact on the developing child (Bronfenbrenner & Morris, 2006). Contexts that are further removed from the proximal process may exert indirect effects on proximal processes and affect children's early development through their effect on parents and the family environment (Bronfenbrenner & Morris, 2006). When these contexts are unstable, they can disrupt the family environment by creating stress for parents (Ackerman, Brown, & Izard, 2004a, 2004b; Conger & Elder, 1994a). In the current study, I included the proximal context of maternal depression and the more distal context of economic (in)security as influencers of the proximal process of parenting and the subsequent effect on the development of children's aggressive behaviour. Researchers have found consistent negative associations between levels of income and levels of maternal depression (Dearing, Taylor, & McCartney, 2004). Thus, in the current study, I focused on mothers' depression as a proximal context that mediates the effects of economic (in)security on the behavioural development of children. In the following sections, I first examine the research on the relationships among maternal depression, negative parenting, and children's aggressive behaviour, and then I examine the research addressing the elements of economic (in)security included in this study and their relationship to maternal depression, negative parenting and children's aggressive behaviour.

Maternal Depression

In any year, about one in twenty Canadians will suffer a major depressive episode (Patten et al., 2007). There is no single cause of depression; but there is evidence that genetic, biological, and environmental attributes play roles in the development of depression (Health Canada, 2002). Women, particularly mothers with young children (Canadian Mental Health Association, 1995), are about two times more likely to experience major depression than are men (Health Canada, 2002). Stress and low socio-economic status are environmental attributes that have been consistently associated with depression and depressive symptoms (Dearing et al., 2004; Health Canada, 2002; Lorant, Croux, Weich, Deliege, Mackenbach, & Ansseau, 2007; Zimmer & Minkovitz, 2003). The incidence of maternal depression is up to two times higher among mothers in low-income families than among mothers in the general population (Lyons-Ruth, Wolfe, Lyubchik & Steingard, 2002; Somers & Willms, 2002). The incidence of maternal depression is even greater among mothers receiving welfare (Ahluwalia, McGroder, Zaslow, & Hair, 2001) with some epidemiological studies finding over 40 percent of mothers on welfare suffering from depression (Siefert, Bowman, Heflin, Danziger, & Williams, 2000).

Persons with depression have low positive affect, are less socially responsive, appear sad, and tend to be more hostile and irritable than non-depressed persons, making it more difficult for them to foster positive relationships with others (Downey & Coyne, 1990; Health Canada, 2002). The difficulty in fostering relationships that accompanies depression is likely to compromise the quality of the relationships between mothers and their children, particularly in the early years when the balance of the relationship depends upon the mother (Downey & Coyne, 1990).

Maternal Depression, Negative Parenting and Aggressive Behaviour

Maternal depression has consistently been linked to parenting behaviours (Berg-Nielsen, Vikan, & Dahl, 2002; Leung & Slep, 2006; Lovejoy, Graczyk, O'Hare, & Neuman, 2000) and to the development of problem behaviours in children (Campbell, 1995; Cummings et al., 2000; Dawson et al., 2003; Downey & Coyne, 1990; Lyons-Ruth, Easterbrooks, & Davidson Cibelli, 1997). Mothers with high levels of depressive symptoms tend to perceive themselves as incompetent in parenting and are more likely to have negative attitudes about their parenting and their children (Conger & Elder, 1994b; Cunningham & Boyle, 2002; Dawson, Ashman, & Carver, 2000; Downey & Coyne, 1990; Lyons-Ruth, Wolfe, & Lyubchik, 2000; Lyons-Ruth et al., 2002). Chronically depressed mothers have been found to be more withdrawn and less responsive in interactions with their infants than non-depressed mothers (Dawson et al., 2000; Dawson et al., 2003; Downey & Coyne, 1990; Lyons-Ruth et al., 2000; Lyons-Ruth et al., 2002). In addition, depressed mothers are also more likely to be irritable and exhibit higher levels of negative parenting behaviour than do non-depressed mothers (Lovejoy et al., 2000; Lyons-Ruth et al., 2000), which, as discussed previously, are associated with the development of children's behavioural problems (Cummings et al, 2000; Leung & Slep, 2006; Shaw et al., 2003).

Longitudinal research indicates that mothers report higher levels of depressive symptoms when their children are infants and toddlers (Campbell et al., 2007; Lavigne et al., 1998b; McLennan et al. 2001). However, for the majority of mothers, these higher levels of depressive symptoms are still lower than cut-offs suggesting clinical diagnosis of depression, and the symptoms decrease as children move out of toddlerhood (Campbell, Matestic, Von Stauffenberg, Mohan, & Kirchner, 2007). It is when mothers' levels of depressive symptoms are at clinical, or near clinical, levels in this early period that children are at greatest risk for developing long-term problems in behavioural development (Dawson et al., 2003), and persistence of maternal depression is also associated with persistence of children's problem behaviours (Lavigne et al., 1998b; Luoma et al., 2004; Munson et al., 2001). Munson et al. (2001) examined the longitudinal relationship between maternal depression and the development of children's externalizing behaviour over five assessments from preschool through grade three with a sample of 101 children of adolescent mothers. They found that the mean of depression scores across the five assessments significantly predicted grade three externalizing problems as well as the rate of change in externalizing behaviour over time. In a second analysis, they examined the relationship between variations from the mean maternal depression score and children's externalizing behaviour score at each assessment. They found that, independent of the overall depression mean score, increases and decreases in depression scores were associated, respectively, with increases and decreases in children's externalizing scores at each assessment.

Although there is substantial research that examines the effect of maternal depression on parenting attitudes and behaviours, and the relationship between maternal depression and children's problem behaviours, there is not a large body of research that goes beyond these findings to examine the role that parenting plays in the association between maternal depression and children's behaviour (McKee, Colletti, Rakow, Jones & Forehand, 2008). Smith (2004) proposed a theoretical explanation that compromised parenting and negative attitudes associated with maternal depression are one of the main mechanisms by which maternal depression affects children. Eamon (2001) examined this relationship and tested a structural model with a sample of 1,297 four to nine-year-old children in a study focusing on the antecedents and consequences of physical punishment. She found that maternal depression had both direct and indirect effects through physical punishment on children's socioemotional problems (measured as an index of internalizing and externalizing behaviours). Shaw et al. (2001) found that children diagnosed with oppositional defiance disorder at age six showed early destructive behaviour but also had mothers with more depressive symptoms and aggressive personality, as well as high levels of rejecting parenting. With this same sample, two years later, Shaw et al. (2003) again found that fearlessness in the child at age one and a half and two years, in the presence of maternal depression and rejecting parenting, was predictive of a continued trajectory of higher and more persistent levels of conduct problems for boys between two and eight years of age.

Recently, Campbell and her colleagues (2007) examined co-occurring trajectories of maternal depression, observed maternal sensitivity (sensitivity to nondistress, positive regard, and intrusiveness), and children's problem behaviours from children age one month to seven years. They found that increasing levels of maternal depressive symptoms predicted decreasing maternal sensitivity. This combination of increasing depressive symptoms and decreasing maternal sensitivity was, in turn, associated with poorer teacher-rated child behavioural outcomes at school entry (Campbell et al., 2007). While a few researchers have found some evidence that parenting behaviours mediate the effects of maternal depression on children's problem behaviours (Dawson et al. 2003; Eamon, 2001; Somers & Willms, 2002) none have specifically examined the relationships among maternal depression, negative parenting, and children's aggressive behaviour. More research is needed to understand how these relationships work in the development of children's aggressive behaviour. Thus, in the current study, I modeled negative parenting behaviours as mediators of the effects of maternal depression on the development of children's aggressive behaviour.

One limitation of the research on maternal depression is that many of these studies rely on maternal report of children's behaviours. Researchers have found that mothers who are depressed tend to rate their children more negatively than non-depressed mothers (Fergusson & Lynskey, 1993), which may affect the validity of reports of problem behaviour made by depressed mothers. However, Richters (1992) in a review of studies claiming rating distortion by depressed mothers found little empirical evidence in these studies to support the claims. Youngstrom, Izard and Ackerman (1999) conducted a study using the criteria Richters specified as necessary to substantiate claims of depression distortion (i.e., longitudinal comparison of depressed and non-depressed mothers ratings of their own and others' children, and ratings of independent observers). They found that maternal dysphoria (mood characterized by symptoms of depression) did account for small to moderate amounts of variance in maternal reports of children's behaviour. In a more recent study, Mulvaney, Mebert, and Flint (2007) compared mother, father and teacher ratings of children's behaviour. They also found that parents' affective states had a significant effect on the variance of both mothers' and fathers' ratings of their children's behaviours. However, maternal anger, and not maternal depression, was the only significant predictor of maternal ratings of children's externalizing behaviours. Despite their findings, Youngstrom et al. (1999) suggest the efficiency of using maternal reports outweighs the disadvantage of the modest reporting bias.

ECONOMIC (IN)SECURITY

Distal contexts affect children's early development through their effect on parents and the family environment (Bronfenbrenner & Morris, 2006). Conger and Elder's (1994a) family economic stress model provides a description of the pathway that connects the context of economic (in)security to maternal depression, negative parenting behaviour and children's behavioural outcomes. Conger and Elder (1994) used per capita income, debt-to-asset ratio, unstable work, and income loss as measures of economic stress. The principal components of my conceptualization of economic (in)security for the current study were income (in)adequacy (amount of family income),income (in)stability (variation of family income over time), source of income, and employment (in)stability (stability of parents' employment). The most salient variables in the concept of economic (in)security are income (in)adequacy and income (in)stability, but employment (in)stability and source of income are clearly connected with these variables, as they are key contributors to income (in)adequacy and (in)stability (Morrissette & Ostrovsky , 2005; Rashid, 1999). Not only are employment (in)stability and source of income linked to income (in)adequacy and (in)stability of income, but they have also been associated with maternal depression (Ahluwalia et al., 2001; Raver, 2003) and with children's behavioural outcomes (Beiser, 2001; Dearing et al., 2006; Harland et al., 2002; Miller-Lewis et al., 2006; Sourander, 2002).

My interest in examining the effects of economic (in)security, rather than income alone, on the development of aggressive behaviour arose from findings of previous research. In the following sections, I review the research that has addressed the factors that contribute to my conceptualization of economic (in)security. I found no study in which researchers examined all of these economic (in)security variables within the same model as contributors to the development of children's aggressive behaviour.

Although there is research that addresses each of these elements as a developmental context, the majority of research on economic contexts as part of the developmental environment has focused on the effects of low family income on broader constructs of children's behaviour.

Employment (In)stability

Jackson and Scott (2002) report that up to one in three Canadian families with more than one income earner may experience a spell of unemployment in a given year. Frequent job changes and frequent moves between employment and unemployment can contribute to economic insecurity. Parents who are unemployed through job loss or a stressed labour market must engage in job searches as well as find ways to manage household expenses with reduced incomes. The combination of reduced income, juggling work schedules, changing jobs, and moving in and out of employment as parents try to gain a stable source of income may increase stress for families, leading to frustration and despair and contributing to the development of maternal depression (Cooksey, Menaghan, & Jekielek, 1997; Dearing et al., 2006; Jackson & Scott, 2002; McLoyd et al., 1994; Raver, 2003). This depression, in turn, can affect mothers' relationships with their children (Conger & Elder, 1994a; Mistry et al., 2004). In the current study, I included parents' employment (in)stability in my conceptualization of economic (in)security not only because of changes in levels of income associated with employment (in)stability, but also because of the impact that unstable employment can have on maternal depression (Raver, 2003).

The research on the effects of the employment of both parents on young children's behaviour is only recently beginning to gain momentum (Cooksey et al., 1997; Parcel & Menaghan, 1994; Parke, 2004), and only a few studies have addressed the effects of parental employment (in)stability on young children's behavioural outcomes. Harland et al. (2002), with a sample of four- to 15-year-old Dutch children, found that parental unemployment was significantly associated with more problem behaviours in children. They found that recent (within the past 12 months) parental unemployment from inability to work and from job loss were significantly associated with children's externalizing behaviours. Similarly, Sourander (2002), with a sample of 374 Finnish three-year-old children, found that children in families where either one or both parents had been unemployed in the past two months had significantly higher levels of aggressiveness and destructiveness than children of parents who had not been unemployed.

Family income was not included, as either a predictor or control, in either of the above studies. However, Dearing et al. (2006) did include income as a control in a recent longitudinal study of 1,132 economically and geographically diverse families that followed children from infancy to school entry. Examining within-child effects, they found that increased hours of parental work that led to increases in income contributed to decreases in children's behavioural problems in low-income families. However, if the increase in hours of work was not associated with a substantial income increase, it had negative consequences for children's behavioural development (Dearing et al., 2006). Over the six year period of the study, on average, children had fewer externalizing problems when their families' income was relatively high than when their families' income was relatively low, consistent with other research examining the effect of income on children's behaviour (Bor et al., 1997; McLeod & Shanahan, 1996; Phipps & Lethbridge, 2006; Strohschein, 2005). This was particularly true for those children living in low-income families.

The three studies by Harland et al. (2002), Sourander (2002), and Dearing et al. (2006) show that employment stability may play an important role in shaping the developmental environment of young children. None of these studies, however, examined whether these effects of employment (in)stability on children's behaviour were mediated through more proximal variables such as parental mental health or parenting behaviours. Conger and Elder's (1994a) research, using their family economic stress model, suggests that the effects of employment and income (in)stability would be mediated through proximal processes in the family environment. Their study examined economic hardship, of which employment instability was an indicator, in a sample of families with adolescent children and found that parental depression and parental hostility mediated the effects of economic hardship on adolescents' externalizing behaviours (Conger et al., 1994). Similarly, Raver (2003) found that, when mothers' hours of work increased, maternal depression decreased, and, when accompanied by increases in earned income, negative parenting behaviours decreased. However, Raver (2003) did not examine the consequences of these relationships on children's behavioural outcomes.

The gap in research on the impact of parental employment (in)stability on the development of aggressive behaviour in early childhood added to my motivation for examining relationships between families' employment (in)stability, as one component of economic (in)security, and children's early behavioural development. Jackson and Scott (2002) point out that, in Canada, during the period in which the data for this study were gathered, vulnerability to unemployment was particularly high for families whose incomes were below the national median income, and that change in parents' labour market participation was a primary cause of declining family income. These findings point to the need for additional research that examines how employment (in)stability affects the developmental environment of young children. In this study I examined whether maternal depression mediates the effect of employment (in)stability on boy's aggressive behaviour.

Source of Income

In this study, I included source of income as one component of economic (in)security. Specifically, I focused on whether families received income from government transfers as an indicator of the security of their income source. The data for the current study were collected in Canada between 1994 and 2001. In the first half of this period, the labour market was stabilizing after an economic recession and there were few lay-offs; however, there was little new hiring (Picot, Morissette & Miles, 2003). Few new jobs were created, particularly for full-time paid employment, and most new jobs came in the form of self-employment (Picot & Heisz, 2000). For low-wage earners, the sluggish labour market did little to improve their fortunes and, in fact, the 1990s were a period of earnings declines for them (Picot & Heisz, 2000). Between 1990 and 2000, the percentage of two parent families with incomes below the Low Income Cut Offs (LICO) increased slightly from 10.5 percent in 1990 to 11.2 percent in 2000 (Statistics Canada, 2003). In addition, fewer than half of Canadians with low-paid employment in 1996 were able to move out of low-paid employment by 2001 (Janz, 2004).

For these low-wage workers, government transfers often provide supplementary income. As reported by Rashid (1999), families in the four lowest income deciles in Canada rely heavily on government transfers as a source of income. These transfers include social assistance, employment insurance, as well as the Child Tax Benefit initiated in 1993, and the National Child Benefit supplement, introduced in 1998 (Federal, Provincial and Territorial Ministers Responsible for Social Services, 2005). Between 1990 and 2000, over half of the low-income families with children in Canada received social assistance benefits at some point (National Council of Welfare, 2001). Reliance on social assistance and employment insurance usually is marked by periodic, rather than continuous, use of these benefits as parents move in and out of the labour force (National Council of Welfare, 1998). Morissette and Ostrovsky (2005), in a review of family earnings instability in the 1990s, found families in the lowest income tertile (bottom third) had the greatest instability in market earnings, but government transfers, such as the Canada Child Tax Benefit, and the National Child Benefit supplement largely offset this instability. In addition, those moving out of low income, and those in the middle-income tertile, while not experiencing the low income of the bottom tertile, had less income stability than those in either the bottom or top tertiles. Increased eligibility restrictions for social assistance and employment insurance implemented during the period of this study meant these families could not receive the stabilizing benefit of these government transfers (Morissette & Ostrovsky, 2005). Although government transfers may have increased income stability for the poorest families, reliance on multiple sources for family income indicates an underlying instability in family income and employment.

There is little research on the effects of source of income on family environments and children's early behavioural development outside of research on the effects of receiving social assistance (Mayer, 2002). Because source of income may be related directly to stability of income and amount of income, it is surprising that there has not been more interest in examining the relationship of income source to children's behavioural development. I found one Canadian study by Beiser et al. (2000) that addressed the effect of source of income, in terms of the transition from social assistance to work, on children's behaviour using a sample of children who were four to nine years old at baseline and six to 11 years old at follow-up. They found that the initial period of transition from social assistance to work had the most negative effects on children's behaviour, despite the fact that family income may have increased. They reported that conduct disorders increased for children in persistently poor families that experienced an absolute increase in income over a two-year period, although remaining poor. Bivariate correlation analysis showed that these income increases were significantly associated with new employment and decreased use of social assistance. They also found that continuing to receive social assistance, or at least continuing to receive some income support while making the transition from social assistance to work, has less deleterious effects on children's behaviour than transitioning between social assistance and work. Beiser et al. (2000) suggest that the economic gains from movement into low-paid employment may not compensate for the additional family stress associated with parental absence from the home.

Miller-Lewis et al. (2006) conducted a two-year longitudinal study with a community-based sample of 395 Australian preschool children from age four to age six. Using both parent and teacher ratings of externalizing behaviour, they found that the effect of receiving social assistance benefits became non-significant on externalizing behaviour in children when children's earlier behaviour, children's difficult temperament (measured as inflexible and non-persistent), and over-reactive parenting behaviours were added to their model. Their model accounted for 63 percent of the variance of children's externalizing behaviour. This is consistent with the literature that examines the mediating effects of more proximal contexts and proximal processes on children's development. Although they did not examine mediation, findings from other research would suggest that the effects of receiving social assistance benefits were mediated by parenting behaviours (Miller-Lewis et al., 2006).

There is additional research from the U.S. on the effects of transitions from social assistance to work on children's early behaviour, but I have not included it here, as it is not relevant in the current context. The primary beneficiaries of social assistance programs in the U.S. are single mothers (U.S. Department of Health and Human Services. Administration for Children and Families, 2004), thus, the majority of the research on social assistance policies has focused on their effects on single-mother families (Brady-Smith, Brooks-Gunn, Waldfogel, & Fauth, 2001; Zaslow, Moore, Brooks, Morris, Tout, Redd, & Emig, 2002). In Canada and Australia, however, all families who meet eligibility requirements, not just single-mother families, may receive social assistance benefits. In this study, the sample comprised boys in two-parent families, thus generalizations from studies of U.S. social assistance samples to the sample in the current study were not appropriate. The aim of the current study was to add to the limited body of research on the effects of families' source of income, as one indicator of economic (in)security, on children's behavioural development in the Canadian context.

Income (In)Adequacy and Income (In)Stability

The majority of research examining the effects of economic variables on the development of children's behaviour focuses on the effects of income (in)adequacy. Low family income consistently has been associated with the development of children's aggressive behaviour (Dodge, et al., 2006; Strohschein, 2005; Tremblay et al., 2004). Although significant, the statistical effects of income on children's aggressive behaviour are usually quite small indicating that large increases in income (e.g., doubling or tripling incomes for low-income families) would be required to produce any noticeable improvements in children's behaviour (Blau, 1999; Taylor, Dearing & McCartney, 2004; Strohschein, 2005). This is supported by research that has shown that small increases in household income are not strongly associated with improved behavioural outcomes for children in low-income families (Beiser et al., 2000; Dearing et al., 2001; Roberts et al., 2001). Furthermore, there is evidence that behavioural outcomes do not continue to deteriorate over time for children living in families with persistently low income (Ackerman et al., 2004b; Beiser et al., 2000; McLeod & Shanahan, 1993; Moore, Glei, Driscoll, Zaslow, & Redd, 2002). In some cases, small gains in household income associated with transitions from welfare to work have been associated with increased risk of behaviour problems (Beiser et al., 2000; Parcel & Menaghan, 1997; Scott, Edin, London, & Kissane, 2004). Compared with an unstable source of income, having a stable source and amount of family income, whether from employment or social assistance, has even been found to predict better child outcomes regardless of the level of income

(Dunifon, Kalil & Danziger, 2003; Kalil & Dunifon, 2007; Moore et al., 2002; Yoshikawa & Seidman, 2001). These findings seem to contradict other research that suggests the development of behavioural problems is accelerated as low income persists (Duncan & Brooks-Gunn, 1997; McLeod & Shanahan, 1996; Strohschein, 2005). These inconsistencies suggest the relationship between persistent low income and behavioural development in children is complex and to understand the practical importance of this relationship requires a complex conceptualization.

There is extensive research that addresses the effects of income on children's development. Much of this research has used stable measures such as income averaged over time (Blau, 1999; Lipman & Offord, 1997) or income measured at a single time (Côté et al., 2006; Côté et al., 2007; Tremblay et al., 2004). In the past decade, researchers have begun to examine how income dynamics relate to child outcomes through the family environment by including variations in source and amount of family income as predictor variables in research designs. More specifically, researchers have examined how child outcomes are related to the duration and timing of poverty (Dearing et al., 2006; Duncan & Brooks-Gunn, 1997; McLeod & Shanahan, 1996), moving in and out of low income (Dearing et al., 2001; Roberts et al., 2001; Shanahan, Davey, & Brooks, 1998), and source of income (Beiser et al., 2000; Moore et al., 2002; Yoshikawa & Seidman, 2001). Investigations that have examined change and stability in economic circumstances over time (Dearing et al., 2001, Phipps & Lethbridge, 2006; Yoshikawa & Seidman, 2001) have provided stronger evidence for the effects of income as a predictor of the development of problem behaviours in children's behaviour (Macmillan, McMorris, & Kruttschnitt, 2004). These findings suggest that income instability, as one component of economic insecurity, may make a unique contribution in predicting the higher incidence of behaviour problems for children in these families as compared with children in families with more stable incomes (Conger et al., 1994; McLeod & Shanahan, 1993; Moore et al., 2002; Yoshikawa & Seidman, 2001).

The research that is relevant to the current study focuses on the effects of persistence of low income and variations in income in early childhood on children's behavioural development. In this area of research, some researchers have focused only on the relationship between income and children's behaviour controlling for effects of variables in children's proximal environments (McLeod & Shanahan, 1996; Phipps & Lethbridge, 2006; Roberts et al., 2001; Strohschein, 2005). Other researchers have examined the effects of income, along with variables in the proximal environment, and their effect on children's behaviour (Bor et al., 1997; Côté et al., 2007; Dearing et al., 2001; McLeod & Shanahan, 1993; Mistry et al., 2004; NICHD Early Child Care Research Network, 2005; Shaw et al., 1994; Taylor et al., 2004). While the research examining the relationship between income and children's development is extensive, the research addressing the relationship between income and physically aggressive behaviour in early childhood is limited. Although I focused on the research specifically addressing physically aggressive behaviour in the review below, I have included some research that focuses on broader constructs of problem behaviour as it pertains to the potential pathways through which income level and income (in)stability may contribute to the development of physically aggressive behaviour in children.

Focusing on the relationship between income and children's behaviour, McLeod and Shanahan (1996) and Strohschein (2005) examined the relationship between family income trajectories (controlling for ethnicity, maternal education, maternal age, and maternal marital status) and antisocial behaviours in children. The results of these studies with respect to antisocial behaviour are relevant to my research because physical aggression in early childhood is a precursor of antisocial behaviour (Dodge et al., 2006; Tremblay et al., 2004). Both McLeod and Shanahan (1996) and Strohschein (2005) used samples from the National Longitudinal Survey of Youth (NLSY) with children who were age four at the beginning of their studies. McLeod and Shanahan followed the children until they were nine years old, while Strohschein followed the children until they were 14 years old. Both found that, even at age four, children in low-income households had higher levels of antisocial behaviour than did children in non-low-income households and that initial income had the largest effect on the trajectories of development of antisocial behaviour. In addition, in both studies, persistence of low family income was associated with trajectories of increasing aggressive behaviour. Furthermore, they found that levels of antisocial behaviour decreased for children whose family income increased as they got older. What is most interesting about these studies was the examination of the process of behavioural development in conjunction with income levels over time and the evidence that both initial income as well as later income has modest, but significant, effects on the development of antisocial behaviour.

In another study, Phipps and Lethbridge (2006) examined the relationships of different measures of income on a range of child outcomes using three cycles of data from the NLSCY. In addition, they divided the sample based on stable family structure: children who lived in two-parent families for the study period and children who lived in lone-parent families for the study period. Examining the relationship between income change and physical aggression, they found that, for the youngest children in their sample (birth to three years old in 1994 and four to seven years old in 1998), regardless of family structure, variation in income had a significant effect on the outcome of aggressive behaviour. However, this effect was not evident for the older children in the sample. Interestingly, they found that increases in income were significantly associated with lower levels of aggressive behaviour, but decreases in income were not significantly associated with higher levels of aggressive behaviour. They also found that the effect of income on all children's outcomes included in their study was not limited to a low-income threshold, and there was no ceiling above which income no longer mattered for the children's outcomes included in the study. Consistent with other research findings, the size of the effect of income on behavioural outcomes was small (Phipps & Lethbridge, 2006).

As noted above, despite small effects, (in)stability of family income appears to be an important element of the developmental environment. However, the small effects associated with income point to the need to understand the processes by which income carries its effect through to the development of aggressive behaviour in children. Research by Dearing et al. (2004) suggests a potential pathway through which income may affect the development of aggressive behaviour. Dearing et al. (2004) analyzed data from a large U.S. longitudinal study (N=1,364) in which they tracked fluctuations in income and fluctuations in levels of maternal depression in the first three years following childbirth. What they found was that, as income increased, levels of maternal depression decreased. They found that depressed women who moved out of poverty (based on the U.S. poverty threshold) were 1.48 times more likely to have depressive symptoms decrease to non-clinical levels than women who remained below the poverty threshold. While the effects of increases in income were greater for low-income mothers, they were significant for all mothers, regardless of income. This finding for maternal depression is consistent with Phipps' and Lethbridge's (2006) finding that there was no ceiling for the effect of income on children's outcomes. In addition, Dearing and his colleagues (2004) found that maternal depression was not a predictor of levels of income over time. Their findings indicate that that fluctuations in family income, independent of level of income, will create disturbances in the family environment, thus examining only the effects of level of family income is insufficient for understanding how income affects family environments.

Dearing et al. (2004) examined the effects of income fluctuations on levels of maternal depression only. However, as described earlier, Munson et al., (2001) found a similar pattern of matching fluctuations between maternal depressive symptoms and children's externalizing behaviour. In addition, other researchers have found that maternal depression mediates the effect of income on children's behaviour in early childhood. For example, Mistry et al. (2004) using NICHD data from children between one and 36 months found that income did not have statistically significant direct effects on children's problem behaviours at age three, but it did have significant indirect effects mediated through maternal depression. Bor et al. (1997) found that, as poverty persisted (measured prenatally, when the child was six months old, and when the child was five years old), its association with boys' externalizing problems increased, and this relationship was primarily mediated by maternal depression.

The findings from the studies above showing that maternal depression mediates the relationship between income and children's problem behaviours (Bor et al., 1997; Muson et al., 2001) suggest a next step would be to take Dearing et al.'s (2004) finding of the relationship between fluctuations in income and maternal depression forward to provide an explanation for the relationship between income (in)stability and the development of children's aggressive behaviour. Maternal depression compromises mothers' relationships with their children and is associated with negative parenting behaviours (Cummings et al., 2000; Downey & Coyne, 1990; Leung & Slep, 2006; Lovejoy et al., 2000; Lyons-Ruth et al., 2000; Shaw et al., 2003). Negative parenting behaviours, in turn, are associated with the development of aggressive behaviour in children (Campbell et al., 2000; Côté et al, 2007; Miller et al., 2002; Romano et al., 2005; Thomas, 2004; Vitaro et al., 2006).

Extrapolating from the findings of Dearing and his colleagues (2004), and linking to other findings from studies noted above that have included parenting behaviour and children's behaviour, while income is secure and high relative to previous or subsequent income, a mother may be less depressed and engage in more positive and responsive parenting behaviours. However, a loss of income would lead to an increase in depressive symptoms and subsequently an increase in negative parenting behaviours, such as yelling and hitting. Finally, the aggressive behaviour of children experiencing changes in parenting behaviours would follow a trajectory that aligns with the pattern of the parenting behaviour: increased levels of negative parenting behaviour would align with increased levels of aggressive behaviour, as Thomas (2004) found in her study examining the effects of punitive parenting on children's aggressive behaviour.

The findings from the trajectory research by Dearing et al. (2004) and Phipps and Lethbridge (2006) suggest that income (in)stability may play an important role in explaining the effect of income on the early development of children's aggressive behaviour. However, these researchers did not examine the processes through which persistent low income or variations in income may have contributed to children's behavioural outcomes (McLeod & Shanahan, 1996; Phipps & Lethbridge, 2006; Strohschein, 2005). In addition, only Phipps and Lethbridge (2006) examined the effects of income variation for children from infancy to school entry. The differences in levels of antisocial behaviour between children in lower and higher income families that were already present at age four in the trajectory studies (McLeod & Shanahan, 1996;

Strohschein, 2005) point to the need to begin earlier to identify the processes through which antisocial behaviour develops (Tremblay, 2004).

The results of the longitudinal studies reviewed above are consistent with cross-sectional studies showing that the effects of income on aggressive behaviour are relatively weak compared to associations between children's behaviour and proximal variables, such as parenting behaviours (Chao & Willms, 2002) and maternal depression (Somers & Willms, 2002). The findings from the longitudinal research show the importance of examining not only the magnitude of the effects of income on children's behaviour but also its effect on mediating variables in children's developmental contexts. The findings also draw attention to the practical implications of income for children's development (Taylor et al., 2004). That is, while the effects of income on children's behaviour may be small, its effects may be mediated through significant effects on more proximal developmental contexts such as maternal depression (Dearing, et al. 2004; Campbell et al., 2007; Lorant et al., 2007; Lyons-Ruth et al., 2002), which points to the importance of considering the role of mediating variables in the relationship between income and children's behaviour.

Family Structure

Family structure and changes in family structure are significantly associated with economic (in)security (Picot, Zyblock, & Pyper, 1999). Canadian children in single-parent families are more likely to experience low income than are children in two-parent families. In 2000, the before-tax median income of single-parent families was only 40 percent of the median before-tax income of two-parent families (Statistics Canada, 2003). Changes in family structure also have a significant impact on family income. Change from a single-parent family to a two-parent family often results in a significant increase in family income, whereas the reverse often results in a significant decrease in income (Picot et al., 1999, Roberts et al., 2001). Changes in labour force participation may also have different consequences depending on family structure. Single-parent families are more susceptible to falling into low income if they experience changes in labour market participation (e.g., working fewer hours, becoming unemployed) than are two-parent families because they have only a single earner (Picot et al., 1999). In this study, I limited my sample to include only boys in families with two parents who remained together for the full period of the study, because the interrelationship between family structure and economic (in)security was a potential confound that would be difficult to untangle.

Summary – Contexts

Although there is a large body of research on how contexts affect children's development in general, the research on contextual influences on aggressive behaviour, specifically, is limited. However, the findings of the research addressing broader constructs of children's behaviour do show that contextual effects play an important role in children's behavioural development (Bor et al., 1997; Dearing et al., 2001; Dearing et al., 2006; Harland et al., 2003; Mistry et al. 2004; Munson et al., 2001; Yeung et al., 2002). Maternal depression is a proximal context that affects mothers' responsiveness to their children and is associated with children's externalizing behaviours (Campbell et al., 2007; Lyons-Ruth et al., 2002; Munson et al., 2001). Income (in)adequacy has been consistently associated with both maternal depression (Dearing et al., 2004) and children's aggressive behaviour (McLeod & Shanahan, 1996; Stroschein, 2005). (In)stability of income and (in)stability of employment have also been linked to problem behaviours in young children, but the effects of (in)stability of income and employment on children's behaviour have not been examined to the same extent as income (in)adequacy. Nevertheless, the limited research on the effect of parents' employment (in)stability and source of income on children's behaviour suggest that these contextual factors also contribute to the development of aggressive behaviour in children. Research examining the pathways through which income (in)adequacy, income (in)stability, employment (in)stability, or source of income are linked to children's aggressive behaviour is limited. One objective of this study was to add to this limited body of research by examining these pathways in infancy and early childhood. In the current study, I included maternal depression as a mediator of the effects of economic (in)security on negative parenting, and negative parenting as a mediator of the effects of maternal depression on the development of boys' aggressive behaviour.

Time

Examination over time is necessary to identify patterns of relationships among variables that contribute to behavioural development (Bronfenbrenner, 1995; Bronfenbrenner & Morris, 2006; Campbell, 1997; Magnusson, 1995; Yoshikawa & Hsueh, 2001). Although there are many reports of research on the relationships among family income, parenting behaviour, and child behaviour, there are few studies that have examined these relationships systematically over time. Shaw and his colleagues suggest, "main effects of children's and parent's behavior might have some concurrent impact, but optimal prediction of later disruptive problems should be obtained by tracing how child and parent behaviors interact across time" (Shaw et al., 1998a p. 97). In addition to tracing child and parent behaviours, it is important to view the process within its context. Collins et al. (2000), in their review of research on parenting, point out that “socialization can be fully understood only by examining the role of parents in light of the influence of other settings in which children and families function” (p.228). The analysis that I use in the current study does just that. Economic (in)security is a context of children’s developmental environment that has a significant impact on parents (Bor et al., 1997; Conger & Elder, 1994a; Dearing et al., 2001; Mistry et al., 2004). In this study, I focused on the impact of economic (in)security on maternal depression as an element of the child’s developmental environment, and I examined how maternal depression affects negative parenting and its contribution to the development of aggressive behaviour in boys.

Cross-sectional research designs that assess only concurrent situations (e.g., Chao & Willms; Harland et al., 2002; Miller et al., 2002; Somers & Willms), or longitudinal designs that measure hypothesized predictors at one time point and outcome measures at a second time point, but do not measure concurrent relationships between the predictors and outcomes (e.g., Bor et al., 1997; Côté et al., 2006; ; Côté et al., 2006; Dearing et al., 2001; Olson et al., 2000; Rubin et al., 2003; Tremblay et al., 2004), cannot account for effects and outcomes within the developmental period that have contributed to subsequent developmental outcomes. Although the findings from cross-sectional studies provide valuable information about relationships among children’s behaviour, temperament, parenting behaviour, family structure, gender, income, and other environmental factors, they do not provide sufficient information on the causal processes that may underlie these relationships (Bronfenbrenner, 1995; Yoshikawa & Hsueh, 2001). Longitudinal studies that fail to consider change in contextual processes between successive periods of measurement may miss important processes that lead to changes in developmental trajectories. Additionally, concurrent measures of predictors may also have associations with current behaviour, over and above prior developmental processes. Thus, it is important to consider relationships among the variables of interest throughout the developmental period of interest to understand their contributions to behavioural outcomes (Bronfenbrenner, 1995; Magnusson, 1995). Assuming that all other things will remain constant as behaviour develops may lead to false conclusions regarding hypothesized relationships among variables (Cole & Maxwell, 2003; Macmillan et al., 2004).

Summary of the Reviewed Literature

Children’s behavioural development is determined by both individual characteristics and environmental contexts. Most researchers examining children’s behavioural development choose to focus on either individual or contextual features as predictors of behavioural outcomes. Very few have examined how combinations of these features either collectively or interactively are associated with children's behaviours (Rubin et al. 2003). Even fewer researchers have tested causal relationships among these variables using longitudinal data. In addition, very few researchers have examined the effects of economic (in)security on children in Canadian families. My study addresses these gaps by examining the dynamic relationship between economic (in)security and the development of aggressive behaviour in boys longitudinally. In this study, I did not treat income as a static feature of the child's developmental environment. On the contrary, I treated income and how income was obtained as having dynamic qualities that continually affect children's environments. My broad hypothesis was that source of income, employment (in)stability, income (in)adequacy, and income (in)stability combine to provide levels of economic (in)security for families that subsequently contribute to the rise of maternal depression, negative parenting behaviours, and the development of aggressive behaviour in young boys.

Finally, an important omission in the existing research on the processes linking income to aggressive behaviour, which was a key element in the current study, is the inclusion of context, process, and person variables as predictors for the development of boys' aggressive behaviour. There is empirical evidence that children's difficult temperament is linked directly and indirectly to the development of aggressive behaviour through experience of negative parenting and maternal depression, (Dodge et al., 2006; Rothbart & Bates, 2006). Given these findings, and the links between income and maternal depression and parenting, children's temperamental qualities may act to exacerbate or attenuate the effects of income on the development of aggressive behaviour (Kim-Cohen, Moffitt, Caspi & Taylor, 2004).

I chose to limit my study to the examination of the development of aggressive behaviour in boys because (a) the evidence of significant differences between boys and girls in the prevalence of aggressive behaviour and (b) the inconclusive findings regarding differences in processes of gender by temperament interaction effects for girls and boys (Dodge et al., 2006; Rothbart & Bates, 2006). In addition, socio-demographic characteristics, such as family structure and children's sex, may affect the associations between economic (in)security and children's behavioural development. I selected the sample for this study based on family structure and children's sex. Findings from the literature reviewed above provide the rationale for making distinctions between these characteristics.

Longitudinal studies provide information for understanding the relationships between the economic variables of income, receipt of social assistance, and unemployment and the family process variables of maternal depression, parenting, and children's behaviour. These studies show consistent associations of maternal depression, parenting behaviours, and economic variables with children's behaviours. Nevertheless, findings are inconsistent regarding whether proximal contexts such as maternal depression or proximal processes such as parenting mediate the effects of economic variables. Some researchers have found strong mediating effects for maternal depression (Bor et al., 1997; Mistry et al., 2004; Yeung et al., 2002). Other researchers have found the effect of parenting on behaviour to be independent of income (Dearing et al., 2001). Inconsistencies such as these make it difficult to develop a cohesive understanding of the relationships among income, maternal depression, parenting, and children's behaviour.

Systematic analysis of these relationships over time using longitudinal data provides a means for examining precursors of children's behaviours and the potential for discovering causal relationships among variables. However, many researchers using longitudinal data fail to take full advantage of the available data when examining the relationship between income and children's behaviour and use what Cole and Maxwell (2003) term "half-longitudinal" designs. Researchers test the prospective relationship between income and behaviour, and between income and potential intervening variables, but only test the concurrent relationship between behaviour and the potential intervening variables. This type of design is prevalent in the research on the relationship between income, parental characteristics, and children's behaviour, but it may bias, either positively or negatively, estimates of the effects of intervening variables on behaviour (Cole & Maxwell, 2003). Alternatively, researchers include measures of children's familial circumstances at one time as predictors of later outcomes. Implicit in this approach is an assumption that the relationship between children's behaviour and the intervening variables has remained static across the period of investigation (MacMillan et al., 2004).

It is only within the past 10 years that a significant body of research on the circumstances and development of children in Canada has begun to emerge (for example, Côté et al., 2006, 2007; Elgar, Curtis, Mcgrath, Waschbusch, & Stewart, 2003; Elgar, Mcgrath, Waschbusch, Stewart, & Curtis, 2004a, Elgar, Waschbusch, Mcgrath, Stewart, & Curtis, 2004b; Tremblay et al., 2004; Willms, 2002). The National Longitudinal Survey of Children and Youth (NLSCY) (Statistics Canada, 1995), begun in 1994, contributes to this work by providing researchers with the necessary data to address the circumstances of children growing up in Canada. Using longitudinal data from the NLSCY, my research will contribute to this new research on the development of children in Canada by addressing the gaps in both the theoretical domain and empirical analyses by examining how the children's and mothers' characteristics in the context of family economic (in)security may contribute to the development of persistent aggressive behaviour in young children.

THE MODEL AND CONCEPTUAL HYPOTHESES

In this study I employed the Process-Person-Context-Time model to examine the development of children's aggressive behaviour from infancy to school entry in the contexts of economic (in)security and maternal depression and their effect on the process of negative parenting. The PPCT model provides a useful framework to guide the examination of relations among key predictors of the development of aggressive behaviour at various levels of influence (Bronfenbrenner, 1995; Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris, 2006). I examined the dynamics of economic (in)security, modeled as parental patterns of employment (in)stability, source of family income, income (in)adequacy, and (in)stability of income over time, and their effect on maternal depression as a contributor to the parenting practices that play a key role in child behavioural development. These processes are overlaid on a foundation of the effects of children's difficult temperament on both parenting behaviour and the development of aggressive behaviour. The four components of the PPCT model are matched with the following concepts. Person is represented by boys' difficult temperament and physically aggressive behaviour. Negative parenting behaviours are included as proximal processes. I include maternal depression and family economic (in)security (employment (in)stability, source of income, income (in)adequacy, and income (in)stability) as contexts affecting the proximal process. The investigation of the relationships among these variables over the period between infancy and school entry addresses development over time. All of the elements included in the model for this study have been linked, alone or in some combination, to children's aggressive behaviour, but no study has examined how the combination of all of these elements over time affects the early development and maintenance of children's aggressive behaviour.

The primary hypotheses that I examine in my research are framed within the PPCT model as follows (and illustrated in Figure 3.1):

Person:

- Early aggressive behaviour in boys predicts their later aggressive behaviour.
- Difficult temperament contributes to the development of aggressive behaviour in boys.

Process:

- Boys' difficult temperament contributes to increased levels of negative parenting behaviour.
- Negative parenting contributes to the development of boys' aggressive behaviour.

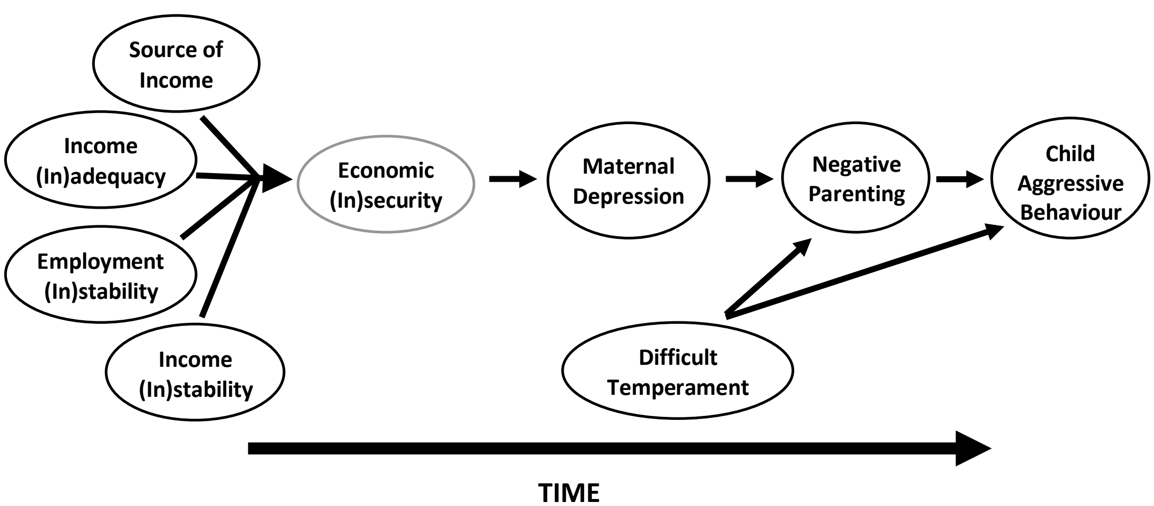
Context:

- The combination of employment (in)stability, source of income, income (in)adequacy, and income (in)stability are elements of economic (in)security.
- Employment (in)stability increases variations in levels of income that contribute to economic (in)security.
- Sources of income affect variations in levels of income that contribute to economic (in)security.
- As family income decreases, the impact of economic insecurity on maternal depression increases.
- Economic insecurity contributes to increased levels of maternal depression.
- Higher levels of maternal depression contribute to increased levels of negative parenting behaviours.
- Maternal depression mediates the relationship between economic insecurity and negative parenting behaviour.

Time:

- (In)stability in the relationships among the process person and context variables over time will affect the development of boys aggressive behaviour.

Figure 3.1. The Basic Conceptual Model



Chapter 4: Method

I used structural equation modeling (SEM) with a repeated measures longitudinal design to investigate the conceptual hypotheses outlined in the previous chapter, which, broadly stated, are that boys difficult temperament and early aggressive behaviour, in conjunction with economic (in)security, mediated by maternal depression and negative parenting, contribute to the development of aggressive behaviour in boys in early childhood. Repeated measures permitted me to examine how the causal nature of these relationships among the variables develop and change over time.

This discussion of methods is organized into two general sections. In the first section, I discuss the National Longitudinal Survey of Children and Youth (NLSCY), the data source for my study, and summarize the sampling methods used for the NLSCY. I also describe the selection of the NLSCY sub-sample I used for my study, and address ethical considerations relevant to the current study. In the second section, I outline the methods I used in the data analysis.

Research Design

I used a longitudinal design in this study to analyze data from the first four cycles of the NLSCY. The NLSCY is a long-term study of a representative sample of Canadian children that is being conducted by Statistics Canada to collect information on child development and well-being. Data collection for the NLSCY began in 1994 and follow-up surveys have been conducted every two years. Data collection for the first wave was carried out in the winter and spring of 1994-1995. The second, third, and fourth waves of data collection took place in the winter and spring of 1996-1997 (Cycle 2), 1998-1999 (Cycle 3), and 2000-2001 (Cycle 4), respectively (Statistics Canada, 1996; 2000; 2002; 2004). The following section summarizes the sampling methods used in the NLSCY. More detailed information on sampling can be obtained from survey documentation published by Statistics Canada (1996; 2000; 2002; 2004).

NLSCY Sample

Target Population of the NLSCY

Canadian children from newborn to age 11 years, living in private households, were the target population for Cycle 1 (1994-1995) of the NLSCY. Children living in institutions (e.g., hospitals, residential facilities, child-welfare facilities) or on Indian reserves, representing about .5 percent of the population, were not included in the survey. The NLSCY is designed to provide both longitudinal and cross-sectional samples, and new longitudinal cohorts were added in Cycle 2 (1996-1997), Cycle 3 (1998-1999), and Cycle 4 (2000-2001). However, because I used data from only the first longitudinal cohort (those children selected in 1994-1995 and followed thereafter), I describe only the sampling strategies used for Cohort 1.

NLSCY Sampling Strategy

A multi-stage stratified sample design was used to select the initial NLSCY sample. The purpose of this strategy was to select children in each of the 10 Canadian provinces to produce reliable provincial estimates by age group. Households were used as the sampling unit and were selected from three main sources: main, integrated, and territorial components.

Main Component

The main component was composed of provincial data collected solely for the NLSCY. The Statistics Canada Labour Force Survey (LFS) (Statistics Canada, 2007) sampling frame served as the basis for the selection of the NLSCY sample from the ten provinces. The LFS uses geographic stratification and multi-stage systematic sampling of households. The sample for the main component of the NLSCY was selected from households that were included in the LFS sample at the time of data collection for the NLSCY, or had recently been part of the sample. The LFS identified households that contained the target population of children aged 0 to 11 in 1994-1995 (Statistics Canada, 1996). The LFS did not include children living in the Yukon or Northwest Territories, children living in institutions, or children living on Indian reserves. The sample from the main component includes 12,900 households.

Integrated Component

In the integrated component, data collection for the NLSCY was combined with data collection for the National Population Health Survey (NPHS; Statistics Canada, 1996). The NPHS was another national longitudinal survey designed to collect information on the mental and physical health of Canadians (it became a part of the Canadian Community Health Survey in 2000[1]). Data on questions that were common to both the NPHS and NLSCY were collected for the children aged 0 to 11 years using the NLSCY interview in this integrated component of the sample. The NPHS used the LFS to draw its sample from nine Canadian provinces; Québec was not included in this LFS

---

[1] Statistics Canada. National Population Health Survey - Household Component - Cross-sectional (NPHS) web page. Available at: http://www.statcan.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=3236&lang=en&db=IMDB&dbg=f&adm=8&dis=2 (accessed on July 19, 2007).

sample. The Québec sample for the integrated component was obtained from the sampling frame constructed by Santé Québec for the Enquête sociale et de santé, 1992-1993.

Territorial Component

Data collection for the Yukon and Northwest Territories (NWT) was carried out with an integrated survey that was used for both the NLSCY and the NPHS. The sample was drawn from the population of private occupied dwellings. Institutions and unorganized areas were excluded from the samples for both territories, and the NWT sample also excluded remote areas and very small communities. The initial NWT sample was also divided into two regions in anticipation of the division of the territory into the Western Territory and Nunavut in 1999.

NLSCY Sample

Households selected for the sample were contacted to request their participation in the survey. Of the 15,579 households selected, 13,439 households agreed to participate, resulting in a response rate of 86.3 percent. In the main component, all children who were 0 to 11 years old, residing in the household and members of the same economic family[2] were selected for the sample, up to a maximum of four children per household. If there were more than four eligible children in the household, four were selected randomly. In the Territories component, a maximum of three children was selected from each household.

In the first cycle of data collection (1994-1995), the NLSCY sample comprised the following seven age groupings: 0-11 months, 1, 2-3, 4-5, 6-7, 8-9, and 10-11 years. Separate groupings for children in the 0-11 months and 1 year olds provided over-sampling of children under two years old.

Longitudinal Target Population

The total sample for Cohort 1 in Cycle 1 was 22,831 children. The longitudinal target population for Cohort 1 in Cycle 2 (1996-1997), Cycle 3 (1998-1999), and Cycle 4 (2000-2001) was the children from the respondent households from Cycle 1. In Cycle 2, the children from the Cycle 1 cohort were aged two to 13 years. Sample reductions

---

[2] An economic family, as defined by Statistics Canada (Definitions, data sources & methods; February 20, 2006; http://www.statcan.ca/english/concepts/definitions/eco-family.htm), includes all family members related by blood, marriage, common-law relationship, or adoption. Foster children are also considered part of the economic family.

were made in the longitudinal cohort in Cycle 2 due to financial restrictions. Children from the NPHS were dropped, and, to reduce respondent burden in households with several eligible children, the number of children included in the survey was reduced to two per household. This reduced the longitudinal sample of Cohort 1 children in Cycle 2 to 16,903.

In Cycle 3, Cohort 1 children were aged four to 15 years. The NLSCY was able to recover some non-respondents from Cycle 2, although there was still some loss of cases, resulting in a total Cohort 1 sample of 16,718 children in Cycle 3. In Cycle 4, when the children were aged 6 to 17 years, additional children were dropped from the survey if they had not responded in two consecutive cycles. As well, children were excluded if they had moved permanently out of the country, or if there was a hard refusal (i.e., the respondent was insistent that they no longer wished to participate in the survey). As a result of these exclusions, 1,086 children were dropped from the Cohort 1 longitudinal sample resulting in a total sample of 15,632 children in Cycle 4 (Statistics Canada, 2002).

Sample for the Current Study

Prior to selecting the sample for my study, I used the primary data files from each of the four cycles of data collection to create new files that included only children whose birthdates fell within 1993 and 1994, and only those variables that would be used for selection of the sample and data analysis (See Appendix A for full sample selection syntax). Using the file from Cycle 4, I selected only those cases that had participated in the survey since the first cycle of data collection (Cohort 1) and where the child was six years old. Using this subsample of the children who were six years old in Cycle 4 (2000-2001) and belonged to Cohort 1 (n = 1,534) (Statistics Canada, 2002), I then merged this data file with the files I had created for the data from Cycles 1, 2, and 3 to form a single data set from which to select the final sample. Once this merged file was created, I excluded those children from the sample who had not participated in all four survey cycles, because a primary goal of the research was to examine processes from cycle to cycle.

There are many factors beyond difficult temperament, negative parenting behaviour, maternal depression, and economic (in)security that may affect children's behavioural development. Researchers often include control variables in their models to address possible confounding in their findings, but, given the complexity of the hypothesized model, this was not feasible. Instead, I excluded cases affected by some potentially confounding factors to facilitate interpretation of the findings. Thus, children included in the study were selected to meet the following criteria: the primary survey respondent in all four cycles of data collection was the biological mother of the child; the child lived in a two-parent family (with the same two parents) for the period under investigation; neither parent of the child was a recent immigrant to Canada; the child had no long-term medical conditions or activity limitations; and the child was from a singleton birth. Finally, only boys were included in the final analyses. The rationale for each criterion follows.

Two exclusion criteria were related to the primary survey respondent. The primary respondent for preschool children in the NLSCY is the person who is most knowledgeable about the child and is referred to as the PMK. For the majority of the children in the NLSCY sample, the PMK was the mother. Mothers were PMKs for 91.3 percent of the responding children in Cycle 1 and 89.8 percent of the children in Cycle 4. Because there could be systematic differences in households where the PMK was someone other than the biological mother, only those children whose PMK in all four cycles was their biological mother were included in the sample.

Children whose mothers changed marital status (i.e., were married, divorced, entered or ended a common-law union) at any time in the period under investigation were also not included in the sample. Changes in family structure create additional instability and also contribute to changes in family economic (in)security (Picot et al., 1999). Thus, these children were excluded from the study sample to avoid the potential confounding relationships that may have arisen with their inclusion.

If either parent had immigrated within four years prior to beginning participation in the NLSCY, the child was not included in the survey. Beiser et al. (2000) found that immigrants experienced less stable employment than non-immigrants did over a two-year period, and they were more likely to experience low income than non-immigrants were. However, recent immigrants face additional stressors related to the adjustments of living in a new country, which may also affect their mental health and parenting (Foss, Chantal & Hendrickson, 2004). Thus, to control for these additional effects, I excluded children of recent immigrants from the sample.

Children with long-term medical problems and activity limitations (e.g. mental disabilities, physical disabilities, heart disease, epilepsy, and other long-term conditions) were excluded from the sample to eliminate alternative explanations for behavioural problems. Mothers of twins and triplets are more likely than mothers of singletons to experience maternal depression (Thorpe, Golding, MacGillivray & Greenwood, 1991). Thus to eliminate the effects of being a twin or triplet on maternal depression and potentially parenting behaviour, any child who was a twin or a triplet was excluded from the sample.

After the exclusions above were applied, the study sub-sample included 361 males and 362 females. The terminal outcome of interest in this study is physical aggression. As a result, I limited my sample for analysis to boys only, based on empirical evidence that physical aggression is more prevalent among boys than among girls (Alink et al., 2006; Baillargeon et al., 2007b; Baillargeon, Tremblay & Willms, 1999). Thus, the subsample for this study comprised 361 boys who were singleton births, with no long-term medical conditions or activity limitation, and who lived in two-parent families for the duration of the period under investigation.

NLSCY Data

The NLSCY is a comprehensive national longitudinal survey that is designed to gather data on a variety of factors that may affect children's motor, social, and cognitive development. The concepts that are used in this study are income (in)adequacy, income (in)stability, employment (in)stability, and source of income, which are used to represent economic (in)security, and maternal depression, parenting behaviours, boys' difficult temperament, and boys' aggressive behaviours. The operationalization of these concepts is discussed in the next chapter, in the section on the measurement model. For simplicity in the remaining text, reference to variables from data collection periods will be referred to in the following manner:

Time 1 (T1): Cycle 1 (1994-1995), children from 0 to 12 months old (Infancy)

Time 2 (T2): Cycle 2 (1996-1997), children from 24 to 36 months old (Toddlerhood)

Time 3 (T3): Cycle 3 (1998-1999), children from 48 to 60 months old (Preschool)

Time 4 (T4): Cycle 4 (2000-2001), children from 72 to 84 months old (School-aged).

NLSCY Scales

Some concepts included in the NLSCY are measured using scales rather than individual indicators. In this study, I use NLSCY scales as indicators for the concepts of maternal depression, negative parenting behaviours, and boys' aggressive behaviour.

The NLSCY survey instruments were developed in consultation with a multidisciplinary team of experts in child development who used several criteria for selecting these scales. First, the scales had to be comparable to scales used in other studies. In addition, the psychometric properties of the scales needed to be available, with complete references, or, if scales were adapted or modified for use in the NLSCY, they were tested for reliability and validity. Finally, the measure had to be concise.

Validation of these NSLCY scales by Statistics Canada, and partially reinvestigated by myself for this study (see Chapter 5), involved three major steps:

1. Factor analyses were performed to describe the factors inherent in each scale.

2. Factor structures were then used to calculate the scale scores.

3. Reliability measures for each scale were produced using Cronbach's alpha coefficient.

These analyses were carried out by Statistics Canada using SAS software. A more detailed description of the validation process is available in overviews of survey instruments, published for each cycle of the NLSCY (Statistics Canada, 1996; 2000, 2002; 2004).

Parent report measures

Ideally a combination of measures (e.g. observation and self-report) and multiple sources of information (e.g. parents, teachers, independent observers) should be used to prevent common method biases in the data (Podsakoff, MacKenzie, Podsakoff, & Lee, 2003). In the NLSCY, the PMK reports all of the data for preschool children. This, in combination with the use of similar measures at each data collection period, may increase the longitudinal correlation among the variables. However, Podsakoff et al. (2003) suggest that temporal separation of the predictor variables from the outcome variables is one way to reduce the effect of common method bias, because it reduces the informants' ability to recall previous responses in an attempt to maintain consistency. Although I used the same measures across the study period, the two-year intervals between data collection in the NLSCY provide this temporal separation.

Despite the drawbacks of common method bias, there are some advantages to using parent report (Rothbart & Bates, 2006). First, parents have the opportunity to observe their children on a daily basis, and thus can more readily identify their children's patterns of behaviour. Independent observers make their assessments based on one or two encounters with a child, and teachers observe children in the more formal and restrictive school setting. Children may also alter their behaviour depending on the context. Thus, they may be more well-behaved in settings outside the home or when being observed in the home by a "stranger" than they are in the family environment. Second, parents have first-hand information on the environmental contexts in which the children are developing. Third, parent questionnaires are inexpensive and less time consuming than laboratory or home observation. Thus, researchers are able to collect a large amount of information about the child in a relatively short time.

The inclusion of maternal depression as a predictor of negative parenting and children's aggressive behaviour is related to the concern about common method bias, because research findings suggest that mothers who are depressed tend to perceive their children more negatively than non-depressed mothers (Fergusson & Lynskey, 1993). However, research findings from studies examining the effect of depression distortion suggest that, while this distortion does account for small to moderate amounts of variance in children's behaviour, the advantage of using maternal reports outweighs the disadvantage of the modest reporting bias (Richters, 1992; Youngstrom et al., 1999).

Ethical Considerations

In this study, I used data from the NLSCY microdata files that contain the exact responses to the questions in the survey. These data are highly sensitive and include identifying characteristics. As such, they are protected under the Statistics Act of Canada. Access to these data is limited to employees or "deemed employees" of Statistics Canada who are subject to the restrictions imposed on Statistics Canada employees with regard to treatment of this sensitive information. To become a deemed employee, I was required to undergo a security evaluation and take an oath to the Statistics Act, and sign a contract with Statistics Canada. All data analysis were carried out at the Research Data Centre (RDC) at the University of Alberta, in Edmonton. The RDC provides a secure closed network computing laboratory for carrying out data analysis with the confidential data files of Statistics Canada surveys, including the NLSCY. All results that were taken out of the RDC for this dissertation were screened for confidential data, whether as direct listings or as possible residual disclosures, by the disclosure analyst, an employee of Statistics Canada.

Data Analysis

In the first stage of the data analysis, I used the Statistical Package for the Social Sciences (SPSS) for Windows Release 11.0 to obtain the univariate descriptives of the sample. The hypothesized model was tested in the second stage of analysis using structural equation modeling (SEM). I used maximum likelihood estimation from LISREL 8.8 (Jöreskog & Sörbom, 1996) for all model estimations. SEM provides a means of incorporating a measurement model and a structural model simultaneously, and tests how well the hypothesized conceptual model fits with the observed data. The measurement portion of the model links the latent variables to the observed variables (like factor analysis), and the structural portion of the model contains the hypothesized ordering and causality between the latent variables (like path analysis) (Nachtigall, Kroehne, Funke & Steyer; 2003).

In SEM, the full model implies that there is a specific structure to the covariance matrix of the measures used. The parameters of the model are estimated and the model-implied covariance matrix can then be compared to the structure of the covariance matrix of the observed data. The fit of the model is then tested using a chi-square fit test (Hayduk, 1987).

The most reliable test of the overall fit of the models is the chi-square statistic. The chi-square statistic tests whether the theoretical covariance matrix deviates from the observed covariance matrix. If there is a significant difference ($p < .05$), the theoretical model is considered to be inadequate. However, the chi-square statistic is quite powerful, and it is difficult to obtain a non-significant chi-square with large samples that have a high level of statistical power. My sample ($n = 361$) was substantial enough to permit estimation of a relatively large model, but it is not so large as to render a large sample size as justification for overlooking significant ill fit of the models.

There has been a tendency among researchers using SEM to ignore significant chi-square values, but pointed discussions of this on SEMNET (an internet listserv) make it obvious that chi-square must be reported and respected. The "utility" of fit indices is therefore correspondingly declining (see articles in *Personality and Individual Differences, 42*(5), 2007, special issue on structural equation model testing). In this dissertation, I follow the convention of reporting the chi-square, degrees of freedom, and p, and respecting the implications of these statistics for interpreting my results. I also report the values for the Adjusted Goodness of Fit Index (AGFI) to provide continuity with other traditions of model assessment that use other fit indices. The AGFI is a variant of the Goodness of Fit Index that is "the percent of observed covariances explained by the covariances implied by the model" (Garson, 1988). The Goodness of Fit Index essentially measures how much better the model fits compared to no model at all. The AGFI is a similar fit index that also adjusts for the degrees of freedom in the model. Findings from a recent study of optimal values for fit indices suggest that AGFI cutoff value of .95 would be optimal for rejecting mispecified models and retaining correct models with the sample size used in the current study (Sivo, Fan, Witte & Willse, 2006). Although I report the values for AGFI, I did not use the AGFI in making decisions about, or descriptions of, the models.

After assessing model fit using the chi-square statistic, I examined the standardized residuals and modification indices to identify sources of ill fit within the models. The standardized residuals show the difference between the observed covariance matrix (S) and the model-implied covariance matrix (∑). Large positive or negative residuals indicate whether the model underestimates or overestimates, respectively, the covariance between any two variables. LISREL provides modification indices that report how much a model's chi-square fit would improve if a specific coefficient was added to the model (Hayduk, 1996).

Chapter 5: Specification of the Causal Model

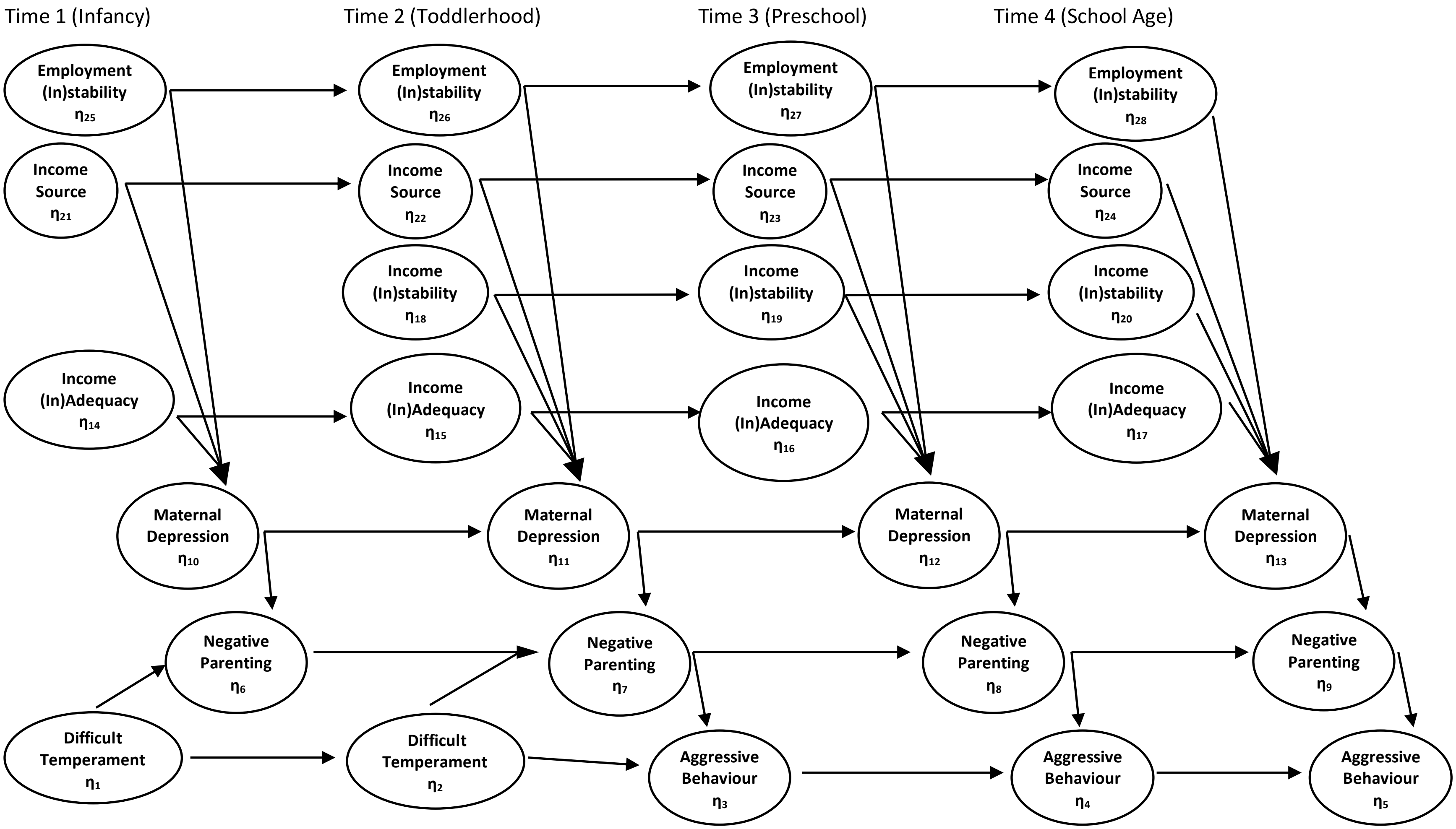
In the first section of this chapter, I describe the conceptual model introduced in Chapter 3. In the second section, I discuss the measurement model and describe the model concepts and their indicators. In the third section, I describe the covariance matrix and how the conceptual model was tested in this study.

The Conceptual Model

The diagram in Figure 5.1 represents an expansion of the hypothesized conceptual model presented in Chapter 3 to account for the all of the relationships among the variables that were examined in this study. Bronfenbrenner's Process-Person-Context-Time (PPCT) model (Bronfenbrenner, 1995; Bronfenbrenner & Evans, 2001; Bronfenbrenner & Morris, 2006), Patterson's model of coercive cycles (Patterson, 2002; Reid & Patterson, 1989), and Conger and Elder's (1994a) family economic stress model, along with research findings reviewed in the preceding chapters provided the conceptual basis for the model.

The conceptual model is fully recursive and is made up of two distinct levels. The first level (the two bottom rows of the model in Figure 5.1) represents person characteristics of difficult temperament and aggressive behaviour, and proximal process of negative parenting behaviours associated with the development of aggressive behaviour in boys. The second level (the five upper rows of the model in Figure 5.1) represents contexts that were hypothesized to influence the proximal process. The first level of the model maps out the developmental process by including the concepts associated with boys' aggressive behaviour and negative parenting behaviour at each time. The modeled hypothesis indicates that higher levels of negative parenting behaviours, boys' difficult temperament, and aggressive behaviour contribute to the development of subsequent aggressive behaviour in boys. Boys' difficult temperament in infancy (Time 1) contributes to mothers' hostile parenting behaviours toward infants. Difficult temperament in infancy was also hypothesized to persist as difficult temperament in toddlerhood (Time 2). Mothers' negative parenting behaviours when boys' are infants persist to when they are toddlers. In addition, negative parenting behaviour and boys' difficult temperament in toddlerhood have concurrent effects on boys' aggressive behaviour.

Figure 5.1: The Full Conceptual Model



*Error variables and the covariances of the four latents at Time 1 (η_1, η_{14}, η_{21}, η_{25}) are part of the model but are not depicted here.

Following this same pattern of effects, negative parenting behaviour when boys are toddlers persists to when they reach preschool age (Time 3), and there is a concurrent effect of negative parenting on preschool boys' aggressive behaviour. This same pattern of effects follows through to negative parenting and boys' aggressive behaviour when they reach school age (Time 4).

The rationale for not including a path from boys' aggressive behaviour to negative parenting (within any specific time) was that this model focuses on the impact of negative parenting on the development of aggressive behaviour in children. This was based on an assumption that parents come to parenting with established patterns of social interaction, whereas, in the preschool years, children are still developing social interaction skills (Maccoby, 1992). Thus, the extent of influence that boys' behaviour exerts on mothers' behaviour was expected to be less than the influence of mothers' behaviour on boys' behaviour. Nevertheless, standardized residuals and modification indices that were produced in the LISREL analysis were examined to decide whether the path from boys' aggressive behaviour to negative parenting should be freed in the model.

The second level, or the top five rows of the model in Figure 5.1, employs the same developmental approach, but addresses the causal relationships among variables in the environmental context of the developing child. The focus in this level is the effect of economic (in)security on maternal depression. The latent concepts of employment (in)stability, source of income, income (in)adequacy, and income (in)stability (which comprise the conceptual definition of economic (in)security in this study) are modeled to have a direct effect on maternal depression. It was expected that higher income inadequacy, income instability, and employment instability would contribute to higher levels of maternal depression. It was assumed that there is a causal relationship between the latent concepts of employment (in)stability, source of income, income (in)adequacy, and income (in)stability from one measurement period to the next measurement period. That is, at each interval, the prior status of each of these concepts, which are components of economic (in)security, influences the current status of the respective concepts. In addition, at each time period, these concepts are linked concurrently to maternal depression, and prior levels of maternal depression persist as current levels of maternal depression. The concurrent effect of maternal depression on negative parenting at each time interval mediates the relationship between the economic context and negative parenting.

The Measurement Model

I built the structural equation model using four progressively expanded models beginning with the most proximal elements of the developmental context and adding more distal elements in subsequent models to discern the contributions made by each set of concepts to the development of aggressive behaviour. The same indicators were used to measure the concepts in all models. In the following sections, I provide the descriptions of the concepts and their indicators and the fixed measurement error variances used in the model and used in the analyses.

The Concepts and Their Indicators

Boys' Difficult Temperament

The difficult temperament concept refers to the fussiness, unadaptability, and unpredictability of the child in infancy (Time 1) and in toddlerhood (Time 2).

T1 Difficult Temperament (η_1)
T2 Difficult Temperament (η_2)

Boys' Difficult Temperament Indicators

In the NLSCY, temperament measures were obtained only for children between three months and three years old. Thus, for the study sample, there are measures of temperament only at Time 1 and Time 2, when the children are infants and toddlers, respectively. The NLSCY uses items from the Infant Characteristics Questionnaire (ICQ), developed by Bates (Bates, Freeland, & Lounsbury,1979) as a measure of children's temperament. This scale includes items that measure four dimensions of temperament: fussiness/difficulty, unadaptability, dullness, and predictability. The ICQ is a well-established measure that is used widely in research on temperament (Bates, 2001; Guerin et al., 1997; Keenan et al., 1998; Normand et al., 1996; Olson et al., 2000; Rothbart & Bates, 2006; Statistics Canada, 1996).

Although the ICQ is intended to measure four dimensions of temperament, the NLSCY did not derive scale scores for the temperament factors described by Bates because the distributions of the items were skewed and multimodal, and because exploratory factor analysis showed that, except for the fussy/difficult scale, loadings on the theoretical factors were unstable (Statistics Canada, 2002). In this study, I used only those items related to the fussy/difficult factor. In the original development of the ICQ, this factor had the highest internal consistency and validity of all four factors (Cronbach's alpha, .79; mother-father ICQ convergence, r=.61) (Bates et al., 1979). In addition, the difficulty factor has been associated longitudinally with externalizing behaviours (Shaw et al., 2001), which is why it is included in this study.

The fussy/difficult factor includes the following nine items: How easy is it to calm or soothe the child when upset; How often each day does the child get fussy and irritable; How frequently the child fusses/cries in general; How easily does the child get upset; When upset, how intensely does the child cry, fuss or whine; What kind of mood is the child generally in; How changeable is the mood of the child; How does the child react to dressing; and Overall degree of difficulty (Bates et al., 1979). Ratings on all items range from 1 to 7, with higher scores indicating a higher level of difficulty.

I carried out a principal components factor analysis of these nine variables with the study subsample using the NSLCY 's Cycle 1 data (see Appendix C). A single factor emerged, but the loading of the variable that asked, "How does he/she react when you are dressing him/her?" was very low. In addition, when the item was removed from the analysis, the reliability of the scale improved. Because of this, and because this item was not asked about the two-year-olds in the NLSCY at Cycle 2, this item was excluded from the scales that I constructed for this study.

I carried out a principal components factor analysis of the eight remaining variables with the data from the study subsample at Time 1 and Time 2. A single factor emerged in each analysis. At Time 1, this factor accounts for 42 percent of the common variance, and at Time 2 the factor accounts for 41 percent of the common variance. I constructed difficult temperament scale scores for Time 1 and Time 2 using the eight items. In calculating the score, the value of each response is reduced by one so the lowest score is zero. Scores could range from 0 to 48, with high scores indicating a higher level of difficulty. Cronbach's alpha for the study subsample was calculated for these scales using SPSS and was .80 for both the Time 1 and Time 2 scales.

Aggressive Behaviour

The concept of aggressive behaviour refers to the child's engaging in behaviours such as hitting, fighting, or reacting with physical aggression. These concepts are measured when the child is a toddler (Time 2), preschool age (Time 3) and school age (Time 4). The final measure of children's aggressive behaviour in Cycle 4 (η_5) is the terminal outcome variable in this model.

<u>T2 Aggressive Behaviour</u> (η_3)
<u>T3 Aggressive Behaviour</u> (η_4)
<u>T4 Aggressive Behaviour</u> (η_5)

Aggressive Behaviour Indicators

In the NLSCY, the Behaviour Scale is a checklist developed to provide indicators of the prevalence of behavioural characteristics of Canadian children. The items selected for inclusion in the Behaviour Scale were selected from other survey and assessment instruments that address children's behaviour, including the Ontario Child Health Study and the Montreal Longitudinal Survey (Statistics Canada, 1996). The NLSCY subscales, based on PMK ratings of children's behaviour, provide indicators of externalizing and internalizing behaviour, as well as indicators of prosocial behaviours. The ratings are based on an ordinal scale with the following values: 1 = never or not true; 2 = sometimes or somewhat true; 3 = often or very true. In calculating the score, the value of each response is reduced by one so the lowest score is zero. Statistics Canada developed subscales of the NLSCY Behaviour Scale using factor analysis to test the psychometric properties of the scale.

For the current study, I used the NLSCY physical aggression subscales[3] from Cycles 2, 3 and 4 as indicators of aggressive behaviour at ages two, four, and six years. In the NLSCY, separate scales are used for children in the two to three year-old age group and in the four to eleven year-old age group. The physical aggression scale for the two to three year-olds measures physical aggression and opposition whereas, for four to eleven year-olds, used when the children in the current study sample were four and six years old, measures physical aggression and conduct disorder (Statistics Canada, 1996). In the current study, the physical aggression scales at Time 2 and Time 3 were indicators of the concept of aggressive behaviour that predicts children's subsequent behaviour, and at Time 4, the physical aggression scale was the indicator for the behavioural outcome at age six.

The physical aggression subscale is made up of eight items for two to three year-olds (child is defiant; gets into many fights; has temper tantrums or hot temper; has difficulty awaiting turn in games or groups; when another child accidentally hurts him/her, he/she reacts with anger and fighting; has angry moods; kicks, bites, hits other children; and punishment doesn't change his/her behaviour) and six items for four to eleven year-olds (gets into many fights; when another child accidentally hurts him/her, he/she reacts with anger and fighting; physically attacks people; threatens people; bullies or is mean to others; and kicks, bites, hits other children). The scores range from 0 -16 when the children were two years old at Time 2 and from 0 - 12 when the children were four and six years old, at Time 3 and Time 4 respectively. Higher scores indicate behaviours associated with physical aggression. The Cronbach's alpha for the physical aggression subscale for two to three year-olds was .754 and for four to eleven year-olds

[3] The NLSCY variable names for the scales used in this study are BBECS04 (Time 2), CBECS09 (Time 3), and DBECS09 (Time 4).

it was .770 (Statistics Canada, 2004). I also calculated the Cronbach's alpha in SPSS for this subscale using unweighted data from the study subsample. The values for Cronbach's alpha were .73, .78, and .78 in Cycles 2, 3, and 4, respectively.

NEGATIVE PARENTING BEHAVIOUR

Negative parenting behaviour refers to hostile or punitive acts toward the child. I included measures of the concept at each measurement period in the model. In the NLSCY, the only measure of negative parenting when children are infants is hostile parenting behaviour. For children two years of age and older, the NLSCY also measures punitive parenting behaviour. Although hostile and punitive parenting are somewhat different dimensions of parenting behaviour, both represent negative parenting behaviours that have been associated with the development of aggressive behaviour in children.

T1 Negative Parenting (η_6)
T2 Negative Parenting (η_7)
T3 Negative Parenting (η_8)
T4 Negative Parenting (η_9)

NEGATIVE PARENTING INDICATORS

Hostile Parenting

Hostile parenting refers to the level of hostile response to the child, such as getting annoyed with the child for behaviour the mother does not approve of, or telling the child she or he is bad. I used the hostile/ineffective parenting scale[4] as an indicator of negative parenting at Time 1 when the children in the sample were less than a year old. This scale was one of two parenting factors (hostile/ineffective and positive interaction) for the 0 – 23 month age group that the NLSCY derived from a factor analysis. Two items asking about negative interactions with the child make up the hostile/ineffective parenting scale (APRCQ04 and APRCQ05). The questions were, "How often do you get annoyed with ... for saying or doing something he/she is not supposed to?" and "How often do you tell him/her that he/she is bad or not as good as others?" The values of the response ranged from 1 "never," to 5 "many times each day." In calculating the scale score, the value of each response is reduced by one so the lowest score is zero. The total score for the scale ranges from 0 to 8, with a high score indicating hostile/ineffective parenting. The Cronbach's alpha for the scale is .394, which is very low (Statistics Canada, 1996). This may be due, in part, to the small

[4] The NLSCY variable name for the scale used in this study is APRCS02.

number of items on the scale (Cortina, 1993). The Cronbach's alpha I calculated in SPSS for this subscale using unweighted data from the study subsample of the NLSCY was .32. In spite of its low reliability, I used this scale because it is the only measure of negative parenting behaviour for children younger than two years old in the NLSCY.

Punitive Parenting

Punitive parenting refers to parenting behaviours such as using physical punishment, yelling, and scolding. The NLSCY's Punitive/Aversive parenting scale was used as the indicator for punitive parenting behaviour at Time 2, Time 3, and Time 4, when the children were two, four and six years old. It is a subscale of the NLSCY's Parenting Scale, which is a self-report instrument to measure parenting behaviours, and was derived from a factor analysis carried out by Statistics Canada analysts for the NLSCY. I chose to examine punitive/aversive parenting in this study because of the consistent associations between maternal depression and punitive/aversive parenting behaviours (Downey & Coyne, 1990; Lahey et al., 1999; Lovejoy et al. 2000; Lyons-Ruth et al., 2002b; McLeod & Shanahan, 1993; Shaw et al., 2003).

Punitive/aversive parenting scale measures were obtained only for children aged two to eleven years old. Punitive/aversive parenting was measured with four items that describe alternative responses to a situation (e.g., When ... breaks the rules or does things that he/she is not supposed to, how often do you...raise your voice, scold or yell at him/her? …calmly discuss the problem? (reversed for scaling); …use physical punishment? …describe alternative ways of behaving that are acceptable? (reversed for scaling)). Responses range from 1 "never" to 5 "all the time." In calculating the score, the value of each response is reduced by one so the lowest score is zero. The scores for the Punitive/Aversive scale range from 0 - 16, with higher scores indicating higher levels of punitive/aversive parenting behaviours.

The Punitive/Aversive parenting scale provided a measure of parenting that is comparable to measures used in other studies. Ackerman et al. (1999) used a similar measure of punitive parenting that asks about hitting and yelling, and the HOME-SF both asks about and observes whether parents spank their child (Bradley, Corwyn, McAdoo, & Garcia Coll, 2001a, 2001b). Harsh or punitive parenting has been associated with higher levels of externalizing behaviours in studies on the effects of parenting on child behaviours (Campbell, 1995; McLeod & Shanahan, 1993; Thomas, 2004; Vitaro et al., 2006). Cronbach's alpha for this scale was .569 (Statistics Canada, 1996), which is a rather low level of internal consistency for the scale. The reliability analysis using the study subsample resulted in the following values for Cronbach's alpha: Cycle 2, .56; Cycle 3, .58; Cycle 4, .54.

Maternal Depression

This concept refers to the presence of maternal depressive symptoms, such as feeling blue, feeling lonely, having crying spells. There is a distinction between clinically diagnosed "depression" and self-reported "depressive symptoms," and most self-report measures are not intended as a diagnostic tool. However, high levels of depressive symptoms based on self-report measures are strongly associated with clinically diagnosed depression (Radloff, 1977), and much of the research that addresses the relationships among maternal depression, parenting, and children's behaviour uses self-report measures of maternal depressive symptoms.

T1 Maternal Depression (η_{10})
T2 Maternal Depression (η_{11})
T3 Maternal Depression (η_{12})
T4 Maternal Depression (η_{13})

Maternal Depression Indicators

Maternal depressive symptoms were measured in all four cycles of data collection used for this study. The scale used in the NLSCY is a shorter version of the Center for Epidemiological Studies Depressive Symptoms Scale (CES-D) developed by L.S. Radloff (1977) of the Epidemiology Study Center of the National Institute of Mental Health in the United States. Dr. M. Boyle of the Chedoke-McMaster Hospital of McMaster University modified the 20-question CES-D scale and reduced it to 12 questions for the NLSCY (Statistics Canada, 1996). This scale measures the occurrence and severity of depressive symptoms (i.e., poor appetite, feeling blue, distraction, feeling depressed, everything was an effort, hopelessness, restless sleep, unhappiness, loneliness, did not enjoy life, had crying spells, felt disliked) experienced by the PMK in the previous week. The Depressive Symptoms Scale allows for assessment of the level of depressive symptoms in the general population and is not designed for clinical diagnosis of depressive symptoms.

There are four response levels for each of the 12 questions in the depressive symptoms scale to indicate the frequency of occurrence of each symptom in the past week: 1 = Rarely or none of the time (less than 1 day); 2 = Some or a little of the time (1-2 days); 3 = Occasionally or a moderate amount of time (3-4 days); 4 = Most or all of the time (5-7 days). To obtain the depressive symptoms score all response values are summed. In calculating the score, the value of each response is reduced by one so the lowest score is zero. Scores on the Depressive Symptoms Scale range from 0 to 36, with higher scores indicating higher levels of depressive symptoms. The scale was validated for the NLSCY using principal components factor analysis based on the responses of

13,140 PMKs. The Cronbach's alpha coefficient for the scale was .82 (Statistics Canada, 1996).

ECONOMIC (IN)SECURITY

The concept of economic (in)security as discussed in previous chapters was not included in the model as a latent concept, but was represented by four separate concepts: income (in)adequacy, income (in)stability, employment (in)stability, and source of income. The operationalization of these concepts is described below.

INCOME (IN)ADEQUACY

The concept of income (in)adequacy refers to the total level of before-tax household income from all sources for the year prior to the assessment, including wages and salary, self-employment, employment insurance, social assistance, and other sources and the adequacy of that income, based on family size, for meeting basic needs of food, clothing and shelter.

T1 Income (In)adequacy (η_{14})
T2 Income (In)adequacy (η_{15})
T3 Income (In)adequacy (η_{16})
T4 Income (In)adequacy (η_{17})

INCOME (IN)ADEQUACY INDICATORS

Household income (in)adequacy was measured using a variable from the NLSCY that reports the ratio of income to the low income cut-off (LICO) based on PMK reports of household income from all sources before deductions. "A low income cutoff (LICO) is an income threshold below which a family is likely to spend significantly more of its income on food, shelter and clothing than the average family" (Giles, 2004). Using data on family expenditure from the Survey of Household spending, the average amount of money a family spends on shelter, clothing and food is calculated based on family size and size of area of residence (urban-rural). From this, the average percentage of income spent on food clothing and shelter is calculated, and an additional 20 percent is added to this average to represent significantly higher than average spending on these necessities (Paquet, 2002). The income to LICO ratio used in the NLSCY was calculated as the before-tax household income divided by the value of the cut-off (Statistics Canada, 1996). Using the income to LICO ratio rather than income alone provides a measure of the adequacy of a family's income because it accounts for family size and the size of the region of residence, which both affect the extent to which family income is adequate to meet their needs.

The "income to LICO ratio" variable is derived by Statistics Canada using the reported before-tax household income from each cycle of data collection. The NLSCY interviewers collected information on the source(s) and amount of income for the PMK, as well as her spouse/partner, to obtain estimates of individual income for the PMK and her spouse/partner, as well as an estimate for total household income from all sources. If respondents were unwilling or unable to provide an exact amount of income, income was estimated using a cascade question to narrow down the family's income within a specified category (Statistics Canada, 1996).

Both the PMK and her/his spouse/partner were asked to report wage earnings when responding to the labour force questions. NLSCY analysts carried out a wage rate edit to compare these wage earnings to reported income both for individuals and households. If large discrepancies appeared, cases were flagged, and a manual review of the data was conducted. If it was determined that the information was incorrect, the value was set to "not-stated." An exact income value was imputed for any record with a "not-stated" value or for cases that had only a response to the cascade question. Values were imputed using "hot-deck imputation." This method involved locating a "donor" record that had a valid value for income and was similar to the record with the "not-stated" value with respect to the highest level of education of the PMK and spouse/partner, the earnings from employment for the PMK and spouse/partner, sources of household income, the economic region, and the Pineo occupation code[5] for the PMK and spouse/partner.

Statistics Canada imputed household income for about 25 percent of the responding households in the full NLSCY sample in Cycle 1 (Statistics Canada, 1996). Cases for which income was imputed were flagged in the data set. In the subsample used for this analysis, Statistics Canada imputed income for 23 percent of the cases in Cycle 1, 11 percent of the cases in Cycle 2, 10 percent of the cases in Cycle 3, and 15 percent of the cases in Cycle 4. With imputed values in place, there were no missing data for the income variable in the four cycles of data that were used in this study.

However, there were missing data for the income to LICO ratio. Statistics Canada computed this ratio for all households in the Cycle 1 sample, but in subsequent cycles of the survey, there were some cases for which the income to LICO ratio had not

[5] The classification system groups occupations described in Statistics Canada's 1980 Standard Occupational Classification into 16 categories, based on a scale developed by Pineo, Porter and McRoberts (1977) (Statistics Canada, 1996).

been computed. For those cases, I imputed values for the income to LICO ratio for these families in the following manner (See Appendix C). I selected the variables indicating the number of persons in the economic household and the size of the area of residence for each case with missing data for the income to LICO variable. From this information, I determined the LICO for the household and then calculated the value of the income to LICO ratio using the LICO and the household income variable. Finally, the income to LICO ratio variable is stored in the data file with three implied decimals, so I divided the values of the variable by 1000. Values for this variable ranged from .2 to 15.9 with an average range of 14 across all four cycles.[6]

INCOME (IN)STABILITY

This concept refers to the amount and direction of change of the ratio of household income to LICO from one cycle to the next.

T2 Income (In)stability (η_{18})
T3 Income (In)stability (η_{19})
T4 Income (In)stability (η_{20})

INCOME (IN)STABILITY INDICATORS

I constructed variables to measure income (in)stability between each assessment period. This measure of income (in)stability is a proportional change ratio calculated by dividing the difference in the income to LICO ratio from the previous assessment to the current assessment by the income to LICO ratio in the previous assessment (e.g., (T2 Income to LICO ratio – T1 Income to LICO ratio)/ T1 Income to LICO ratio). Because this proportional change is based on the income to LICO ratio, it accounts for increases and decreases in income (in)adequacy related to any changes in income, family size, and/or area of residence. It also reflects potential differences in the impact of relative change in specific levels of income (in)adequacy. For example, a .25 decrease in the income to LICO ratio is likely to have a larger impact in a household where the income to LICO ratio in the previous assessment was 1.25 (for an income (in)stability value of -.20) than it would in a household where the income to LICO ratio from the previous assessment was 2.25 (for an income (in)stability value of -.11) (Dearing et al., 2001; 2004). These variables measure change in a family's Income to LICO ratio between Time 1 and Time 2; between Time 2 and Time 3; and between Time 3 and Time 4. Because the indicators for income (in)stability are derived from the

[6] Statistics Canada's restrictions on disclosure do not allow a more detailed description of these data.

income (in)adequacy variables collinearity among these variables is expected. However, the income (in)adequacy variables have high reliability, which serves to reduce the potential problems in estimation (Grewal, Cote, & Baumgartner, 2004).

Source of Income

This concept refers to the extent to which the family depends on government transfers as a source of household income.

T1 Income Source (η_{21})
T2 Income Source (η_{22})
T3 Income Source (η_{23})
T4 Income Source (η_{24})

Source of Income Indicators

I created a source of income variable for this study to indicate the main source of household income, as well as sources of supplementary income in each cycle. The primary purpose of this variable was to provide a measure of the extent to which a family relied on government transfers to supplement their household income. This variable was intended to be an indicator of the security of the household source of income, based on the assumption that greater reliance on government transfers is associated with less secure sources of income. Higher values of this variable indicated greater reliance on government transfers.

I derived this variable using source of income variables from the NLSCY. However, the NLSCY changed the source of income variables in Cycles 3 and 4, so it was necessary to derive a new variable that provided equivalent coding across all four cycles. In Cycles 1 and 2, respondents were asked to report whether or not they received income from any of 13 sources[7], and then were asked to indicate their main source of income. In Cycles 3 and 4, rather than simply asking whether respondents had received income from specific sources, respondents were asked for the amount of income received from each of seven specific sources.[8] To derive a main source of income for Cycle 3 and Cycle 4, I calculated the percentage of income from each source of income.

---

[7] The following sources of income were included in the Cycle 1 and Cycle 2 questionnaires : wages/salaries; self-employment; dividends, interest, etc; unemployment insurance; worker's compensation; CPP or QPP; pensions, annuities; Old age security, GIS; Child Tax Benefit; Social assistance/welfare; Child support; Alimony; Other.

[8] The following sources of income were included in the Cycle 3 and Cycle 4 questionnaires : wages/salaries; self-employment; employment insurance; Child Tax Benefit; Social assistance; Child and spousal support; All other sources.

The source that contributed the greatest percentage of income was selected as the main source of income (see Appendix D for syntax used).

The number of categories for source of income was reduced to seven in Cycle 3. To produce equivalent measures in all four cycles, I recoded the source of income variables in Cycles 1 and 2. The categories for this new variable used the seven following income sources that were specified in Cycles 3 and 4: Wages and salaries; Self-employment; Employment Insurance (EI); Child Tax Benefit (CTB); Social Assistance (SA); Child and spousal support; and Other sources. Thus, responses for those who received alimony or child support in Cycle 1 or 2 were combined into a single category, child and spousal support. If respondents indicated they had received dividends, interest, Canadian Pension Plan (CPP) or Québec Pension Plan (QPP), pensions, annuities, Old Age Security or Guaranteed Income Supplement in Cycles 1 or 2, these responses were recoded to the “Other” category.

Finally, it was necessary to create dichotomous variables to indicate whether or not respondents had received income in Cycles 3 and 4 from the sources listed above. As noted previously, respondents had to indicate the amount of income from each source, thus, if the value of the income in the category was greater than 0, the category was coded 1 to indicate it as a source of income. Once these variables were created, it was possible to create the source of income variable used in the present study. This variable ranges from 0 to 3, with the value of 3 indicating the greatest reliance on government transfers, which is conceptualized as indicating the least amount of stability in source of income.

It should be noted that, in this operationalization, I included self-employment and wage employment in the same category. Although self-employment income may not be as stable as wage employment, if the self-employment was insecure, changes in the source of income variable values and changes in income values over time should capture the instability. The operationalization of the variable follows.

0 = Main source of income is employment or self-employment and no child support, no “other” or no government transfers except CTB.

1 = Main source of income is employment, self-employment, "other” or child support – may receive additional income from any of the above sources and/or CTB, but not EI or SA.

2 = Main source of income is employment, self-employment, other or child support – may receive additional income from any of these sources and EI, but not SA.

3 = Main source of income EI, SA, or CTB – OR received SA (whether or not main source). May have received income from employment, self-employment, other or child support.

The first category (0) represented the most stable source of income based on the assumption that income from employment or self-employment was a more secure source of income than income from government transfers or "other" sources. Households receiving the CTB were not excluded from this category, as long as employment was the main source of income, because many families with reasonably high and stable incomes may still receive the CTB, since the benefit amount is prorated according to the number of children and family income (Canada Revenue Agency, no date).

The second category (1) was similar to the first, except that child support or "other" income sources may be the main source or supplementary source of income. The assumption underlying this category was that these other sources of household income are not as secure as employment income alone. The exclusion of households that received EI and SA from this category was based on the assumption that, if the household did not receive these government transfers, the sources of income were more secure than those in households that did receive them (de Raaf, Motte, Vincent, 2003; Morisette & Ostrovsky, 2005). This was also based on the assumption that if a family in this sample was eligible for a government transfer they would receive it. However, the NLSCY data do not provide a way of determining whether this was the case.

The third category (2) included households that meet the same conditions as above in the second category, but EI was also a source of income in the past year, although not a main source of income. The fourth category (3) represents families who had the least secure sources of income in the past year. It includes families whose main source of income was CTB, EI or SA. It also includes any family that received social assistance in the past year, whether or not it was the main source of income. This category included a variety of income sources, and it was based on the assumption that if government transfers were the main source of household income, household income sources were relatively insecure. Furthermore, it was assumed that receiving social assistance, whether as a main source of income or as a complementary source of income, was an indication that the sources of income for the household are insecure. Social Assistance was distinguished from EI in that, in order to be eligible for EI, an individual has to have had some form of stable employment within the previous 52 weeks. From 1990 to 1997, this was between 10 and 20 weeks (depending on the unemployment rate) (Lin, 1998). Since 1997, eligibility is based on hours worked in the previous 52 weeks. Currently, an individual has to have worked between 420 and 700 hours, depending on regional unemployment, in the previous 52 weeks to be eligible to collect employment insurance (Service Canada, 2007).

Employment (In)stability

This concept refers to the stability of employment in the year prior to the assessment.

T1 Employment (In)stability (η_{25})
T2 Employment (In)stability (η_{26})
T3 Employment (In)stability (η_{27})
T4 Employment (In)stability (η_{28})

Employment (In)stability Indicators

I used the number of weeks out of work in the past year as the indicator for employment (in)stablility. PMKs were asked to provide information about the hours worked, work arrangements, periods of absence from work, and reason for the most recent absence for themselves and their spouses/partners. The NLSCY derived a variable indicating the number of weeks worked in the previous year from this information. Another question in the NLSCY was used to differentiate between individuals who were unemployed (out of work and looking for work) and those who were not in the labour force (out of work and not looking for work). For each cycle of data collection, I used these variables to derive a variable that represents the sum of the weeks in the past year that the PMK and her spouse/partner spent out of work and looking for work. Cases where the PMK, or the spouse/partner, worked the whole year, or did not work for some or all of the year but were not looking for work, were coded as "0". As with the income (in)adequacy variables, the values of these variables were divided by 10 so that the range was similar to the range of other variables used in the analysis. The values of this variable ranged from 0, for families that experienced no unemployment in the past year, to 10.4, for families where the PMK and spouse were unemployed for the entire year.

Fixed Coefficients, Scaling and Reliability

The variables described above are the indicators for the concepts in the structural model used for the analysis. In this model each concept was measured by a single indicator, as described above. The measurement of the latent concept was scaled by fixing lambda [λ] at 1.0 so that unit changes in the latent concept were linked to unit changes in the corresponding indicator variable (Hayduk, 1987) (Table 5.1).

There are many potential sources of measurement error in the data. These include data collection methods, coding errors, problems with reporting (response bias), and, with respect to using secondary data, the problem of not having measures that were constructed specifically for measuring the concepts in the model. To account for these assumed random errors in measurement, I fixed the error variance of the indicators (LISREL's theta epsilon values). Theta variance adjusts for measurement unreliability and is the portion of variance in an indicator that is thought to arise from sources other than the concept the indicator is supposed to measure. For example, what portion of the response to the scale used to measure Difficult Temperament at Time 1 are solely the result of difficult temperament, and what portion may be attributable to other causes (Hayduk, 1987)? For each indicator, I determined the proportion of variance that was error variance based on an assessment of the validity of the indicators. Table 5.1 provides the values for the percent of error variance and fixed variance for each of the indicators in the model.

Table 5.1: Fixed Variance of Indicators

	Time 1 Infancy		**Time 2 Toddlerhood**		**Time 3 Preschool**		**Time 4 School Age**	
	% of Error Variance	Fixed Variance	% of Error Variance	Fixed Variance	% of Error Variance	Fixed Variance	% of Error Variance	Fixed Variance
Difficult Temperament	20	10.6798	20	10.3209	na	na	na	na
Aggressive Behaviour	na	na	27	2.2081	22	0.9855	22	.8070
Hostile Parenting	68	1.1417	na	na	na	na	na	na
Punitive Parenting	na	na	44	2.1281	42	1.5910	46	1.7461
Maternal depression	28	5.1192	25	4.3210	21	4.0873	23	3.3677
Income (In)adequacy	5	.0824	5	.0795	5	.0721	5	.0984
Income (In)Stability	na	na	5	.0100	5	.0100	5	.0200
Source of Income	15	.1635	15	.1333	15	.1331	15	.0981
Weeks out of Work	10	.3817	10	.3816	10	.1697	10	.1699

For all concepts that were measured using a scale as the indicator (Difficult Temperament, Aggressive Behaviour, Negative Parenting, and Maternal Depression), I used the reliability estimates (Cronbach's alpha) that I calculated for the scales at each cycle of the survey to assess the validity of the indicator. To estimate the portion of variance that was error variance, I calculated the unreliability of the scale (i.e., proportion of the indicator's variance that is error = $1 - \alpha$) and then multiplied the variance of the item by this value to obtain the fixed error variance assigned to each indicator. For example, the Cronbach's alpha coefficient for the difficult temperament scale at Time 1 was .80, thus the unreliability for the scale equalled .20 (or 20 percent). The variance for the difficult temperament scale at Time 1 was 53.4, and .20 of this variance results in the fixed variance value of 10.68.

The proportion of error assigned to the concepts relating to economic (in)security variables was low. There were three reasons for this decision. First, the income questions and source of income questions were asked through a series of cascading questions and values were computed in this manner. This reduces the likelihood that respondents omit sources and amounts of income. Second, bivariate analysis revealed that these variables are significantly correlated over time. Third, it appears that response rates increase over time. Long-term participants in the survey showed more willingness to respond to questions regarding income and source of income. In Cycle 1, Statistics Canada imputed 25 percent of the income values. In Cycle 2, this was reduced to 11 percent and in Cycle 3, 10 percent of the income values were imputed; however, in Cycle 4, there was a slight increase, and 15 percent of the income values were imputed.

THE COVARIANCE MATRIX

The covariance matrix used in all analyses was obtained using pairwise deletion of the missing values (SPSS 11.0). The sample size ranged from 319 to 361. The mean effective sample was 355 cases, which was specified in the LISREL analysis syntax. The percentage of missing values for the variables used in the analysis ranged from 0 percent to 11.6 percent.

Table 5.2 provides a summary of the missing data for each of the indicator variables. Half (14) of the indicators had no missing data, and eight indicators had fewer than five[9] (1.4 %) cases with missing data. Five indicators had missing data for six to eight cases. The indicator for employment (in)stability at Time 3 had missing data for 14 cases. The indicator for difficult temperament at Time 1 had missing data for 42 cases (11.6%) because the questions were not administered for children younger than 3 months old.

---

[9] To ensure the confidentiality of respondents' data, if there are fewer than six cases in a cell, or if fewer than six cases are missing data, Statistics Canada will not release the data for disclosure.

Table 5.2: Missing Values for Indicator Variables

INDICATOR		% Missing
Difficult Temperament 1	(y_1)	11.6%
Difficult Temperament 2	(y_2)	0.0%
Aggressive Behaviour 1	(y_3)	1.9%
Aggressive Behaviour 2	(y_4)	<1.4%[10]
Aggressive Behaviour 3	(y_5)	<1.4%
Hostile Parenting 1	(y_6)	<1.4%
Punitive Parenting 2	(y_7)	0.0%
Punitive Parenting 3	(y_8)	<1.4%
Punitive Parenting 4	(y_9)	1.9%
Maternal Depression 1	(y_{10})	<1.4%
Maternal Depression 2	(y_{11})	<1.4%
Maternal Depression 3	(y_{12})	<1.4%
Maternal Depression 4	(y_{13})	1.9%
Income Source 1	(y_{14})	0.0%
Income Source 2	(y_{15})	0.0%
Income Source 3	(y_{16})	0.0%
Income Source 4	(y_{17})	0.0%
Employment (In)stability 1	(y_{18})	2.2%
Employment (In)stability 2	(y_{19})	<1.4%
Employment (In)stability 3	(y_{20})	3.9%
Employment (In)stability 4	(y_{21})	1.7%
Income (In)stability 2	(y_{22})	0.0%
Income (In)stability 3	(y_{23})	0.0%
Income (In)stability 4	(y_{24})	0.0%
Income (In)adequacy 1	(y_{25})	0.0%
Income (In)adequacy 2	(y_{26})	0.0%
Income (In)adequacy 3	(y_{27})	0.0%
Income (In)adequacy 4	(y_{28})	0.0%

UNIVARIATE ANALYSIS

Table 5.3 provides univariate description of the indicator variables included in the analyses, including sample size, range, median, mean, standard deviation, skewness, and kurtosis of the variables used in the analysis. Statistics Canada suppressed the sample size data for the variables with fewer than six missing cases. As noted above, when fewer than six cases are present in a cell or fewer than six cases were excluded from the sample, individual data are potentially identifiable via residual analysis.

---

[10] Less than 1.4 percent indicates the precise number of missing cases was less than six, and hence suppressed by Statistics Canada confidentiality procedures.

Table 5.3: Univariate Descriptives for the Study Sample

INDICATOR	N	Mean	(SD)	Range of Values for Sample*	Median	Skewness	Kurtosis
Difficult Temperament T1 (y_1)	319**	12.17	(7.31)	37.00	11.00	0.59	0.10
Difficult Temperament T2 (y_2)	361	15.11	(7.18)	38.00	15.00	0.11	-0.23
Aggressive Behaviour T2 (y_3)	354	5.14	(2.86)	14.00	5.00	0.43	0.11
Aggressive Behaviour T3 (y_4)	***	2.07	(2.12)	10.00	1.00	0.97	0.29
Aggressive Behaviour T4(y_5)	***	1.52	(1.92)	11.00	1.00	1.60	2.76
Hostile Parenting T1 (y_6)	***	0.73	(1.30)	7.00	0.00	1.98	3.79
Punitive Parenting T2 (y_7)	361	9.28	(2.20)	13.00	9.00	0.07	0.11
Punitive Parenting T3 (y_8)	***	8.99	(1.95)	15.00	9.00	0.59	1.82
Punitive Parenting T4 (y_9)	354	8.66	(1.95)	11.00	8.50	0.16	-0.11
Maternal Depression T1 (y_{10})	***	4.42	(4.28)	26.00	3.00	1.67	3.67
Maternal Depression T2 (y_{11})	***	3.99	(4.16)	25.00	3.00	1.55	3.32
Maternal Depression T3 (y_{12})	***	3.72	(4.41)	32.00	3.00	2.59	9.68
Maternal Depression T4 (y_{13})	354	2.89	(3.83)	29.00	2.00	2.58	10.78
Income (In)adequacy T1 (y_{14})	361	2.14	(1.28)	15.60	1.89	4.10	37.09
Income (In)adequacy T2 (y_{15})	361	2.05	(1.26)	13.65	1.81	3.51	25.30
Income (In)adequacy T3 (y_{16})	361	2.20	(1.20)	11.86	2.01	2.80	16.54
Income (In)adequacy T4 (y_{17})	361	2.42	(1.40)	13.98	2.15	3.23	20.71
Income (In)stability T2 (y_{18})	361	0.03	(0.43)	3.97	-0.04	2.83	14.89
Income (In)stability T3 (y_{19})	361	0.17	(0.45)	3.62	0.11	1.78	6.68
Income (In)stability T4 (y_{20})	361	0.18	(0.70)	9.12	0.08	8.10	86.53
Income Source T1 (y_{21})	361	1.28	(1.04)	3.00	2.00	-0.10	-1.44
Income Source T2 (y_{22})	361	0.73	(0.94)	3.00	0.00	0.91	-0.50
Income Source T3 (y_{23})	361	0.61	(0.94)	3.00	0.00	1.18	-0.06
Income Source T4 (y_{24})	361	0.41	(0.81)	3.00	0.00	1.71	1.51
Employment (In)stability T1 (y_{25})	353	1.36	(1.95)	8.30	0.00	1.31	0.85
Employment (In)stability T2 (y_{26})	***	0.94	(1.95)	10.40	0.00	2.44	5.86
Employment (In)stability T3 (y_{27})	347	0.51	(1.30)	8.70	0.00	3.16	11.00
Employment (In)stability T4 (y_{28})	355	0.46	(1.30)	10.40	0.00	3.75	16.42

*Only the range is reported because minimum and maximum values were not released by Statistics Canada
** This scale was not administered to children under 3 months old
***Data not released by Statistics Canada

The means for difficult temperament at Time 1 and Time 2 fall within the middle of the range of the values for the variables. The means for aggressive behaviour at Time 2, Time 3, and Time 4 fall toward the lower end of the scales, and decrease over time, indicating a decrease in boys' aggressive behaviour over time. Among the parenting variables, the majority of mothers scored very low on hostile parenting behaviours at Time 1, for an overall mean of 0.73 on a scale that ranges from 0 to 8. The means for punitive parenting were relatively stable, although there was a slight decrease in the mean over time, indicating an overall reduction in the level of punitive parenting. The mean score for maternal depression decreased with each successive time period, from a high of 4.42 at Time 1, to a low of 2.89 at Time 4. The median score was 3.0 at Times 1, 2, and 3, decreasing to 2.0 at Time 4. However, the ranges of depression scores were 26, 25, 32, and 29 at times 1, 2, 3, and 4, respectively (Table 5.3).

Although there was a fairly large range in values for the income (in)adequacy variable, and the means at all time periods were above the LICOs, most families' incomes clustered toward the lower end of the distribution, and there was little change in the means over time. This same pattern was evident for the income (in)stability variables as well, suggesting that the families in the sample collectively experienced very little change in income in the six years of the study. For the source of income variables at Time 1, the mean (1.28) and median (2.00) are higher than at any other time. This reflects higher reliance on government transfers by new parents, probably because many of them were able to collect employment insurance during their maternity leaves. At Time 2, the median for income source is "0", and the mean is 0.73, indicating that most families in this sample did not receive government transfers as a source of income after their child was over one year old. The mean continues to decline over time, indicating that even fewer families use government transfers as a source of income as time goes on.

The descriptives also indicate that the majority of families did not experience much instability in employment over time. The median score in all cycles for family employment stability, measured by number of weeks out of work in the past year, was zero. The sum of the number of weeks that the mother and father were out of work in the past year ranged from 0 to 83 weeks[11] at Time 1, from 0 to 104 weeks at Time 2, from 0 to 87 weeks at Time 3, and from 0 to 104 weeks at Time 4. However, the mean number of weeks out of work at Time 1 was 13.6 weeks, and this value continued to decrease in subsequent periods (9.4 weeks at Time 2, 5.1 weeks at Time 3, and 4.6 weeks at Time 4).

The following variables showed positive skewness and kurtosis: aggressive behaviour at Time 4; hostile parenting at Time 1; maternal depression, income (in)adequacy, and employment (in)stability at Time 1, Time 2, Time 3, and Time 4; and income source at Time 4. Given these deviations from univariate normality, it can be assumed that the assumption of multivariate normality in maximum likelihood

[11] Note: The values of the means and median for these variables in Table 5.3, above, are the number of weeks out of work divided by ten.

estimation would not be met. However, Lei and Lomax (2005) tested the robustness of maximum likelihood estimation in SEM using different degrees of nonnormality with various sample sizes. They found no significant differences among the standard errors of parameter estimates at different degrees of nonnormality. In addition, although parameter estimates were sensitive to nonnormality, the worst effect of bias was considerably less than 10 percent, thus, they argue that "the usual interpretation of SEM parameter estimates can be accepted, even under the severe nonnormality conditions" (p.16).

Testing the Conceptual Model

I carried out the analysis of the conceptual model in four segments following the Process-Person-Context-Time model working from the bottom row of Figure 5.1 upward. The model included 31 latent endogenous concepts. Endogenous concepts are caused by other variables included in the model. Although this is an all eta model, five concepts did not receive causal effects from other variables in the model: difficult temperament, income (in)adequacy, employment (in)stability, and source of income at Time 1 and the income (in)stability concept at Time 2. The latent variables were modeled as LISREL η (eta) variables to insure that maximum diagnostic information was available for the models (Hayduk, 1987).

In the first segment of the analysis, I focused on the person and examined the continuity of boys' aggressive behaviour over time, including the contribution of difficult temperament and early aggressive behaviour to the development of boys' aggressive behaviour at age 6. In the second segment, I added mothers' negative parenting behaviour to the model as a proximal process contributing to the development of boys' aggressive behaviour. In this segment, I included the influence of boys' difficult temperament on mothers' negative parenting and the influence of mothers' negative parenting on boys' aggressive behaviour, along with the continuity of negative parenting behaviour over time. I addressed context in the third and fourth segments of the analysis. In the third segment, I added maternal depression to the model to examine its effect on negative parenting behaviour and boys' aggressive behaviour. Finally, in the fourth segment of the analysis the economic context variables were added to examine the hypothesized relationships of the complete conceptual model described in this study (Figure 5.1).

At each segment of the analysis, I built the model in steps. I began with a simple model in which related latent concepts (e.g., aggressive behaviour in toddlerhood (Time 2), preschool (Time 3), and school age (Time 4) were linked sequentially, but did not link the concepts with other potential causal elements. I expected that the model would fail in the first steps, and I made modifications to the model to link the latent concepts if the standardized residuals and modification indices were consistent with the theoretical assumptions of the conceptual model. For example, in the second segment of the analysis, when I added negative parenting to the model, I did not link the parenting concepts to boys' aggressive behaviour in the first step. However, examination of the standardized residuals and modification indices suggested that these links should be included. This was consistent with the theoretical assumptions of the conceptual model in Figure 5.1, so I added these links in the subsequent step.

As each segment of the model was built, the remainder of the full conceptual model constituted "error". The assumptions of the full model implied that, until all the segments of the model were included, the errors among the concepts should covary (in the LISREL Psi matrix), because the full conceptual model suggests the excluded portions of the model include some common, yet currently excluded, causes. I chose to defer freeing the covariances between the errors until I had added all of the hypothesized causal elements to the model. I reasoned that, because I was building the conceptual model segment by segment, the addition of the concepts in the subsequent segment would account for at least part of the error covariances. Thus, it would be preferable to have the first model fail and then improve as concepts were added.

CHAPTER 6: RESULTS

In this chapter, I report the results of the analyses of the four model segments. In each of the four sections below, I describe the steps taken to build the model. I review the structure of the model and report the fit statistics and the diagnostic information from the standardized residuals and modification indices. I present the maximum likelihood estimates for the final step of each model segment along with a diagram of each segment model. LISREL specifies a “t-value” for the structural coefficients, and values greater than $\pm$ 2.00 (*) and greater than $\pm$ 3.00 (**) are indicated as statistically significant. (Full outputs for the each of the final model segments are presented in Appendix E.)

MODEL 1 – DIFFICULT TEMPERAMENT AND AGGRESSIVE BEHAVIOUR

MODEL DESCRIPTION

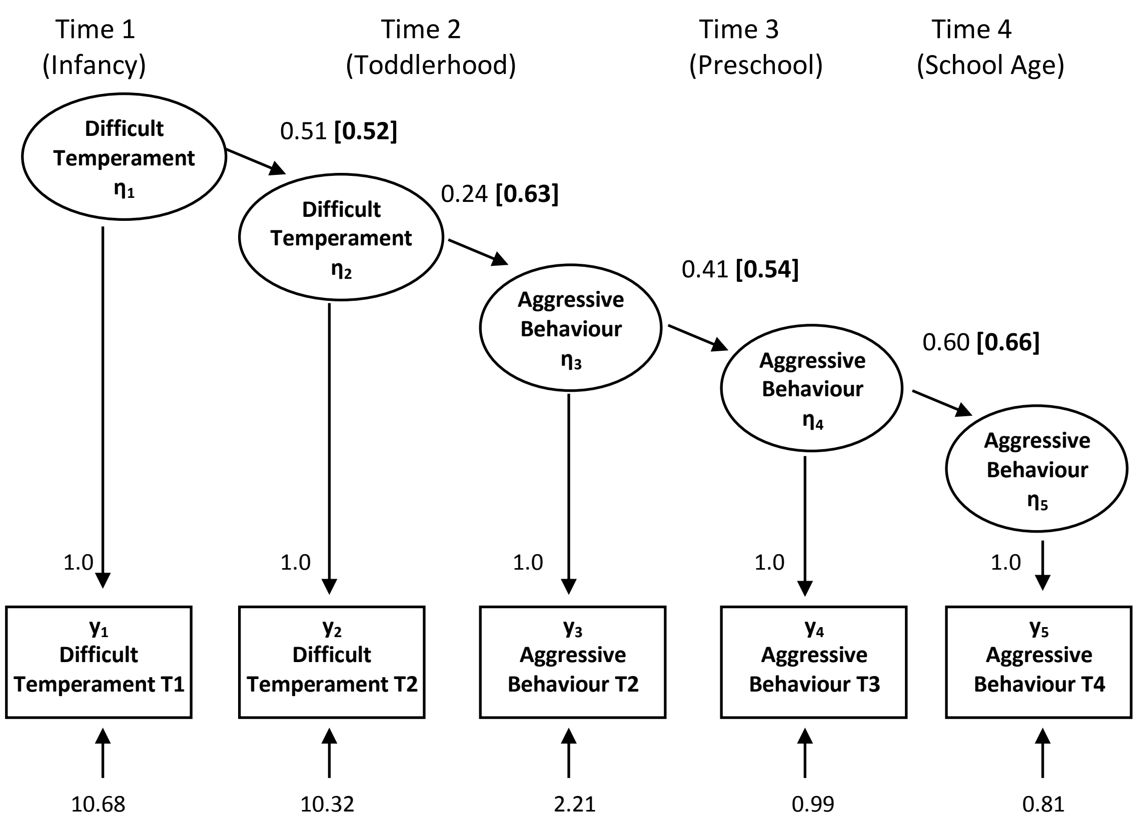
The model used for this portion of the analysis, including the measurement structure, is presented in Figure 6.1. This model was a simplification of the full model (Figure 5.1) and included only those concepts related to boys’ difficult temperament and aggressive behaviour, in effect, treating the other variables in the full model as errors in the current model. I used the model in Figure 6.1 to examine the causal relationship between difficult temperament in infancy (Time 1) and toddlerhood (Time 2) and boys’ aggressive behaviour from toddlerhood to school age. The model was fully recursive and included five latent concepts: Time 1 Difficult Temperament (η_1); Time 2 Difficult Temperament (η_2); Time 2 Aggressive Behaviour (η_3); Time 3 Aggressive Behaviour (η_4); and Time 4 Aggressive Behaviour (η_5).

The model represents the hypothesized relationships between difficult temperament and aggressive behaviour in this study. According to the conceptual model shown in Figure 6.1, difficult temperament in infancy (Time 1) persists, somewhat, as difficult temperament in toddlerhood (Time 2). Difficult temperament in toddlerhood (Time 2) concurrently contributes to aggressive behaviour in toddlerhood (Time 2). The direction of this causal path was based on the assumption that temperament is a heritable trait, whereas behaviour is a developed state. Thus, difficult temperament is assumed to contribute to the development of aggressive behaviour, but aggressive behaviour does not affect levels of difficult temperament. Following this sequence of paths, aggressive behaviour in toddlerhood (Time 2) persists to aggressive behaviour in preschool (Time 3), which persists to the aggressive behaviour outcome at school age (Time 4).

Model 1 Results

The observed data fit the conceptual model marginally well: Minimum Fit Function χ^2 (6 *df*) = 11.76, p = 0.068; Normal Theory Weighted Least Squares χ^2 (6 *df*) = 11.63, p = 0.071; AGFI = 0.97. The indicators in the model did not have a multivariate normal distribution, and hence violated the normality assumption of Maximum Likelihood Estimation; however, comparison of the Minimum Fit Function χ^2 (11.76, p = 0.068; *df* = 6) and Normal Theory Weighted Least Squares χ^2 (11.63, p = 0.071, *df* = 6) suggested that the bias arising from assuming normal distributions may have been small.

Figure 6.1 – Model 1. Difficult Temperament and Aggressive Behaviour (standardized effects in brackets)



(All parameter estimates are significant, with a t-value greater than 3.00. Measurement error variances were fixed at the indicated values.)

The diagonal elements of the matrix of the standardized residuals suggested that the variances of the endogenous variables in the model were adequately modeled. The only standardized residual greater than $\pm$ 1.96 was for the covariance of difficult temperament at Time 1 and aggressive behaviour at Time 2 (-2.46), indicating that the covariance was overestimated in the model. The modification indices (MI) for the Beta matrix suggested that a path from difficult temperament at Time 1 to aggressive behaviour at Time 3 should be added (MI = 5.48). However, the standardized expected change suggested that freeing this coefficient would not result in any notable change in the model.

The modification indices for the Psi matrix (the covariance matrix among the error variables connected to the latent concepts) suggested additional changes may have been warranted. The MI for allowing the errors of difficult temperament at Time 1 and aggressive behaviour at Time 3 to covary was 5.48, and the MI for allowing the errors of difficult temperament at Time 2 and aggressive behaviour at Time 3 to covary was 4.85. One other modification suggested by the MIs was to allow the latent error variables of aggressive behaviour at Time 2 and aggressive behaviour at Time 4 to covary (MI = 2.49). The expected change with these modifications, however, was not consistent with theory. Freeing the error covariances between difficult temperament at Time 1 and aggressive behaviour at Time 2 would have resulted in a negative estimate, as would freeing the error covariances between aggressive behaviour at Time 2 and aggressive behaviour at Time 4. However, freeing the errors between difficult temperament at Time 2 and aggressive behaviour at Time 3 would have resulted in a positive estimate. Overall, these diagnostics did not suggest modifying the model in any systematic way beyond expanding the model by moving forward to a more complete version of the model depicted in Figure 5.1, because the expansion incorporates features that would have appeared as error covariances in the Figure 6.1 model.

Maximum Likelihood Estimates for Model 1

The maximum likelihood parameter estimates (both unstandardized and standardized) for the direct effects in the model are presented in Table 6.1 along with standard errors and t-values for the effects among the latent variables. The estimates are also shown in the model in Figure 6.1. All of the direct effects in the model were statistically significant and in the expected direction.

The model explained a moderate proportion of the variance for each of the latent concepts: Difficult Temperament at Time 2 (toddlerhood), 27 percent; Aggressive Behaviour at Time 2 (toddlerhood), 39 percent; Aggressive Behaviour at Time 3 (preschool), 29 percent; Aggressive Behaviour at Time 4 (school age), 43 percent. These values indicate that a majority of the variance in these variables is explained by variables other than the variables appearing in the current model. That is, persistence of difficult temperament and physical aggression is present, but these effects only account for a portion of the variance in these variables.

From Table 6.1 we see that more difficult temperament at Time 1 produced more difficult temperament at Time 2 ($\beta_{2,1}$ = 0.51, t = 8.57). Difficult temperament at Time 2 contributed to children's use of aggressive behaviour at Time 2 ($\beta_{3,2}$ = 0.24, t = 10.22). For every unit increase in difficult temperament, boys' use of aggressive behaviour was statistically expected to increase .24 units. As a consequence of these two direct effects, difficult temperament at Time 1 had a significant indirect effect on aggressive behaviour at Time 2, through its effect on difficult temperament at Time 2 (0.12, t = 6.83) (see Table 6.2).

Table 6.1: Model 1 Direct Effects – Difficult Temperament and Aggressive Behaviour
Parameters, Standard Errors, and t-Values

To	*From*	Unstandardized Effect	Standardized Effect	SE	*t*	SMC
ETA 2 – Difficult Temperament Time 2						**0.27**
	ETA1– Difficult Temperament T1	0.51**	0.52	0.06	8.57	
ETA 3 – Aggressive Behaviour Time 2						**0.39**
	ETA2 – Difficult Temperament T2	0.24**	0.63	0.02	10.2	
ETA 4 – Aggressive Behaviour Time 3						**0.29**
	ETA3 – Aggressive Behaviour T2	0.41**	0.54	0.05	8.46	
ETA 5 – Aggressive Behaviour Time 4						**0.43**
	ETA4– Aggressive Behaviour T3	0.60**	0.66	0.05	11.0	

LISREL specifies a "t-value" for the structural coefficients, and values greater than ± 2.00 (*) and greater than ± 3.00 (**) are indicated as statistically significant.

Table 6.2: Model 1 Indirect Effects – Difficult Temperament and Aggressive Behaviour -
Parameters, Standard Errors, and t-Values

To	From	Unstandardized Effect	Standardized Effect	SE	t
ETA 3 – Aggressive Behaviour Time 2					
	ETA1 - Difficult Temperament T1	0.12**	0.33	0.02	6.83
ETA 4 – Aggressive Behaviour Time 3					
	ETA1 - Difficult Temperament T1	0.05**	0.18	0.01	5.54
	ETA2 - Difficult Temperament T2	0.10**	0.34	0.01	6.95
ETA 5 – Aggressive Behaviour Time 4					
	ETA1 - Difficult Temperament T1	0.03**	0.12	0.01	5.09
	ETA2 - Difficult Temperament T2	0.06**	0.22	0.01	6.11
	ETA3 - Aggressive Behaviour T2	0.25**	0.36	0.03	7.06

LISREL specifies a "t-value" for the structural coefficients, and values greater than ± 2.00 (*) and greater than ± 3.00 (**) are indicated as statistically significant.

Previous use of aggressive behaviour resulted in increased used of aggressive behaviour in subsequent periods. For every unit increase in boys' use of aggressive behaviour at Time 2, there was a .41 unit increase expected in the use of aggressive behaviour at Time 3. And, for each unit increase in boys' use of aggressive behaviour at Time 3, there was a .60 unit increase in the use of aggressive behaviour at Time 4.

Indirect effects, which were calculated as products from the relevant direct effects, are shown in Table 6.2. The indirect effect of difficult temperament at Time 1 on aggressive behaviour at Time 3 (0.05, $t = 5.54$), and on aggressive behaviour at Time 4 (0.03, $t = 5.09$), indicates persistent, although decreasing, effects of early difficult temperament on aggressive behaviour over time. The persistence of the effect of difficult temperament on aggressive behaviour over time is also evident in the indirect effects of difficult temperament at Time 2 on aggressive behaviour at Time 3 (0.10, $t = 6.95$) and Time 4 (0.06, $t = 6.11$). Aggressive behaviour at Time 2 has an even larger indirect effect on aggressive behaviour at Time 4 (0.25, $t = 7.06$) than does difficult temperament at Time 2.

Model 1 Summary

This base model showed that boys' difficult temperament in infancy (Time 1) persists into toddlerhood (Time 2), and difficult temperament in toddlerhood contributes to aggressive behaviour in toddlerhood. Furthermore, aggressive behaviour in boys persists from toddlerhood to school age (Time 4). The fit of this base model was marginal, but inconsistencies in the modification indices that were noted above, suggest that, in addition to the error effects, there are other factors, not included in this first model, that contribute to the development of problem behaviours. These findings supported the addition of other explanatory variables, rather than continuing with further modifications to the current model. In the next step, I added negative parenting variables to the model.

MODEL 2 – Difficult Temperament, Aggressive Behaviour, and Negative Parenting

The model used for this portion of the analysis, including the measurement structure is presented in Figure 6.2. In this model, I added the concepts of Negative Parenting to Model 1. The model included 9 latent concepts: the same five latent concepts that appeared in Figure 6.1 plus Time 1 Negative Parenting (η_6), Time 2 Negative Parenting (η_7), Time 3 Negative Parenting (η_8), and Time 4 Negative Parenting (η_9).

I used this model to examine the hypothesized contributions of negative parenting behaviours to the development of aggressive behaviour in addition to the contributions of the child's personal characteristics. I included concurrent paths from mothers' negative parenting to boys' aggressive behaviour. I also included concurrent paths from boys' difficult temperament to mothers' negative parenting at Time 1 and Time 2, and longitudinal paths from boys' difficult temperament at Time 2 to mothers' negative parenting at Time 3 and Time 4 to test the hypothesized relationship between boys' difficult temperament and mothers' negative parenting.

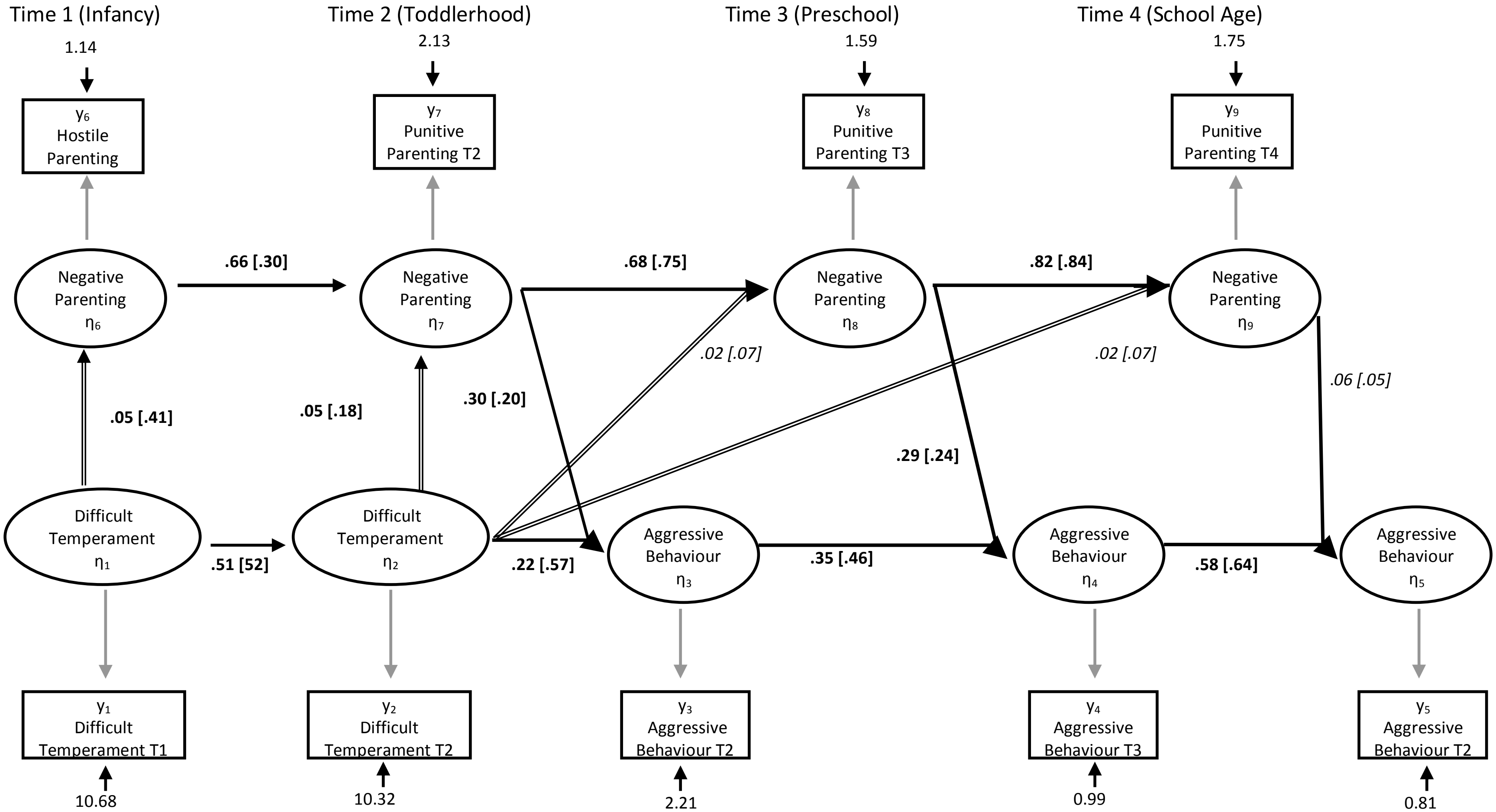
I built the model in steps, adding causal paths based on my conceptual hypotheses. In the first step, I included paths that linked negative parenting behaviours over time, but I did not add links between difficult temperament and negative parenting or aggressive behaviour and negative parenting. In the second step, I linked negative parenting behaviour to concurrent aggressive behaviour. In the third step, I linked difficult temperament to concurrent negative parenting behaviours at Time 1 and Time 2, and I linked difficult temperament at Time 2 longitudinally to negative parenting at Time 3 and Time 4.

Model 2, Step 1

In this model, the latent concepts of negative parenting at Time 1, Time 2, Time 3, and Time 4 were added to the Model 1, as described in the previous section. The model claims that negative parenting at Time 1 directly contributes to negative parenting at Time 2, negative parenting at Time 2 persists to negative parenting at Time 3, and negative parenting at Time 3 directly persists to negative parenting at Time 4. I based the model on the assumption that earlier parenting behaviours would contribute to later parenting behaviours; however, only parenting in the immediately preceding period would have direct effects on subsequent parenting behaviours, hence all effects from non-adjacent periods on subsequent parenting behaviours were indirect. For example, the effect of negative parenting at Time 1 on negative parenting at Time 3 was mediated through its effect on negative parenting at Time 2, which had a direct effect on negative parenting at Time 3. In this initial step, all of the assumptions regarding the relationships between difficult temperament and boys' aggressive behaviour that I included in Model 1 remained, but there were no links from negative parenting to aggressive behaviour.

The omission of these links claims that there is no link between mothers' negative parenting and boys' aggressive behaviour, and is counter to my conceptual hypotheses. Thus, a failing model, with diagnostic evidence recommending linking negative parenting and boys' aggressive behaviour, would demonstrate that it is unreasonable to claim there are no effects of mothers' negative parenting on boys' aggressive behaviour.

Figure 6.2 - MODEL 2 (Step 3) Difficult Temperament, Aggressive Behaviour, and Negative Parenting (standardized effects in brackets)



Minimum Fit Function χ^2 (24 *df*) = 37.19, p = 0.042; Normal Theory Weighted Least Squares χ^2 = 35.54, p = 0.061; AGFI = 0.96. Significant effects are in bold. Double lines indicate paths with equality constraints. Measurement error variances were fixed at the indicated values.

Model 2, Step 1 Results

As expected, this model resulted in substantial inconsistency between the data and the model claiming that there were no connections between negative parenting and boys' aggressive behaviour: Minimum Fit Function χ^2 (29 *df*) = 99.58, p = 0.00; Normal Theory Weighted Least Squares χ^2 (29 *df*) = 94.97, p = 0.00; AGFI = 0.91. In this first step, all of the maximum likelihood parameter estimates were significant, with all t-values greater than 3. Examination of the standardized residuals revealed many discrepancies between the observed covariances and the model-implied covariances. Almost 40 percent (17 of 45) of the standardized residuals exceeded $\pm$ 1.96, although all the residuals on the diagonal were low, indicating that the model adequately coordinated with the variance of the endogenous variables. Values for the standardized residuals ranged from -2.46 to 5.18. The pattern of the residuals indicated that, to improve model fit, paths should be added between difficult temperament and negative parenting and between negative parenting and aggressive behaviour, which is consistent with the conceptual hypotheses.

Modification Indices

The modification indices supported the conceptual model as they suggested freeing the effects from concurrent negative parenting to aggressive behaviour. The modification indices for these pathways were 14.24 for Time 2 ($\beta_{3,7}$), 17.66 for Time 3 ($\beta_{4,8}$), but only 1.47 for Time 4 ($\beta_{5,9}$). In addition to the relationship between parenting and behaviour, the modification indices also supported freeing the coefficients for the paths from boys' difficult temperament to negative parenting. The modification indices for these pathways were 22.06 for Time 1 difficult temperament to Time 1 negative parenting ($\beta_{6,1}$), 17.66 for Time 2 difficult temperament to Time 2 negative parenting ($\beta_{7,2}$), 10.06 for Time 2 difficult temperament to Time 3 negative parenting ($\beta_{8,2}$), 2.70 for Time 2 difficult temperament to Time 4 negative parenting ($\beta_{9,2}$).

Model 2, Step 2

At this step, the coefficients from concurrent negative parenting to aggressive behaviour were freed based on the initial model formulation in Figure 5.1 and the findings in step 1 above. The addition of these paths provides evidence relevant to the hypothesis stated above: negative parenting practices contribute to the development of aggressive behaviour in boys. Although the modification index for the path at Time 4 was fairly low, and would not suggest the need for freeing the path, I thought it was necessary to add the path for consistency with the theoretical model.

Model 2, Step 2 Results

This model resulted in a slightly improved chi-square but the model was still statistically inconsistent with the data: Minimum Fit Function χ^2 (26 *df*) = 70.90, p = 0.00; Normal Theory Weighted Least Squares χ^2 (26 *df*) = 68.65, p = 0.00; AGFI = 0.93. However, the value for chi-square was lower than the value for Model 1. The model converged after six iterations with no indication of problems in the minimization/maximization procedure. I expected the continued significant ill fit as it signalled the continued need to include anticipated effects from boys' difficult temperament to negative parenting, which was also suggested by the modification indices in the previous model.

All of the parameter estimates were significant with t-values greater than 3.00, except for the estimate for the effect of negative parenting on aggressive behaviour at Time 4 (0.05, t = 0.59). Examination of the standardized residuals revealed that discrepancies between the observed covariances and the model-implied covariances remained in this revised model. In this model, there were about the same number of standardized residuals that exceeded $\pm$ 1.96 – 20 of 45 (44%) – as were in the first step for Model 2. In addition, the residuals on the diagonal for the variances of the concepts of aggressive behaviour were quite high, indicating that this revised model was not yet consistently accounting for the variance of these endogenous variables. Values for the standardized residuals ranged from -2.44 to 4.25.

Modification Indices

The pattern of the residuals and the modification indices supported the conceptual model by suggesting that the coefficients between concurrent difficult temperament and negative parenting should be freed. The modification indices for these pathways were 21.10 for Time 1 difficult temperament and negative parenting ($\beta_{6,1}$ and $\beta_{1,6}$), and 14.05 for Time 2 difficult temperament to negative parenting ($\beta_{7,2}$), and 15.00 for the reverse ($\beta_{2,7}$). This same pattern was evident in the modification indices in Step 1 above. The parallel values of the reciprocal paths raised the question of whether I should free the reciprocal paths or select one direction over the other. I examined the standardized expected changes for Beta, which indicated that freeing the path from negative parenting to difficult temperament would do more to improve model fit than would freeing the path from difficult temperament to negative parenting. However, I had hypothesized the latter path in the conceptual model.

The modification indices also continued to suggest the need to free the coefficients for the longitudinal paths from boys' difficult temperament at Time 2 to mothers' negative parenting at Time 3 ($\beta_{8,2}$ MI = 8.98) but less so at Time 4 ($\beta_{9,2}$ MI

=2.53). In addition, the modification indices suggested that the coefficients for the longitudinal relationships between difficult temperament at Time 1 and negative parenting at Time 2 ($\beta_{7,1}$ MI = 2.30), Time 3 ($\beta_{8,1}$, MI = 7.11), and Time 4 ($\beta_{9,1}$, MI = 4.97) should be freed.

The standardized residuals also indicated that the covariances for negative parenting and aggressive behaviour were not adequately explained. My examination of the modification indices revealed a pattern that suggested the possibility of freeing the effects from concurrent aggressive behaviour to negative parenting. The modification indices for these paths were as follows: Time 2 aggressive behaviour to negative parenting ($\beta_{7,3}$) = 12.76; Time 3 aggressive behaviour to negative parenting ($\beta_{8,4}$) = 3.47; Time 4 aggressive behaviour to negative parenting ($\beta_{9,5}$) = 4.10. No other consistent patterns emerged in the modification indices.

Model 2, Step 3

In this step of modifications for Model 2, I freed the coefficients for the concurrent paths from difficult temperament to negative parenting at Time 1 and Time 2 ($\beta_{6,1}$ and $\beta_{7,2}$). I also freed the coefficients for the longitudinal paths from difficult temperament at Time 2 to negative parenting at Time 3 ($\beta_{8,2}$) and to negative parenting at Time 4 ($\beta_{9,2}$). My decision to free the coefficients from difficult temperament to parenting, both concurrently and longitudinally, rather than freeing the coefficients from concurrent aggressive behaviour to parenting was based on the following considerations. First, I assumed, based on previous research findings, that temperament, as a trait, is more likely to exhibit stability over time than is behaviour, which may be more easily modified by environmental factors (Rothbart & Bates, 2006). Second, the consistent pattern of the residuals and modification indices between Step 1 and Step 2 warranted addressing these relationships.

In addition to freeing the coefficients, I placed equality constraints on the two estimates of the concurrent effects of temperament on parenting at Time 1 ($\beta_{6,1}$) and Time 2 ($\beta_{7,2}$) as well as equality constraints on the two estimates of the longitudinal effect of difficult temperament at Time 2 on negative parenting at Time 3 ($\beta_{8,2}$) and Time 4 ($\beta_{9,2}$). According to Rothbart and Bates (2006), early measures of temperament are moderately stable over time, thus the equality constraints for the paths from temperament to negative parenting was imposed based on the assumption that the effect of child temperament on parenting would also be fairly consistent over time. Placing equality constraints on estimates results in a single parameter estimate that is used in all the paths specified with the equality constraint.

Another rationale for imposing an equality constraint on the concurrent effects of temperament on parenting at Time 1 ($\beta_{6,1}$) and Time 2 ($\beta_{7,2}$) was to compensate for the missing data for the temperament measure at Time 1. Given that there were no data on difficult temperament for those children who were less than 3 months old at Time 1, and there were no missing data at Time 2 for this measure, I used the equality constraint to balance out the difference in effects that might arise from the Time 1 missing data. Since there were no concurrent measures of difficult temperament for Time 3 and Time 4, it seemed reasonable to employ the concept of difficult temperament at Time 2 as a proxy for the influence of boys' difficult temperament on later negative parenting behaviour. Moreover, because the effects of temperament are likely to be somewhat weakened over longer time spans, it seemed appropriate to impose equality constraints for the longitudinal effects separately from the concurrent effects of difficult temperament. This single estimate placed as two effects within the model was the first data-prompted revision to the Figure 5.1 model. The constraints imposed by these modifications to the model account for child effects on parenting through temperament and allowed for testing the hypothesis stated in Chapter 3: Boys' difficult temperament contributes to negative parenting behaviours.

Model 2, Step 3 Results

The chi-square of the modified model was considerably lower than the previous model and indicated a marginal fit: Minimum Fit Function χ^2 (24 df) = 37.19, p = 0.042; Normal Theory Weighted Least Squares χ^2 (24 df) = 35.54, p = 0.061; AGFI = 0.96. The model converged after seven iterations with no indication of problems in the minimization/maximization procedure.

Only three (7%) of the standardized residuals exceeded $\pm$ 1.96 indicating there were now fewer differences between the observed covariances and the model-implied covariances in this revised model. The standardized residuals on the diagonal were low, except for a marginally high value for negative parenting at Time 1 (-1.76), demonstrating that the revised model was adequately modeling the variance of these concepts. Values for the standardized residuals ranged from -3.06 to 1.60. Two of the largest residuals were for the relationship between difficult temperament at Time 1 and aggressive behaviour at Time 3 (-3.02) and for the relationship between difficult temperament at Time 1 and negative parenting at Time 2 (-2.47). The third highest residual was for the relationship between aggressive behaviour at Time 2 and aggressive behaviour at Time 4 (-2.86). These negative values indicated that the model was overestimating these effects. Examination of the modification indices for the Beta matrix did not reveal any consistent pattern of relationships among the variables to suggest that further modifications would improve the model fit.

Maximum Likelihood Estimates for Model 2

The maximum likelihood estimates of the direct effects for the Figure 6.2 model are shown in Table 6.3. Almost all of the maximum likelihood parameter estimates were significant, with t-values greater than 3.00. The exceptions were that the estimate for the effect of negative parenting on aggressive behaviour at Time 4 remained non-significant (0.06, t = 0.69) and the estimates for the equalized longitudinal effects of difficult temperament at Time 2 on negative parenting at Time 3 and Time 4 were also not significant (0.02, t = 1.70). Thus, the data-prompted model revision did not locate any significant direct effects of difficult temperament in toddlerhood on later negative parenting.

The squared multiple correlations for the structural equations show that the model explained only small amounts of the variance for the latent concepts related to parenting at Time 1 and Time 2 (negative parenting at Time 1, 17 %; negative parenting at Time 2, 15 %). However, it explained a substantial amount of the variance for the concepts related to parenting at Time 3 and Time 4 (Negative Parenting at Time 3, 59 %; negative parenting at Time 4, 74 %), which was largely due to the persistence of parenting behaviour over time. There was a small increase in the amount of variance explained over the previous model for the concepts of aggressive behaviour at Time 2 and Time 3, but this model failed to explain additional variance for other concepts in the model (see Table 6.3).

Table 6.3 shows the LISREL maximum likelihood parameter estimates (both unstandardized and standardized) for direct effects, with standard errors and t-values, and Table 6.4 shows the indirect effects. The effects for the concepts included in Model 1 are similar in Model 2 with only small changes in the estimates, although the significance of the effects increased slightly. In Model 2, difficult temperament had significant direct and indirect effects on negative parenting both concurrently and over time. The direct effect of difficult temperament at Time 1 on negative parenting at Time 1 was significant ($\beta_{6,1}$ = 0.05, t = 4.98). The direct effect of difficult temperament at Time 2 on negative parenting at Time 2 was significant ($\beta_{7,2}$ = 0.05, t = 4.98) and equal to the corresponding effect at Time 1 as required by the equality constraint. However, the direct effect of difficult temperament at Time 2 on negative parenting at Time 3 and Time 4 was not significant.

The indirect effects of difficult temperament at Time 1 on later negative parenting were also significant: at Time 2 (0.06, t = 4.06); at Time 3, (0.05, t = 4.57); and at Time 4, (0.05, t = 4.35). Indirect effects of difficult temperament at Time 2 on later negative parenting were also significant: at Time 3 (0.03, t = 4.28); at Time 4 (0.04, t = 4.67). Although small, these effects were consistent over time.

Table 6.3: Model 2 Direct Effects – Difficult Temperament, Aggressive Behaviour, and Negative Parenting
Parameters, Standard Errors, and t-Values

To *From*	**Unstandardized Effect**	**Standardized Effect**	**SE**	***t***	**SMC**
ETA 2 – Difficult Temperament Time 2					**0.27**
ETA1– Difficult Temperament T1	0.51**	*0.52*	0.06	8.61	
ETA 3 – Aggressive Behaviour Time 2					**0.42**
ETA2 – Difficult Temperament T2	0.22**	*0.57*	0.02	8.86	
ETA7 – Negative Parenting T2	0.30*	*0.20*	0.10	2.85	
ETA 4 – Aggressive Behaviour Time 3					**0.33**
ETA3 – Aggressive Behaviour T2	0.35**	*0.45*	0.05	6.88	
ETA8 – Negative Parenting T3	0.29**	*0.24*	0.09	3.37	
ETA 5 – Aggressive Behaviour Time 4					**0.43**
ETA4– Aggressive Behaviour T3	0.58**	*0.64*	0.06	9.66	
ETA9– Negative Parenting T4	0.06	*0.05*	0.08	0.69	
ETA 6 – Negative Parenting Time 1					**0.17**
ETA1– Difficult Temperament T1	0.05**	*0.41*	0.01	4.98	
ETA 7 – Negative Parenting Time 2					**0.15**
ETA2– Difficult Temperament T2	0.05**	*0.18*	0.01	4.98	
ETA6 – Negative Parenting T1	0.66*	*0.30*	0.25	2.68	
ETA 8 – Negative Parenting Time 3					**0.59**
ETA2 – Difficult Temperament T2	0.02	*0.07*	0.01	1.70	
ETA7 – Negative Parenting T2	0.68**	*0.75*	0.08	8.20	
ETA 9– Negative Parenting Time 4					**0.74**
ETA2 – Difficult Temperament T2	0.02	*0.07*	0.01	1.70	
ETA8– Negative Parenting T3	0.81**	*0.84*	0.08	9.62	

*(*SMC = squared multiple correlations)*

The stability of negative parenting behaviour over time is evident from the direct and indirect effects of earlier parenting behaviours on later parenting behaviours. There was quite a large and significant direct effect of negative parenting at Time 1 on negative parenting at Time 2 ($\beta_{7,6}$ = 0.66, t = 2.68). In addition, the indirect effects of negative parenting at Time 1 on negative parenting at Time 3 (0.45, t = 2.62) and Time 4 (0.36, t = 2.57) were also quite large and significant. The direct effect of negative parenting behaviour at Time 2 on negative parenting at Time 3 was also large and highly significant ($\beta_{8,7}$ = 0.68, t = 8.20), as was the indirect effect of negative parenting at Time 2 on negative parenting at Time 4 (0.55, t = 7.00). The largest effect in the whole model was the direct effect of negative parenting at Time 3 on negative parenting at Time 4

($\beta_{9,8}$ = 0.81, t = 9.62), showing considerable persistence in parenting practices over this time span.

Table 6.4: Model 2 Indirect Effects – Difficult Temperament, Aggressive Behaviour, and Negative Parenting
Parameters, Standard Errors, and t-Values

To	*From*	Unstandardized Effect	Standardized Effect	SE	*t*
ETA 3 – Aggressive Behaviour Time 2					
	ETA1 - Difficult Temperament T1	0.13**	*0.34*	0.02	7.16
	ETA2 - Difficult Temperament T2	0.01*	*0.04*	0.01	2.53
	ETA6 - Negative Parenting T1	0.20*	*0.06*	0.10	1.96
ETA 4 – Aggressive Behaviour Time 3					
	ETA1 - Difficult Temperament T1	0.06**	*0.20*	0.01	6.08
	ETA2 - Difficult Temperament T2	0.10**	*0.33*	0.01	7.09
	ETA6 - Negative Parenting T1	0.20*	*0.08*	0.09	2.36
	ETA7 - Negative Parenting T2	0.31**	*0.27*	0.07	4.61
ETA 5 – Aggressive Behaviour Time 4					
	ETA1 - Difficult Temperament T1	0.04**	*0.14*	0.01	5.39
	ETA2 - Difficult Temperament T2	0.06**	*0.22*	0.01	6.20
	ETA3 - Aggressive Behaviour T2	0.20**	*0.30*	0.04	5.82
	ETA6 - Negative Parenting T1	0.14*	*0.06*	0.06	2.25
	ETA7 - Negative Parenting T2	0.21**	*0.20*	0.05	3.93
	ETA8 - Negative Parenting T3	0.22*	*0.19*	0.07	2.96
ETA 7 – Negative Parenting Time 2					
	ETA1 - Difficult Temperament T1	0.06**	*0.22*	0.01	4.06
ETA 8 – Negative Parenting Time 3					
	ETA1 - Difficult Temperament T1	0.05**	*0.20*	0.01	4.57
	ETA2 - Difficult Temperament T2	0.03**	*0.14*	0.01	4.28
	ETA6 - Negative Parenting T1	0.45*	*0.23*	0.17	2.62
ETA 9– Negative Parenting Time 4					
	ETA1 - Difficult Temperament T1	0.05**	*0.21*	0.01	4.35
	ETA2 - Difficult Temperament T2	0.04**	*0.18*	0.01	4.67
	ETA6 - Negative Parenting T1	0.36*	*0.19*	0.14	2.57
	ETA7 - Negative Parenting T2	0.55**	*0.63*	0.08	7.00

All of the effects of negative parenting behaviour on boys' aggressive behaviour were positive and significant (indicating that more negative parenting resulted in more aggressive behaviour in boys), except for the effect of negative parenting at Time 4 on boys' aggressive behaviour at Time 4 ($\beta_{5,9}$ = 0.06, t = 0.69). Time 1 negative parenting influenced aggressive behaviour indirectly through its effect on negative parenting at Time 2. The indirect effect of negative parenting at Time 1 on aggressive behaviour at Time 2 was 0.20 (t = 1.96), at Time 3 was 0.20 (t = 2.36), and at Time 4 was 0.14 (t = 2.25).

The direct and indirect effects of negative parenting at Time 2 on boys' aggressive behaviour were all significant. The direct effect of negative parenting at Time 2 on boys' aggressive behaviour at Time 2 ($\beta_{3,7}$) was 0.30 (t = 2.85). Thus, a one-unit increase in negative parenting resulted in a .30 unit increase in aggressive behaviour. The total indirect effect of negative parenting at Time 2 on aggressive behaviour at Time 3 through its influence on aggressive behaviour at Time 2 and negative parenting at Time 3 (0.31, t = 4.61) was similar to its effect on aggressive behaviour at Time 2. The indirect effect of negative parenting at Time 2 on aggressive behaviour at Time 4 (0.21, t = 3.93) was significant but not as strong as its indirect effects on earlier aggressive behaviour.

The direct effect of negative parenting at Time 3 on boys' aggressive behaviour at Time 3 was similar to its indirect effect on boys' aggressive behaviour at Time 4. Negative parenting at Time 3 contributed to higher levels of boys' aggressive behaviour at Time 3 ($\beta_{4,8}$ = 0.29, t = 3.37). The indirect effect of negative parenting at Time 3 on boys' aggressive behaviour at Time 4 through its effect on aggressive behaviour at Time 3 and through negative parenting at Time 4 (0.22, t = 2.96) was also moderately strong. As noted before, only the direct effect of negative parenting at Time 4 on boys' aggressive behaviour at Time 4 was weak and non-significant ($\beta_{5,9}$ = 0.06, t = 0.69).

Model 2 Summary

This model confirmed my hypotheses that boys' difficult temperament contributes to mothers' negative parenting behaviours and that difficult temperament, as well as mothers' negative parenting behaviour contributes to the development of aggressive behaviour in boys. Comparison of the standardized direct effects indicates that difficult temperament was a stronger predictor of later aggressive behaviour than was negative parenting behaviour. However, the persistence of aggressive behaviour in boys from toddlerhood to school age, which was evident in Model 1, has the largest effect as a predictor of later aggressive behaviour.

This model also provided evidence that aggressive behaviour and negative parenting are somewhat stable over time, which is consistent with other research findings (behaviour: Campbell, 1995; parenting: Dallaire & Weinraub, 2005; Morrell & Murray, 2003). The stability of parenting behaviours over time and the high level of explained variance for negative parenting at Time 4 (74%) suggest that there were relatively few factors outside the model that were needed to explain these parenting behaviours. However, the lower levels of explained variance for negative parenting at Time 1 (17%) and Time 2 (15%) suggest that additional factors contribute to the early development of negative parenting behaviours. Next, I turn to Model 3, in which maternal depression is added to the conceptual model to investigate whether it influences negative parenting.

MODEL 3 – DIFFICULT TEMPERAMENT, AGGRESSIVE BEHAVIOUR, NEGATIVE PARENTING AND MATERNAL DEPRESSION

This model expanded on Model 2 and examined the conceptual hypothesis that higher levels of maternal depression result in increased levels of negative parenting practices. In addition to testing the relationships included in Model 2, I examined the contribution of maternal depression to increased use of negative parenting behaviours. In Model 3, latent variables that address the contribution of maternal depression to negative parenting behaviours were added to Model 2, which was discussed in the previous section. As in Model 2, I built the expanded model in steps, and added causal paths if the diagnostic information was supported by the hypotheses noted above. In this model, I allowed the errors for the concepts of maternal depression at Time 1 and boys' difficult temperament at Time 1 to covary. My rationale for freeing this covariance was two-fold. First, there were no causal effects linked to these concepts within the model at this point. Second, as characteristics of the individuals sharing a common environment, I thought it reasonable to assume there would be some common causes outside of the conceptual model contributing to these concepts.

In the first step, the model included paths that link maternal depression over time and the errors for maternal depression and difficult temperament at Time 1 were allowed to covary, but there were no paths from maternal depression to parenting behaviours or to boys' aggressive behaviour. Failure of this model to fit would indicate that maternal depression does indeed require some causal connections to the other model variables. In the second step, I linked maternal depression only to concurrent parenting behaviour. In the third step, I linked maternal depression to both concurrent parenting and concurrent aggressive behaviour.

MODEL 3, STEP 1

In this first step, I added the latent concepts of maternal depression at Time 1, Time 2, Time 3, and Time 4 to Model 2, which I described previously. The errors for maternal depression and difficult temperament at Time 1 were allowed to covary. Maternal depression at Time 1 was directly linked to maternal depression at Time 2, maternal depression at Time 2 was directly linked to maternal depression at Time 3, and maternal depression at Time 3 was directly linked to maternal depression at Time 4. In this step, it was assumed that earlier maternal depression would persist to later maternal depression; however, only maternal depression in the adjacent period would have direct effects on subsequent maternal depression, thus, effects to maternal depression at non-adjacent time periods would be indirect. For example, the effect of maternal depression at Time 1 on maternal depression at Time 3 would be mediated through its effect on maternal depression at Time 2, which has a direct effect on maternal depression at Time 3. In this initial step, all of the assumptions regarding the relationships between boys' difficult temperament and aggressive behaviour, and mothers' negative parenting that were included in Model 2 remained, but there were no links from maternal depression to negative parenting or to boys' aggressive behaviour.

Model 3, Step 1 Results

As expected, this model (with no effects connecting maternal depression to the other modeled variables) resulted in a statistically significant chi-square: Minimum Fit Function χ^2 (62 df) = 177.97, p = 0.00; Normal Theory Weighted Least Squares χ^2 (62 df) = 179.19, p = 0.00; AGFI = 0.89. The model converged after six iterations with no indication of problems in the minimization/maximization procedure.

On examination of the standardized residuals, I found many discrepancies between the observed covariances and the model-implied covariances. Forty percent of the standardized residuals exceeded $\pm$ 1.96. The residuals on the diagonal were low, except for the variables measuring maternal depression, indicating that the model did not adequately explain the variance of those variables. Values for the standardized residuals ranged from -4.94 to 5.98. The pattern of the residuals indicated that relationships between maternal depression and parenting behaviour, between maternal depression and boys' aggressive behaviour, and between maternal depression at Time 1 and maternal depression at Time 3 and Time 4 were not well accounted for in the model. The conceptual hypotheses predicted that paths should be added between maternal depression and negative parenting behaviour.

Modification Indices

The modification indices for the Beta matrix supported freeing the coefficients from concurrent maternal depression to parenting behaviour. The modification indices for these pathways were 13.22 for Time 1 ($\beta_{6,10}$), 7.91 for Time 2 ($\beta_{7,11}$), 16.05 for Time 3 ($\beta_{8,12}$), and 2.95 for Time 4 ($\beta_{9,13}$). The modification indices also suggested freeing the paths from maternal depression to boys' aggressive behaviour (Time 2: $\beta_{3,11}$, MI= 7.34; Time 3: $\beta_{4,12}$, MI= 8.35; and Time 4: $\beta_{5,13}$, MI=2.97) as well as the reverse effects of boys' aggressive behaviour leading to maternal depression (Time 2: $\beta_{11,3}$, MI= 4.26; Time 3: $\beta_{12,4}$, MI= 15.71; and Time 4: $\beta_{13,5}$, MI=3.09). In addition, the modification indices for the Beta matrix suggested that freeing the paths from maternal depression at Time 1 to maternal depression at Time 3 ($\beta_{12,10}$, MI= 22.26) and Time 4 ($\beta_{13,10}$, MI= 22.19) would improve the model. The modification index for the Psi matrix also supported allowing the errors of the latent concepts of maternal depression to covary from Time 1 to Time 2 ($\psi_{11,10}$, MI= 5.51), Time 1 to Time 3 ($\psi_{12,10}$, MI= 25.70) and Time 1 to Time 4 ($\psi_{13,10}$, MI= 22.51).

Model 3, Step 2

In this step, I freed the coefficients from concurrent maternal depression to parenting behaviour based on the findings in step 1 above and the conceptual model in Figure 5.1. The addition of these paths allowed for testing the previously stated hypothesis that higher levels of maternal depression result in increased levels of negative parenting behaviours.

Model 3, Step 2 Results

This model continued to result in a highly statistically significant chi-square, so additional causal effects were required: Minimum Fit Function χ^2 (58 *df*) = 146.70, p = 0.00; Normal Theory Weighted Least Squares χ^2 (58 *df*) = 141.81, p = 0.00; AGFI = 0.91. However, the value for chi-square was significantly reduced from the previous model (difference χ^2 (4 *df*) = 31.27 p < .001). The model converged after seven iterations.

The significance of the parameter estimates that were tested in Model 2 followed the same pattern as in that previous model. The t-values for the estimates were greater than $\pm$ 2.00, with a few exceptions. The equal estimates for the effect of difficult temperament at Time 2 on negative parenting at Time 3 and Time 4 were not significant (0.02, t = 1.70), and the effect of negative parenting on aggressive behaviour at Time 4 (0.08, t = 0.91) was not significant, following the same pattern as Model 2.

All of the effects linking maternal depression to negative parenting behaviour were positive, indicating higher levels of maternal depression contributed to negative parenting, but the pattern of the significance of these parameter estimates was not consistent across time. Estimates for the concurrent effects of maternal depression on negative parenting behaviour at Time 1 ($\beta_{6,10}$ = 0.07, t = 3.10) and Time 3 ($\beta_{8,12}$ = 0.08, t = 3.37) were positive and significant. However, although the parameter estimates were positive, the effect size was smaller and non-significant at Time 2 ($\beta_{7,11}$ = 0.05, t = 1.17) and Time 4 ($\beta_{9,13}$ = 0.02, t = 0.79).

Examination of the standardized residuals revealed that numerous discrepancies between the observed covariances and the model-implied covariances remained in this revised model. Compared to the model in step 1, there was a decrease in the number of standardized residuals that exceeded $\pm$ 1.96 – 25 of 91 (27%). In addition, the size of the residuals on the diagonal for the maternal depression variables decreased to within $\pm$ 1.96, except for the Time 2 measurement, which increased slightly. Values for the standardized residuals ranged from -4.61 to 5.97. As in the previous step, the pattern of the residuals supported the addition of paths between maternal depression and aggressive behaviour, and the addition of paths from maternal depression at Time 1 to maternal depression at Time 3 and Time 4.

Modification Indices

The modification indices for the Beta matrix maintained a pattern similar to that in step 1, and continued to support freeing the direct effects from concurrent maternal depression to boys' aggressive behaviour (Time 2: $\beta_{3,11}$, MI= 7.51; Time 3: $\beta_{4,12}$, MI= 6.84; and Time 4: $\beta_{5,13}$, MI=2.62). The modification indices also continued to support freeing some of the reverse effects of aggressive behaviour leading to maternal depression (Time 2: $\beta_{11,3}$, MI= 2.97; Time 3: $\beta_{12,4}$, MI= 10.42; and Time 4: $\beta_{13,5}$, MI=2.66).

As in step 1, the modification indices indicated that freeing the paths from maternal depression at Time 1 to maternal depression at Time 3 ($\beta_{12,10}$, MI= 24.10) and Time 4 ($\beta_{13,10}$, MI= 22.41) would improve the model. Furthermore, the modification index for the Psi matrix (the covariance matrix among the error variables connected to the latent concepts) also supported allowing the errors of the latent concepts for maternal depression to covary from Time 1 to Time 2 ($\psi_{11,10}$, MI= 5.34), Time 1 to Time 3 ($\psi_{12,10}$, MI= 27.35) and Time 1 to Time 4 ($\psi_{13,10}$, MI= 22.77).

The modification indices that suggested freeing the paths from maternal depression at Time 1 to later depressive symptoms were much higher than those that suggest freeing the paths from maternal depression to boys' aggressive behaviour. However, in the next step, I freed the concurrent paths from maternal depression to boys' aggressive behaviour rather than additional coefficients among the concepts of maternal depression. My rationale for this was that the factors that link these maternal depression variables may be outside of the current model, and based on the conceptual hypotheses, the economic variables that were to be added in the final model that was tested in this study might provide the explanation that was omitted in Model 3.

Model 3, Step 3

In this step, I added direct paths from concurrent maternal depression to boys' aggressive behaviour to the model. Justification for my decision comes from research showing that maternal depression is linked to the development of aggressive behaviour (Kim-Cohen, Moffitt, Taylor, Pawlby, & Caspi, 2005; Luoma et al., 2004; Malik et al., 2007). Additional research has also shown that maternal depression may contribute not only to increased negative parenting behaviours, but it may also reduce responsiveness and consistency, further contributing to the development and maintenance of aggressive behaviour (Rubin & Burgess, 2002). The modification indices suggested that freeing the coefficients from boys' aggressive behaviour to maternal depression would improve the model. However, Elgar et al. (2003), using a cross-lagged panel design over a four-year period, with children from four to eleven years old, found that maternal depression preceded aggressive behaviour and not the reverse. Based on the evidence from their study, and because the collinearity among the coefficients would have been likely to create problems for estimation, I chose not to free these paths in the model I used for this study.

Model 3, Step 3 Results

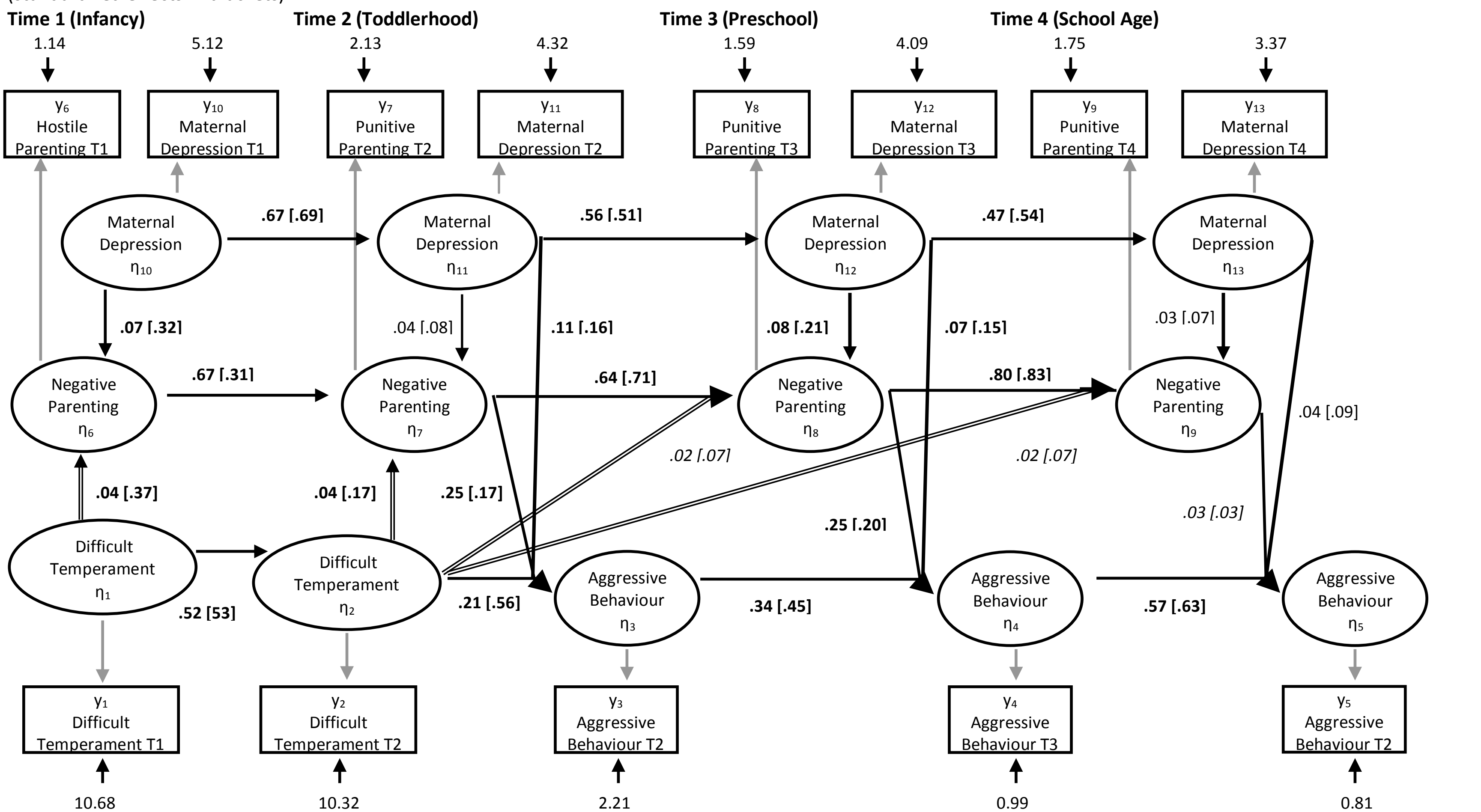
Although the model fit improved somewhat from the model in step 2, this model also resulted in a highly statistically significant chi-square: Minimum Fit Function χ^2 (55 *df*) = 131.23, p = 0.00; Normal Theory Weighted Least Squares χ^2 (55 *df*) = 125.29, p = 0.00; AGFI = 0.91. The value for chi-square was reduced somewhat from the previous model. The model converged after seven iterations, pointing to no difficulty with the minimization/maximization process. The standardized residuals also indicated some improvement in the model, although there were still a substantial number (19 of 91, 21%) that were $\pm$ 1.96. The pattern of the residuals revealed that the discrepancies between the observed covariances and the model-implied covariances rested primarily with the variables associated with maternal depression.

The residuals on the diagonal failed to improve for the maternal depression variables. In addition, the residual for the outcome variable of boys' aggressive behaviour at Time 4 increased to 2.26. Thus, although overall fit improved, the model did not improve with respect to explaining the outcome variable.

Maximum Likelihood Estimates for Model 3

The maximum likelihood estimates of the direct effects of Model 3 are shown in Figure 6.3 and Table 6.5. There were small changes in the parameter estimates for the paths that were common to Model 2, but overall the model remained stable in this step. With the exception of the following parameter estimates, all estimates were significant, with t-values greater than $\pm$ 2.00. The equal estimates for the effect of difficult temperament at Time 2 on negative parenting at Time 3 and Time 4 ($\beta_{8,2}$ and $\beta_{9,2}$) were not significant (0.02, t = 1.66). The effect of negative parenting on aggressive behaviour at Time 4 ($\beta_{5,9}$= 0.03, t = 0.40) remained nonsignificant, and the value of the parameter estimate was reduced considerably from its value in the previous step ($\beta_{5,9}$= 0.08, t = 0.91). The inconsistent pattern of significance for the parameter estimates linking

Figure 6.3 - MODEL 3 (Step 3) Difficult Temperament, Aggressive Behaviour, Negative Parenting and Maternal Depression
(standardized effects in brackets)



Minimum Fit Function χ^2 (55 *df*) = 131.23, p = 0.00; Normal Theory Weighted Least Squares χ^2 = 125.29, p = 0.00; AGFI = .91. (**Significant effects are in bold**. Double lines indicate paths with equality constraints.)

maternal depression to parenting behaviour remained from the previous step. Estimates for the concurrent relationship between maternal depression and negative parenting behaviour at Time 1 ($\beta_{6,10}$ = 0.07, t = 3.11) and Time 3 ($\beta_{8,12}$ = 0.08, t = 3.15) were positive and significant. At Time 2 and Time 4, even though the parameter estimates were positive, the effect sizes remained small and non-significant (Time 2: $\beta_{7,11}$ = 0.04, t = 0.93 and Time 4: $\beta_{9,13}$ = 0.03, t = 0.79) as in the previous step.

The parameter estimates for the paths from concurrent maternal depression to aggressive behaviour that were added in this step showed a similar pattern to that of the parameter estimates for the paths from negative parenting to aggressive behaviour, weakening over time. The estimates at Time 2 ($\beta_{3,11}$ = 0.11, t = 2.53) and Time 3 ($\beta_{4,12}$ = 0.07, t = 2.33) were significant, and the estimate at Time 4 ($\beta_{5,13}$ = 0.04, t = 1.48) was not significant.

The squared multiple correlations for the structural equations show that the explained variance in maternal depression is moderately stable over time. At Time 2, 47 percent of the variance associated with maternal depression was explained; at Time 3, 26 percent of the variance was explained; and at Time 4, 30 percent of the variance of maternal depression was explained by the model. The addition of maternal depression as a predictor of parenting behaviour only slightly increased the explained variance for parenting when compared to Model 2. With respect to boys' difficult temperament and aggressive behaviour, there was also only a slight increase in explained variance.

Table 6.5 provides LISREL's maximum likelihood effect estimates of direct effects (both unstandardized and standardized) implied by the final step forModel 3 and the standard errors and t-values. The squared multiple correlations for the model concepts are also included in the last column of the table. The direct effects for the concepts included in Model 2 are similar in Model 3 with only small changes in the estimates, although the magnitude and significance of the effects decreased slightly with the addition of maternal depression to the model. The greatest decrease occurred in the direct and indirect effects of negative parenting on boys' aggressive behaviour. This suggests that parenting does play a role in mediating the effects of maternal depression on the development of boys' aggressive behaviour, but that maternal depression also has independent effects, indicating that there are cumulative effects of maternal depression and negative parenting on boys' aggressive behaviour. One caveat, however, is that the addition of maternal depression resulted in a model that was significantly inconsistent with the covariance data. As noted in the discussion regarding the standardized residuals, the high residuals on the diagonal indicate that the variance of maternal depression and boys' aggressive behaviour at Time 4 were not consistent with the model, and this contributes to the poor fit of this model. Despite these issues, the total effects of maternal depression on other variables in the model were significant except at Time 4. Maternal depression exhibits a fair amount of stability over time, although unlike boys' aggressive behaviour and parenting behaviours, the effect of previous maternal depression on subsequent maternal depression weakens over time.

Table 6.5: Model 3 Direct Effects – Difficult Temperament, Aggressive Behaviour, Negative Parenting, and Maternal Depression – *Parameters, Standard Errors, and t-Values*

To	*From*	Unstandardized Effect	Standardized Effect	SE	*t*	SMC
ETA 2 – Difficult Temperament Time 2						**0.28**
	ETA1– Difficult Temperament T1	0.52**	*0.53*	0.06	8.70	
ETA 3 – Aggressive Behaviour Time 2						**0.43**
	ETA2 – Difficult Temperament T2	0.21**	*0.56*	0.02	8.89	
	ETA7 – Negative Parenting T2	0.25*	*0.17*	0.11	2.35	
	ETA11 – Maternal Depression T2	0.11*	*0.16*	0.04	2.53	
ETA 4 – Aggressive Behaviour Time 3						**0.34**
	ETA3 – Aggressive Behaviour T2	0.34**	*0.45*	0.05	6.70	
	ETA8 – Negative Parenting T3	0.25*	*0.20*	0.09	2.69	
	ETA12 – Maternal Depression T3	0.07*	*0.15*	0.03	2.33	
ETA 5 – Aggressive Behaviour Time 4						**0.43**
	ETA4– Aggressive Behaviour T3	0.57**	*0.63*	0.06	9.49	
	ETA9– Negative Parenting T4	0.03	*0.03*	0.09	0.40	
	ETA13 – Maternal Depression T4	0.04	*0.09*	0.03	1.48	
ETA 6 – Negative Parenting Time 1						**0.27**
	ETA1– Difficult Temperament T1	0.04**	*0.37*	0.01	4.55	
	ETA10 – Maternal Depression T1	0.07**	*0.32*	0.02	3.11	
ETA 7 – Negative Parenting Time 2						**0.16**
	ETA2– Difficult Temperament T2	0.04**	*0.17*	0.01	4.55	
	ETA6 – Negative Parenting T1	0.67*	*0.31*	0.26	2.59	
	ETA11 – Maternal Depression T2	0.04	*0.08*	0.04	0.93	
ETA 8 – Negative Parenting Time 3						**0.61**
	ETA2 – Difficult Temperament T2	0.02	*0.07*	0.01	1.66	
	ETA7 – Negative Parenting T2	0.64**	*0.71*	0.08	7.95	
	ETA12 – Maternal Depression T3	0.08**	*0.21*	0.03	3.15	
ETA 9– Negative Parenting Time 4						**0.75**
	ETA2 – Difficult Temperament T2	0.05	*0.07*	0.01	1.66	
	ETA8– Negative Parenting T3	0.80**	*0.83*	0.09	9.34	
	ETA13 – Maternal Depression T4	0.03	*0.07*	0.03	0.95	
ETA11 – Maternal Depression Time 2						**0.47**
	ETA10 – Maternal Depression T1	0.67**	*0.69*	0.06	10.59	
ETA12 – Maternal Depression Time 3						**0.26**
	ETA11 – Maternal Depression T2	0.56**	*0.51*	0.07	8.08	
ETA13 – Maternal Depression Time 4						**0.30**
	ETA12 – Maternal Depression T3	0.47**	*0.54*	0.05	8.75	

The direct effect of maternal depression at Time 1 on maternal depression at Time 2 ($\beta_{11,10}$ = 0.67, t = 10.59) showed that, for every 1 unit elevation in maternal depression at Time 1, there was a .67 unit elevation in maternal depression at Time 2. There were moderate, and significant, indirect effects of maternal depression at Time 1 on maternal depression at Time 3 (0.38, t = 6.78) and Time 4 (0.18, t = 5.52]. The magnitude of the direct effect of maternal depression at Time 2 on maternal depression at Time 3 ($\beta_{12,11}$ = 0.56, t = 8.08) was not quite as great as the effect of Time 1 maternal depression on Time 2 maternal depression, but it was still substantial. There was also a moderate indirect effect of maternal depression at Time 2 on maternal depression at Time 4 (0.26, t = 6.15). From Time 3 to Time 4, the effect of maternal depression on subsequent maternal depression remained substantial ($\beta_{13,12}$ = 0.47, t = 8.75), but again was smaller than the earlier effects of Time 1 maternal depression on Time 2 maternal depression, and Time 2 maternal depression on Time 3 maternal depression.

The direct effects of maternal depression on negative parenting were small, and were only significant at Time 1 and Time 3. At Time 1 a one unit increase in maternal depression led to a 0.07 unit increase in negative parenting ($\beta_{6,10}$ = 0.07, t = 3.11). At Time 2, the effect of maternal depression on negative parenting was not significant ($\beta_{7,11}$ = 0.04, t = 0.93). At Time 3, the effect was double the effect at Time 2 ($\beta_{8,12}$ = 0.08, t = 3.15), and was also significant. However, the effect of maternal depression on negative parenting at Time 4 ($\beta_{6,10}$ = 0.03, t = 0.95) was not significant. The indirect effects of maternal depression on parenting were small, but all indirect effects were significant. The indirect effects of maternal depression at Time 1 on negative parenting at Time 2 was 0.07 (t = 2.66). The indirect effects of maternal depression at Time 1 on negative parenting at Time 3 was the same (0.07, t = 4.04). Again, at Time 4 there was little change in the size of the indirect effects of maternal depression at Time 1 on negative parenting (0.06, t = 4.12).

The pattern of indirect effects of maternal depression at Time 2 on later parenting was similar to the effects of maternal depression at Time 1. The indirect effect of maternal depression at Time 2 on negative parenting at Time 3 was 0.07 (t = 2.57), and its indirect effect on negative parenting at Time 4 was 0.06 (t = 2.82). Finally, the indirect effect of maternal depression at Time 3 on negative parenting at Time 4 was 0.08 (t = 3.55).

The direct effects of maternal depression on boys' aggressive behaviour at Time 2, Time 3 and Time 4 were small, but consistent. The effects decreased in magnitude and significance over time, so that by the time the boys were school age, the effect was not significant (Time 2: $\beta_{3,11}$ = 0.11, t = 2.52; Time 3: $\beta_{4,12}$ = 0.07, t = 2.33; Time 4: $\beta_{5,13}$ =

0.04, t = 1.48). The indirect effects of maternal depression on boys' aggressive behaviour through its effects on negative parenting and earlier aggressive behaviour followed the same pattern of small effects decreasing in magnitude over time. The indirect effect of maternal depression at Time 1 on boys' aggressive behaviour at Time 2 was 0.09 (t = 3.07), at Time 3, it was 0.07 (t = 4.58), and, at Time 4, it was 0.05 (t = 4.57).

Table 6.6: Model 3 Indirect Effects – Difficult Temperament, Aggressive Behaviour, Negative Parenting , and Maternal Depression – *Parameters, Standard Errors, and t-Values*

To	*From*	Unstandardized Effect	Standardized Effect	SE	*t*
ETA 3 – Aggressive Behaviour Time 2					
	ETA1 – Difficult Temperament T1	0.12**	*0.33*	0.02	7.07
	ETA2 – Difficult Temperament T2	0.01*	*0.03*	0.00	2.14
	ETA6 – Negative Parenting T1	0.17	*0.05*	0.10	1.73
	ETA10 – Maternal Depression T1	0.09*	*0.13*	0.03	3.07
	ETA11 – Maternal Depression T2	0.01	*0.01*	0.01	0.88
ETA 4 – Aggressive Behaviour Time 3					
	ETA1 – Difficult Temperament T1	0.05**	*0.18*	0.01	5.84
	ETA2 – Difficult Temperament T2	0.09**	*0.30*	0.01	6.72
	ETA6 – Negative Parenting T1	0.16*	*0.07*	0.08	2.15
	ETA7 – Negative Parenting T2	0.24**	*0.21*	0.06	3.75
	ETA10 – Maternal Depression T1	0.07**	*0.15*	0.02	4.58
	ETA11 – Maternal Depression T2	0.09**	*0.18*	0.02	4.16
	ETA12 – Maternal Depression T3	0.02*	*0.04*	0.01	2.06
ETA 5 – Aggressive Behaviour Time 4					
	ETA1 – Difficult Temperament T1	0.03**	*0.12*	0.01	5.10
	ETA2 – Difficult Temperament T2	0.05**	*0.20*	0.01	5.84
	ETA3 – Aggressive Behaviour T2	0.19**	*0.28*	0.03	5.69
	ETA6 – Negative Parenting T1	0.10*	*0.05*	0.05	2.00
	ETA7 – Negative Parenting T2	0.15**	*0.15*	0.05	3.07
	ETA8 – Negative Parenting T3	0.17*	*0.15*	0.08	2.22
	ETA10 – Maternal Depression T1	0.05**	*0.11*	0.01	4.57
	ETA11 – Maternal Depression T2	0.07**	*0.14*	0.02	4.33
	ETA12 – Maternal Depression T3	0.07**	*0.17*	0.02	3.64
	ETA13 – Maternal Depression T4	0.00	*0.00*	0.00	0.37
ETA 7 – Negative Parenting Time 2					
	ETA1 – Difficult Temperament T1	0.05**	*0.20*	0.01	3.81
	ETA10 – Maternal Depression T1	0.07*	*0.15*	0.03	2.66
ETA 8 – Negative Parenting Time 3					
	ETA1 – Difficult Temperament T1	0.04**	*0.18*	0.01	4.33
	ETA2 – Difficult Temperament T2	0.03**	*0.12*	0.01	3.96
	ETA6 – Negative Parenting T1	0.43*	***0.22***	0.17	2.53
	ETA10 – Maternal Depression T1	0.07**	*0.18*	0.02	4.04
	ETA11 – Maternal Depression T2	0.07*	*0.16*	0.03	2.57

(Table 6.6 continues on next page)

Table 6.6 – Model 3 – Indirect Effects (continued)

To	*From*	Unstandardized Effect	Standardized Effect	SE	*t*
ETA 9– Negative Parenting Time 4					
	ETA1 - Difficult Temperament T1	0.04**	*0.19*	0.01	4.06
	ETA2 - Difficult Temperament T2	0.03**	*0.16*	0.01	4.28
	ETA6 - Negative Parenting T1	0.34*	*0.18*	0.14	2.48
	ETA7 - Negative Parenting T2	0.51**	*0.59*	0.07	6.80
	ETA10 - Maternal Depression T1	0.06**	*0.16*	0.02	4.12
	ETA11 - Maternal Depression T2	0.06*	*0.15*	0.02	2.82
	ETA12 - Maternal Depression T3	0.08**	*0.21*	0.02	3.55
ETA12 – Maternal Depression Time 3					
	ETA10 - Maternal Depression T1	0.38**	*0.35*	0.06	6.78
ETA13 – Maternal Depression Time 4					
	ETA10 - Maternal Depression T1	0.18**	*0.19*	0.03	5.52
	ETA11 - Maternal Depression T2	0.26**	*0.28*	0.04	6.15

The indirect effect of maternal depression at Time 2 on boys' aggressive behaviour at Time 2 was 0.01 (t = 0.88), at Time 3, it was 0.09 (t = 4.16), and at Time 4 was 0.07 (t = 4.33). The indirect effect of maternal depression at Time 3 on boys' aggressive behaviour at Time 3 was 0.02 (t = 2.06), and at Time 4, it was 0.07 (t = 3.64). The indirect effect of maternal depression at Time 4 on boys' aggressive behaviour at Time 4 was negligible (0.00, t = 0.37).

Model 3 Summary

Although this model failed, the nature of the relationships among negative parenting and boys' aggressive behaviour remain stable and understandable. It appears that maternal depression has detectable, but small, effects on both negative parenting behaviours and boys' aggressive behaviour. The direct effects of maternal depression on boys' aggressive behaviour were small, but consistent. This was in contrast to the inconsistent direct effects of maternal depression on negative parenting. The indirect effects on maternal depression on negative parenting and boys' aggressive behaviour showed more stability. The concurrent indirect effect of maternal depression on boys' aggressive behaviour at Time 4 was the only insignificant indirect effect.

The effect of maternal depression in the previous time period declined over time. However, consistently significant effects of previous maternal depression on maternal depression in the following period suggest depressive symptoms persist over time, and other evidence that depressive symptoms are persistent supports this. The standardized residuals and modification indices indicated that variations in maternal depression at Time 1 coordinated more strongly with variations in maternal depression at much later times than the model accommodated. There would be two possibilities for addressing this – one would be to link depressive symptoms at Time 1 as a direct cause of depressive symptoms at Time 3 and Time 4, as well as at Time 2. An alternative would be to assume that maternal depression at all periods has a common cause outside of the current model and allow the errors of the maternal depression concepts to covary. I could have modeled this relationship in a further step at this point, but one of the conceptual hypotheses in this study was that economic insecurity constitutes an "outside" common cause of maternal depression. Thus, rather than presuming direct effects from Time 1 depressive symptoms to Time 3 and Time 4 depressive symptoms and introducing another step at this point, it seemed appropriate to proceed to adding the concepts related to economic (in)security that comprise the final model.

MODEL 4 – Difficult Temperament, Aggressive Behaviour, Negative Parenting, Maternal Depression, and Income

My original intention for this study, was to model economic (in)security using the latent concepts of employment (in)stability, income (in)stability, income source, and income (in)adequacy. This model (as shown in Figure 5.1) was attempted, but a number of problems became evident after running the model.

First, the fit of the model was extremely poor and resulted in a statistically significant chi-square: Minimum Fit Function χ^2 (323 *df*) = 1535.16, p = 0.00; Normal Theory Weighted Least Squares χ^2 = 1321.23, p = 0.00; AGFI = 0.74. However, the model converged after 10 iterations with no indication of problems in the minimization/ maximization procedure. The standardized residuals revealed numerous discrepancies between the observed covariances and the model-implied covariances. Almost one-third (29%, 116 of 406) of the standardized residuals exceeded $\pm$ 1.96, and the values of the standardized residuals ranged from -13.94 to 13.49. The majority (66%) of the high residuals were located among the covariances of the economic (in)security variables. In addition, high residuals on the diagonal for income (in)adequacy at Time 1 and Time 3, source of income at Time 1, Time 2, and Time 3, and employment (in)stability at Time 1 and Time 3 indicated that the variances of these variables were somewhat inconsistent with the model.

Second, the addition of the economic (in)security concepts more than doubled the model size, which made it difficult to identify specific problem areas. Another problem with this increase in the number of variables in the model was that the relatively small sample used in this study may not have been large enough to handle the increasing number of variables. Finally, there were significant effects from income (in)adequacy to maternal depression, but there were no significant effects from any of the other economic (in)security concepts. Rather than proceed with further modifications in an attempt to address the multiple problems with the full economic (in)security model I had proposed, I tested two additional models that each included a subset of economic (in)security variables related to income: income (in)stability and income (in)adequacy. I chose not to examine models that included employment (in)stability or source of income because the parameter estimates for the relationship between these variables and maternal depression were very small in the full model and did not suggest these concepts would provide additional explanation if added to Model 3. In the first revised model, only the set of income (in)stability variables was added to Model 3. There also were no significant effects from income (in)stability to maternal depression in the full model, but I chose to test this model because income (in)stability provided the closest approximation to my conceptualization of economic (in)security. In the second revised model, only the set of income (in)adequacy variables was added to Model 3. I discuss the results of these two models separately below.

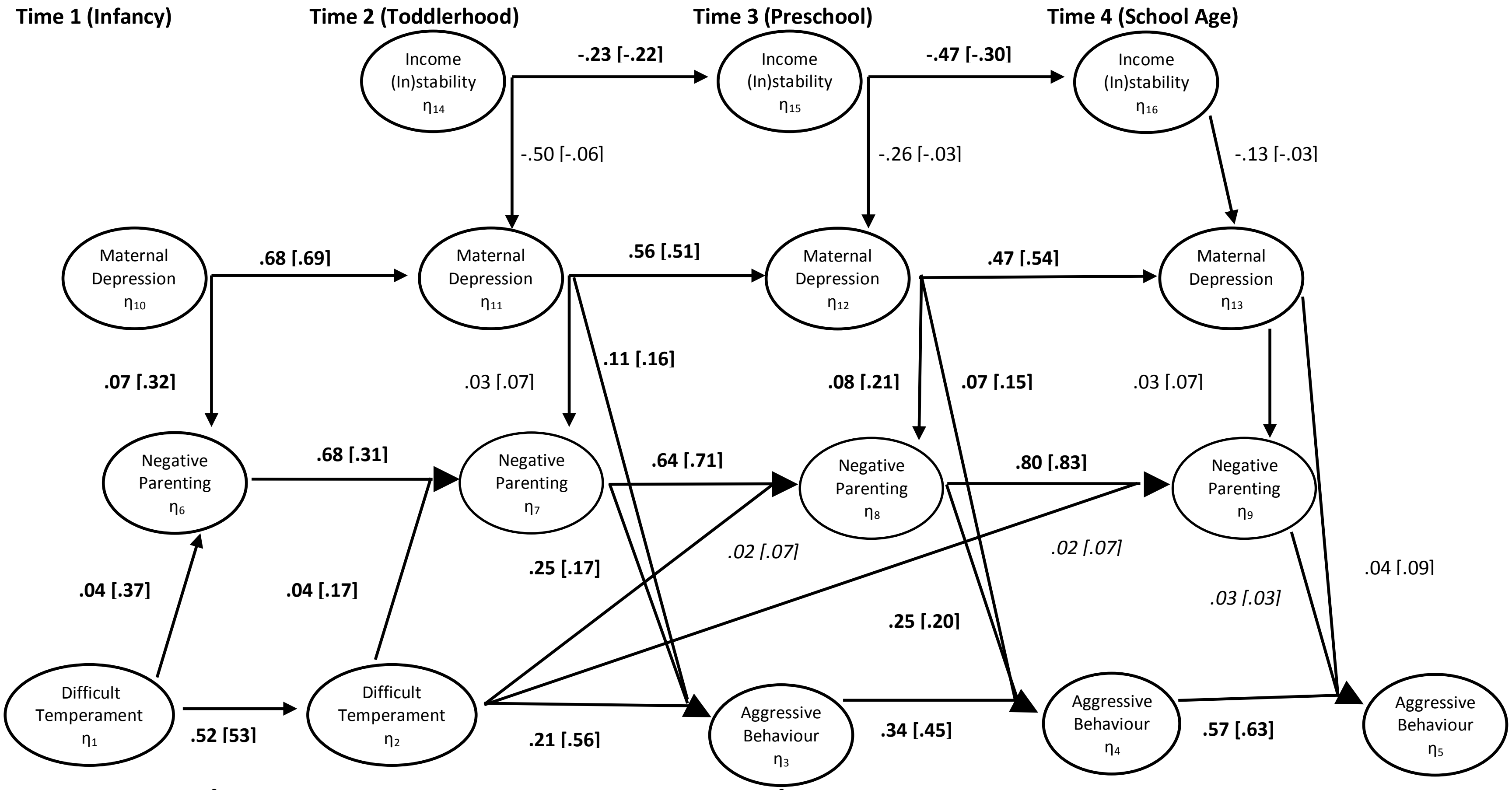
Model 4A - Income (In)stability

In this model, the concept of income (in)stability at Time 2, Time 3, and Time 4 was added to Model 3 with concurrent links to maternal depression. This concept refers to the amount and direction of change in income from one measurement period to the next. The income (in)stability indicator was a measure of income to LICO ratio change from one period to the next, thus, it was not possible to obtain an (in)stability indicator for Time 1, as there was no measure of income prior to Time 1. It was assumed that increases in the income to LICO ratio would be associated with decrease in levels of maternal depression, and decreases in the income to LICO ratio would result in increases in levels of maternal depression. Furthermore, these positive, or negative, effects would be mediated through maternal depression to negative parenting. The model used for this analysis is presented in Figure 6.4. The variable descriptions, fixed measurement error variances (Table 5.2) and univariate descriptives (Table 5.3) were presented in Chapter 4.

This model examined the contribution of income (in)stability to increased levels of maternal depression, which potentially contributes to increased levels of negative parenting behaviours and indirectly to increased levels of boys' aggressive behaviour. This model examined the following hypotheses:

- Higher income instability leads to increased levels of maternal depression.
- Maternal depression mediates the relationship between income (in)stability and negative parenting behaviours.

Figure 6.4: Model 4A Difficult Temperament, Aggressive Behaviour, Negative Parenting, Maternal Depression, and Income (In)Stability
(standardized effects in brackets)



Minimum Fit Function χ^2 (92) = 172.25, p = 0.00; Normal Theory Weighted Least Squares χ^2 = 164.31, p = 0.00; AGFI = 0.92. (**Significant effects are in bold.** Equality constraints are the same as in the previous model.)

MODEL 4A RESULTS - INCOME (IN)STABILITY

This model failed and resulted in a statistically significant chi-square: Minimum Fit Function χ^2 (92 df) = 172.25, p = 0.00; Normal Theory Weighted Least Squares χ^2 = 164.31, p = 0.00; AGFI = 0.92. The model converged after seven iterations with no indication of problems in the minimization/maximization procedure.

All of the parameter estimates for the relationships among the income (in)stability concepts were negative and significant indicating that the direction of change in the Income to LICO ratio is not sustained over time. Rather, if a family experiences a significant drop in the Income to LICO ratio at one period, the likelihood of another significant drop in the ratio at a subsequent time is reduced. It is more likely that income adequacy will either stabilize through receipt of government transfers such as EI or Social Assistance or simply because they can drop no further (Morisette & Ostrovsky, 2005). Similarly, a significant increase in the income to LICO ratio at one period is not likely to predict a significant increase in the ratio in the subsequent period. Income (in)stability had no significant effects on maternal depression, hence there were no significant indirect effects carried over to other variables in the model. Aside from the addition of the income (in)stability variables, Model 4a was the same as Model 3, and the values of the remaining parameter estimates for those paths repeated from Model 3 remained the same (see Figure 6.4, Table 6.7 and Table 6.8).

Examination of the standardized residuals revealed numerous discrepancies between the observed covariances and the model-implied covariances. Seventeen percent (23 of 136) of the standardized residuals exceeded $\pm$ 1.96, and the values of the standardized residuals ranged from -4.66 to 5.94. The majority of the residuals on the diagonal were low. However, the high residuals on the diagonal for maternal depression at Time 2 (3.02), negative parenting at Time 4 (2.14) and boys' aggressive behaviour at Time 4 (2.24) indicated that the variances of these variables were somewhat inconsistent with the model.

Table 6.7: Model 4a – Income (In)Stability – Direct Effects – *Parameters, Standard Errors, and t-Values*

To	*From*	Unstandardized Effect	Standardized Effect	SE	*t*	SMC
ETA 2 – Difficult Temperament Time 2						**0.28**
	ETA1– Difficult Temperament T1	0.52**	*0.53*	0.06	8.70	
ETA 3 – Aggressive Behaviour Time 3						**0.43**
	ETA2 – Difficult Temperament T2	0.21**	*0.56*	0.02	8.89	
	ETA7 – Negative Parenting T2	0.25*	*0.17*	0.11	2.35	
	ETA11 – Maternal Depression T2	0.11*	*0.16*	0.04	2.57	
ETA 4 – Aggressive Behaviour Time 3						**0.34**
	ETA3 – Aggressive Behaviour T2	0.34**	*0.45*	0.05	6.69	
	ETA8 – Negative Parenting T3	0.25*	*0.20*	0.09	2.69	
	ETA12 – Maternal Depression T3	0.07*	*0.15*	0.03	2.32	
ETA 5 – Aggressive Behaviour Time 4						**0.43**
	ETA4– Aggressive Behaviour T3	0.57**	*0.63*	0.06	9.49	
	ETA9– Negative Parenting T4	0.03	*0.03*	0.09	0.39	
	ETA13 – Maternal Depression T4	0.05	*0.09*	0.03	1.50	
ETA 6 – Negative Parenting Time 1						**0.27**
	ETA1– Difficult Temperament T1	0.04**	*0.37*	0.01	4.54	
	ETA10 – Maternal Depression T1	0.07**	*0.32*	0.02	3.12	
ETA 7 – Negative Parenting Time 2						**0.16**
	ETA2– Difficult Temperament T2	0.04**	*0.17*	0.01	4.54	
	ETA6 – Negative Parenting T1	0.68*	*0.31*	0.26	2.60	
	ETA11 – Maternal Depression T2	0.03	*0.07*	0.04	0.89	
ETA 8 – Negative Parenting Time 3						**0.61**
	ETA2 – Difficult Temperament T2	0.02	*0.07*	0.01	1.66	
	ETA7 – Negative Parenting T2	0.64**	*0.71*	0.08	7.95	
	ETA12 – Maternal Depression T3	0.08**	*0.21*	0.03	3.15	
ETA 9– Negative Parenting Time 4						**0.75**
	ETA2 – Difficult Temperament T2	0.02	*0.07*	0.01	1.66	
	ETA8– Negative Parenting T3	0.80**	*0.83*	0.09	9.34	
	ETA13 – Maternal Depression T4	0.03	*0.07*	0.03	0.95	
ETA11 – Maternal Depression Time 2						**0.48**
	ETA10 – Maternal Depression T1	0.68**	*0.69*	0.06	10.67	
	ETA14 – Income (In)stabilityT2	-0.50	*-0.06*	0.46	-1.09	
ETA12 – Maternal Depression Time 3						**0.26**
	ETA11 – Maternal Depression T2	0.56**	*0.51*	0.07	8.11	
	ETA15 – Income (In)stabilityT3	-0.26	*-0.03*	0.5	-0.51	
ETA13 – Maternal Depression Time 4						**0.30**
	ETA12 – Maternal Depression T3	0.47**	*0.54*	0.05	8.77	
	ETA16 – Income (In)stability T4	-0.13	*-0.03*	0.27	-0.50	
ETA15 – Income (In)stability Time 3						**0.05**
	ETA14 – Income (In)stabilityT2	-0.23**	*-0.22*	0.06	-4.01	
ETA16 – Income (In)stability Time 4						**0.09**
	ETA15 – Income (In)stability T3	-0.47**	*-0.30*	0.08	-5.55	

Table 6.8: Model 4a – Income (In)Stability – Indirect Effects – *Parameters, Standard Errors, and t-Values*

To	*From*	Unstandardized Effect	Standardized Effect	SE	*t*
ETA 3 – Aggressive Behaviour Time 2					
	ETA1 - Difficult Temperament T2	0.12**	*0.33*	0.02	7.07
	ETA2 - Difficult Temperament T3	0.01**	*0.03*	0.02	9.70
	ETA6 - Negative Parenting T2	0.17	*0.05*	0.10	1.74
	ETA10 - Maternal Depression T2	0.09**	*0.13*	0.03	3.10
	ETA11 - Maternal Depression T3	0.01	*0.01*	0.01	0.84
	ETA14 - Income (In)stability T2	-0.06	*-0.01*	0.06	-1.01
ETA 4 – Aggressive Behaviour Time 3					
	ETA1 - Difficult Temperament T1	0.05**	*0.18*	0.01	5.84
	ETA2 - Difficult Temperament T2	0.09**	*0.30*	0.01	6.72
	ETA6 - Negative Parenting T1	0.16*	*0.07*	0.08	2.16
	ETA7 - Negative Parenting T2	0.24**	*0.21*	0.06	3.76
	ETA10 - Maternal Depression T1	0.08**	*0.15*	0.02	4.60
	ETA11 - Maternal Depression T2	0.09**	*0.18*	0.02	4.17
	ETA12 - Maternal Depression T3	0.02*	*0.04*	0.01	2.06
	ETA14 - Income (In)stability T2	-0.04	*-0.01*	0.05	-0.92
	ETA15 - Income (In)stability T3	-0.02	*-0.01*	0.05	-0.50
ETA 5 – Aggressive Behaviour T4					
	ETA1 - Difficult Temperament T1	0.03**	*0.12*	0.01	5.09
	ETA2 - Difficult Temperament T2	0.05**	*0.20*	0.01	5.84
	ETA3 - Aggressive Behaviour T2	0.19**	*0.28*	0.03	5.68
	ETA6 - Negative Parenting T1	0.10*	*0.05*	0.05	2.00
	ETA7 - Negative Parenting T2	0.15**	*0.15*	0.05	3.07
	ETA8 - Negative Parenting T3	0.17*	*0.15*	0.08	2.21
	ETA10 - Maternal Depression T1	0.05**	*0.11*	0.01	4.58
	ETA11 - Maternal Depression T2	0.07**	*0.14*	0.02	4.34
	ETA12 - Maternal Depression T3	0.07**	*0.17*	0.02	3.64
	ETA13 - Maternal Depression T4	0.00	*0.00*	0.00	0.35
	ETA14 - Income (In)stability T2	-0.03	*-0.01*	0.03	-0.92
	ETA15 - Income (In)stability T3	-0.02	*0.00*	0.04	-0.43
	ETA16 - Income (In)stability T4	-0.01	*0.00*	0.01	-0.47
ETA 7 – Negative Parenting Time 2					
	ETA1 - Difficult Temperament T1	0.05**	*0.20*	0.01	3.81
	ETA10 - Maternal Depression T1	0.07*	*0.15*	0.03	2.64
	ETA14 - Income (In)stability T2	-0.02	*0.00*	0.03	-0.69
ETA 8 – Negative Parenting Time 3					
	ETA1 - Difficult Temperament T1	0.04**	*0.18*	0.01	4.33
	ETA2 - Difficult Temperament T2	0.03**	*0.12*	0.01	3.96
	ETA6 - Negative Parenting T1	0.43*	*0.22*	0.17	2.54
	ETA10 - Maternal Depression T1	0.07**	*0.18*	0.02	4.03
	ETA11 - Maternal Depression T2	0.07*	*0.16*	0.03	2.53
	ETA14 - Income (In)stability T2	-0.03	*-0.01*	0.03	-0.84
	ETA15 - Income (In)stability T3	-0.02	*-0.01*	0.04	-0.51

(Table 6.8 continues on next page)

Table 6.8: Model 4a – Income (In)Stability – Indirect Effects (Continued)

To	*From*	Unstandardized Effect	Standardized Effect	SE	*t*
ETA 9– Negative Parenting Time 4					
	ETA1 - Difficult Temperament T1	0.04**	*0.19*	0.01	4.06
	ETA2 - Difficult Temperament T2	0.03**	*0.16*	0.02	4.27
	ETA6 - Negative Parenting T1	0.34*	*0.18*	0.14	2.49
	ETA7 - Negative Parenting T2	0.51**	*0.59*	0.07	6.80
	ETA10 - Maternal Depression T1	0.06**	*0.16*	0.02	4.12
	ETA11 - Maternal Depression T2	0.06*	*0.15*	0.02	2.79
	ETA12 - Maternal Depression T3	0.08**	*0.21*	0.02	3.56
	ETA14 - Income (In)stability T2	-0.03	*-0.01*	0.03	-0.85
	ETA15 - Income (In)stability T3	-0.02	*-0.01*	0.04	-0.46
	ETA16 - Income (In)stability T4	0.00	*0.00*	0.01	-0.44
ETA12 – Maternal Depression Time 3					
	ETA10 - Maternal Depression T1	0.38**	*0.35*	0.06	6.82
	ETA14 - Income (In)stability T2	-0.22	*-0.02*	0.28	-0.79
ETA13 – Maternal Depression Time 4					
	ETA10 - Maternal Depression T1	0.18**	*0.19*	0.03	5.54
	ETA11 - Maternal Depression T2	0.26**	*0.28*	0.04	6.17
	ETA14 - Income (In)stability T2	-0.12	*-0.01*	0.14	-0.88
	ETA15 - Income (In)stability T3	-0.06	*-0.01*	0.26	-0.21
ETA16 – Income (In)stability Time 4					
	ETA14 - Income (In)stability T2	0.11**	*0.07*	0.03	3.26

I observed the following patterns among the standardized residuals. First, the covariance between maternal depression and immediately subsequent depression appeared to be overestimated in the model, whereas the covariances between maternal depression at Time 1 and maternal depression at Time 3 and Time 4 were underestimated. This repeated the pattern that was evident in Model 3, indicating that the addition of income (in)stability to the model did not improve the explanation of the coordination of the variance among the maternal depression concepts. Specifically, since the direct effects appeared to be providing more coordination than these covariances require, it appears that other factors not included in this model, must be contributing some stability to depressive symptoms over time. The standardized residuals also showed that the covariances implied by the current estimates among the income (in)stability variables were consistently overestimated. Thus, as with maternal depression, it appears that other factors outside of the model might be governing these changes.

Modification Indices

The modification indices in both the Beta and Psi matrices suggested adding linkages among all of the income (in)stability variables, indicating that the model did not adequately account for the coordination among these (in)stability variables. In terms of their effects on other variables in the model, the modification indices did not provide support for linking income (in)stability to any additional variables within the model.

With respect to maternal depression, the modification indices suggested freeing the coefficients linking maternal depression at Time 1 to maternal depression at Time 3 (MI = 23.67) and maternal depression at Time 1 to maternal depression at Time 4 (MI = 22.48). The modification indices for the Psi matrix suggested that freeing the errors among these variables would do more to improve model fit. This supported an interpretation that factors outside of the current model may affect the stability of maternal depression over time. Given these findings, and that income (in)stability had no significant effect on maternal depression, it seemed reasonable to continue and examine whether income (in)adequacy was a contributing factor in maternal depression.

Model 4B - Income (In)adequacy

In Model 4B, the concepts of income (in)adequacy at Time 1, Time 2, Time 3, and Time 4 were added to Model 3 with concurrent links to maternal depression. The model used for this analysis is presented in Figure 6.5. This model examined the following hypotheses:

- Lower levels of income adequacy are associated with increased levels of maternal depression.
- Maternal depression mediates the relationship between income (in)adequacy and negative parenting behaviours.

Model 4B Results - Income (In)adequacy

This model failed and resulted in a statistically significant chi-square: Minimum Fit Function χ^2 (106 df) = 219.24, p = 0.00; Normal Theory Weighted Least Squares χ^2 = 210.72, p = 0.00; AGFI = 0.91. The model converged after seven iterations with no indication of problems in the minimization/maximization procedure.

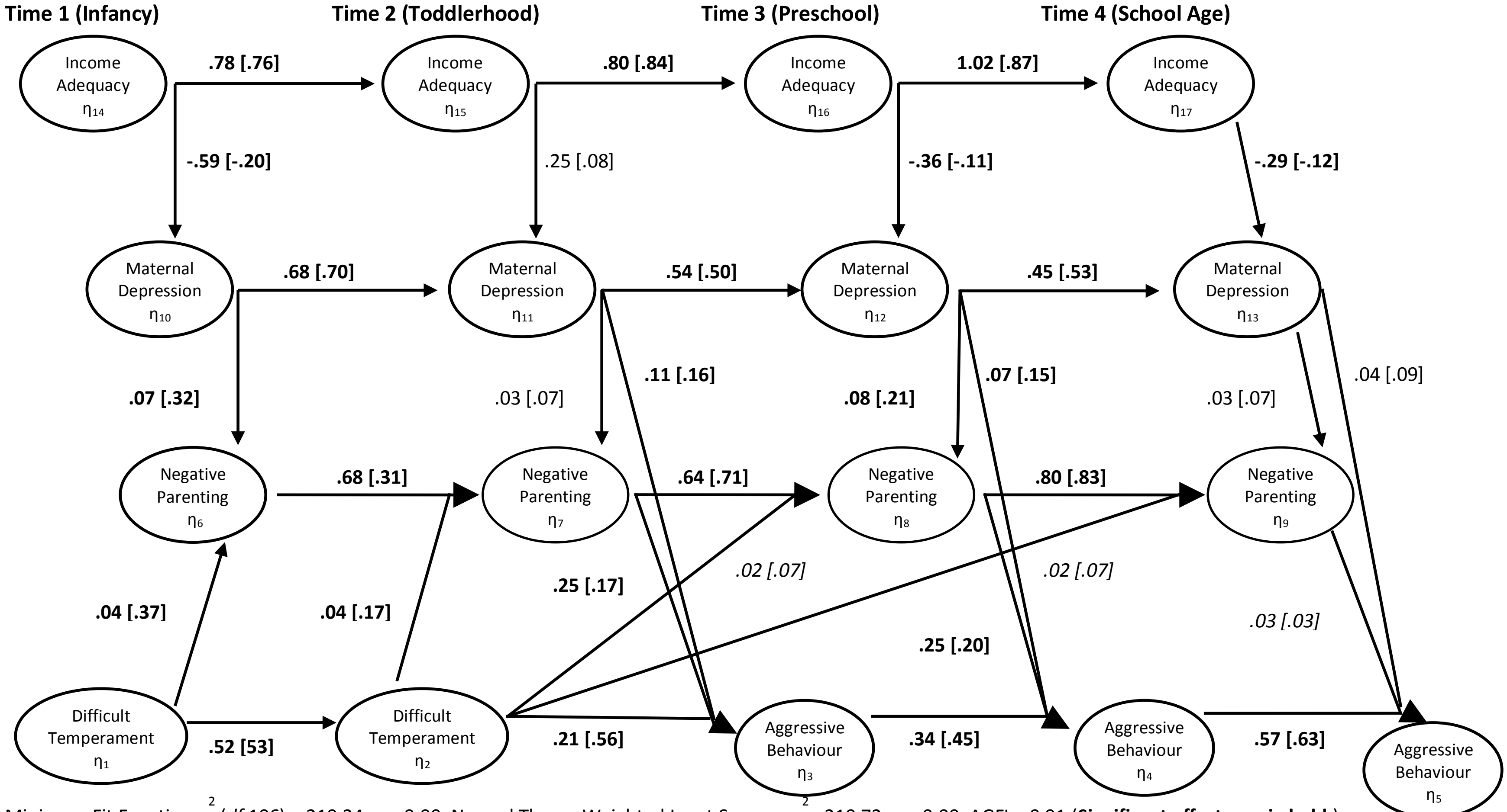
There were only small changes in the parameter estimates for the paths that were included in Model 3 (see Table 6.9). The concurrent effects of income (in)adequacy on maternal depression at Time 1, Time 3, and Time 4 were negative and significant (as income adequacy increased, maternal depression decreased). At Time 2, the effect was positive ($\beta_{11,15}$ = 0.25), which was contrary to my expectations, but it did not quite reach significance (t = 1.52). All parameter estimates for the effect of income (in)adequacy on subsequent income (in)adequacy were positive, substantial, and significant giving evidence of considerable stability in income (in)adequacy over time.

Table 6.10 shows that income (in)adequacy at Time 1 had significant indirect effects on all variables in the model, except for boys' aggressive behaviour at Time 2 and maternal depression at Time 2 as a consequence of the insignificant direct effect of concurrent income (in)adequacy on maternal depression at Time 2. In contrast, there were few significant indirect effects of income (in)adequacy at Time 2, Time 3, and Time 4 on any of the other variables in the model. Income (in)adequacy at Time 2 had significant indirect effects only on maternal depression at Time 4 and on income (in)adequacy at Time 4. Income (in)adequacy at Time 3 had a small, but near significant indirect effects on boys' aggressive behaviour at Time 4 ($\beta_{5,16}$ = -0.04, t = -1.98) as well as a moderate and significant indirect effect on maternal depression at Time 4. There were no significant indirect effects from income (in)adequacy at Time 4.

Almost 20 percent of the standardized residuals (29 of 153) exceeded $\pm$ 1.96 and ranged from -5.90 to 5.92. The pattern of the residuals revealed that the discrepancies between the observed covariances and the model-implied covariances rested primarily with the relationships among the income (in)adequacy variables and among the maternal depression variables. The pattern of residuals for the income (in)adequacy model was similar to the pattern of the income (in)stability model above. The majority of the residuals on the diagonal were low. However, the high residuals on the diagonal for maternal depression at Time 2 (2.62) and Time 3 (2.99), negative parenting at Time 4 (2.21) and boys' aggressive behaviour at Time 4 (2.30) indicated that the model did not account for the variance of these variables well, and there was no improvement from Model 3 in terms of model fit.

As in Model 3, and the income (in)stability model, the covariance between maternal depression and immediately subsequent depression appeared to be overestimated in the model, whereas the covariances between maternal depression at Time 1 and maternal depression at Time 3 and Time 4 were underestimated. Although higher levels of income adequacy had a mild mitigating effect on maternal depression, the effect was not consistent. The repetition of the pattern of residuals in all of the models that included maternal depression indicated that the factors that contribute to the persistence of depression over time were not represented well in these models.

Figure 6.5: Model 4B Difficult Temperament, Aggressive Behaviour, Negative Parenting, Maternal Depression, and Income (In)adequacy (standardized effects in brackets)



Minimum Fit Function χ^2 (*df* 106) = 219.24, p = 0.00; Normal Theory Weighted Least Squares χ^2 = 210.72, p = 0.00; AGFI = 0.91.(**Significant effects are in bold**.) Equality constraints are the same as in previous models.)

Table 6.9: Model 4b-Income (In)Adequacy – Direct Effects

To	*From*	Unstandardized Effect	Standardized Effect	SE	*t*	SMC
ETA 2 – Difficult Temperament Time 2						**0.28**
	ETA1– Difficult Temperament T1	0.52**	*0.53*	0.06	8.69	
ETA 3 – Aggressive Behaviour Time 3						**0.43**
	ETA2 – Difficult Temperament T2	0.21**	*0.56*	0.02	8.90	
	ETA7 – Negative Parenting T2	0.25*	*0.17*	0.11	2.35	
	ETA11 – Maternal Depression T2	0.11*	*0.16*	0.04	2.56	
ETA 4 – Aggressive Behaviour Time 3						**0.34**
	ETA3 – Aggressive Behaviour T2	0.34**	*0.45*	0.05	6.70	
	ETA8 – Negative Parenting T3	0.25*	*0.20*	0.09	2.69	
	ETA12 – Maternal Depression T3	0.07*	*0.15*	0.03	2.32	
ETA 5 – Aggressive Behaviour Time 4						**0.43**
	ETA4– Aggressive Behaviour T3	0.57**	*0.63*	0.06	9.50	
	ETA9– Negative Parenting T4	0.03	*0.03*	0.09	0.39	
	ETA13 – Maternal Depression T4	0.05	*0.09*	0.03	1.49	
ETA 6 – Negative Parenting Time 1						**0.28**
	ETA1– Difficult Temperament T1	0.04**	*0.37*	0.01	4.53	
	ETA10 – Maternal Depression T1	0.07**	*0.32*	0.02	3.16	
ETA 7 – Negative Parenting Time 2						**0.17**
	ETA2– Difficult Temperament T2	0.04**	*0.17*	0.01	4.53	
	ETA6 – Negative Parenting T1	0.68*	*0.31*	0.26	2.63	
	ETA11 – Maternal Depression T2	0.03	*0.07*	0.04	0.90	
ETA 8 – Negative Parenting Time 3						**0.61**
	ETA2 – Difficult Temperament T2	0.02	*0.07*	0.01	1.65	
	ETA7 – Negative Parenting T2	0.64**	*0.71*	0.08	7.95	
	ETA12 – Maternal Depression T3	0.08**	*0.21*	0.03	3.15	
ETA 9– Negative Parenting Time 4						**0.75**
	ETA2 – Difficult Temperament T2	0.02	*0.07*	0.01	1.65	
	ETA8– Negative Parenting T3	0.80**	*0.83*	0.09	9.34	
	ETA13 – Maternal Depression T4	0.03	*0.07*	0.03	0.95	
ETA10 – Maternal Depression Time 1						**0.04**
	ETA14 – Income (In)adequacyT1	-0.59**	*-0.20*	0.18	-3.30	
ETA11 – Maternal Depression Time 2						**0.47**
	ETA10 – Maternal Depression T1	0.68**	*0.70*	0.07	10.51	
	ETA15 – Income (In)adequacyT2	0.25	*0.08*	0.16	1.52	
ETA12 – Maternal Depression Time 3						**0.26**
	ETA11 – Maternal Depression T2	0.54**	*0.50*	0.07	7.88	
	ETA16 – Income (In)adequacyT3	-0.36	*-0.11*	0.19	-1.90	
ETA13 – Maternal Depression Time 4						**0.30**
	ETA12 – Maternal Depression T3	0.45**	*0.53*	0.05	8.46	
	ETA17– Income (In)adequacy T4	-0.29*	*-0.12*	0.14	-2.12	
ETA15 – Income (In)adequacy Time 2						**0.61**
	ETA14 – Income (In)adequacyT2	0.76**	*0.78*	0.04	20.74	
ETA16 – Income (In)adequacy Time 3						**0.71**
	ETA15 – Income (In)adequacyT2	0.80**	*0.84*	0.03	25.04	
ETA17 – Income (In)adequacy Time 4						**0.77**
	ETA16 – Income (In)adequacyT3	1.02**	*0.87*	0.04	28.05	

Table 6.10: Model 4b-Income (In)Adequacy – Indirect Effects

To	*From*	Unstandardized Effect	Standardized Effect	SE	*t*
ETA 3 – Aggressive Behaviour Time 2					
	ETA1 - Difficult Temperament T1	0.12**	0.33	0.02	7.07
	ETA2 - Difficult Temperament T2	0.01*	0.03	0.00	2.14
	ETA6 - Negative Parenting T1	0.17	0.05	0.10	1.74
	ETA10 - Maternal Depression T1	0.09**	0.14	0.03	3.10
	ETA11 - Maternal Depression T2	0.01	0.01	0.01	0.85
	ETA14 - Income (In)adequacy T1	-0.03	-0.02	0.02	-1.47
	ETA15 - Income (In)adequacy T2	0.03	0.01	0.02	1.33
ETA 4 – Aggressive Behaviour Time 3					
	ETA1 - Difficult Temperament T1	0.05**	0.18	0.01	5.84
	ETA2 - Difficult Temperament T2	0.09**	0.30	0.01	6.72
	ETA6 - Negative Parenting T1	0.16*	0.07	0.08	2.17
	ETA7 - Negative Parenting T2	0.24**	0.21	0.06	3.75
	ETA10 - Maternal Depression T1	0.07**	0.15	0.02	4.58
	ETA11 - Maternal Depression T2	0.09**	0.18	0.02	4.15
	ETA12 - Maternal Depression T3	0.02*	0.04	0.01	2.06
	ETA14 - Income (In)adequacy T1	-0.05*	-0.03	0.02	-2.23
	ETA15 - Income (In)adequacy T2	0.00	0.00	0.02	-0.12
	ETA16 - Income (In)adequacy T3	-0.03	-0.02	0.02	-1.62
ETA 5 – Aggressive Behaviour Time 4					
	ETA1 - Difficult Temperament T1	0.03**	0.12	0.01	5.10
	ETA2 - Difficult Temperament T2	0.05**	0.20	0.01	5.84
	ETA3 - Aggressive Behaviour T2	0.19**	0.28	0.03	5.69
	ETA6 - Negative Parenting T1	0.11*	0.05	0.05	2.01
	ETA7 - Negative Parenting T2	0.15**	0.15	0.05	3.06
	ETA8 - Negative Parenting T3	0.17*	0.15	0.08	2.21
	ETA10 - Maternal Depression T1	0.05**	0.11	0.01	4.56
	ETA11 - Maternal Depression T2	0.07**	0.14	0.02	4.32
	ETA12 - Maternal Depression T3	0.07**	0.17	0.02	3.64
	ETA13 - Maternal Depression T4	0.00	0.00	0.00	0.36
	ETA14 - Income (In)adequacy T1	-0.04*	-0.03	0.02	-2.46
	ETA15 - Income (In)adequacy T2	-0.02	-0.01	0.02	-0.89
	ETA16 - Income (In)adequacy T3	-0.04	-0.03	0.02	-1.98
	ETA17 - Income (In)adequacy T4	-0.01	-0.01	0.01	-1.25
ETA 6 – Negative Parenting Time 1					
	ETA14 - Income (In)adequacy T1	-0.04*	-0.07	0.02	-2.30
ETA 7 – Negative Parenting Time 2					
	ETA1 - Difficult Temperament T1	0.05**	0.20	0.01	3.82
	ETA10 - Maternal Depression T1	0.07*	0.15	0.03	2.66
	ETA14 - Income (In)adequacy T1	-0.03*	-0.03	0.02	-2.00
	ETA15 - Income (In)adequacy T2	0.01	0.01	0.01	0.77

(Table 6.10 continues on next page)

Table 6.10: Model 4b-Income (In)Adequacy – Indirect Effects (Continued)

To	*From*	Unstandardized Effect	Standardized Effect	SE	*t*
ETA 8 – Negative Parenting Time 3					
	ETA1 - Difficult Temperament T1	0.04**	0.18	0.01	4.33
	ETA2 - Difficult Temperament T2	0.03**	0.12	0.01	3.95
	ETA6 - Negative Parenting T1	0.44*	0.22	0.17	2.57
	ETA10 - Maternal Depression T1	0.07**	0.18	0.02	4.01
	ETA11 - Maternal Depression T2	0.07*	0.16	0.03	2.49
	ETA14 - Income (In)adequacy T1	-0.05*	-0.04	0.02	-2.51
	ETA15 - Income (In)adequacy T2	-0.01	-0.01	0.02	-0.40
	ETA16 - Income (In)adequacy T3	-0.03	-0.02	0.02	-1.63
ETA 9– Negative Parenting Time 4					
	ETA1 - Difficult Temperament T1	0.04**	0.19	0.01	4.06
	ETA2 - Difficult Temperament T2	0.03**	0.16	0.01	4.26
	ETA6 - Negative Parenting T1	0.35*	0.18	0.14	2.52
	ETA7 - Negative Parenting T2	0.51**	0.59	0.07	6.81
	ETA10 - Maternal Depression T1	0.06**	0.16	0.02	4.09
	ETA11 - Maternal Depression T2	0.06*	0.15	0.02	2.74
	ETA12 - Maternal Depression T3	0.08**	0.21	0.02	3.56
	ETA14 - Income (In)adequacy T1	-0.05**	-0.04	0.02	-2.57
	ETA15 - Income (In)adequacy T2	-0.01	-0.01	0.02	-0.82
	ETA16 - Income (In)adequacy T3	-0.04	-0.03	0.02	-1.80
	ETA17 - Income (In)adequacy T4	-0.01	-0.01	0.01	-0.87
ETA11 – Maternal Depression Time 2					
	ETA14 - Income (In)adequacy T1	-0.22	-0.08	0.16	-1.38
ETA12 – Maternal Depression Time 3					
	ETA10 - Maternal Depression T1	0.37**	0.34	0.06	6.64
	ETA14 - Income (In)adequacy T1	-0.34*	-0.11	0.14	-2.46
	ETA15 - Income (In)adequacy T2	-0.15	-0.05	0.17	-0.92
ETA13 – Maternal Depression Time 4					
	ETA10 - Maternal Depression T1	0.17**	0.18	-0.03	5.37
	ETA11 - Maternal Depression T2	0.24**	0.26	0.04	5.96
	ETA14 - Income (In)adequacy T1	-0.34**	-0.13	0.1	-3.28
	ETA15 - Income (In)adequacy T2	-0.31*	-0.11	0.13	-2.39
	ETA16 - Income (In)adequacy T3	-0.46*	-0.16	0.16	-2.96
ETA16 – Income (In)adequacy Time 3					
	ETA14 - Income (In)adequacy T1	0.61**	0.66	0.04	16.66
ETA16 – Income (In)adequacy Time 4					
	ETA14 - Income (In)adequacy T1	0.63**	0.57	0.04	14.79
	ETA15 - Income (In)adequacy T2	0.82**	0.74	0.04	19.76

The patterns of the standardized residuals among the income (in)adequacy variables indicated that the relationships among these variables over time were complex and they were not addressed well in this model. The pattern of residuals was similar to the pattern observed for the maternal depression variables. The covariances of the consecutive income (in)adequacy variables were "overestimated," while non-adjacent covariances were "underestimated." In addition, the pattern of the residuals for the estimation of the variances at each period was not consistent. Thus other factors external to the model may govern these changes, indicating that averaging income over time would mask these effects.

Although the residuals indicate that other factors outside the model contributed to the differences in income (in)adequacy over time, the squared multiple correlations provided evidence that a large amount of the variance in the income (in)adequacy variables was explained by stability in the income (in)adequacy variables (Time 2 = 61%; Time 3 = 71%; Time 4 = 77%). However, there was no increase from Model 3 in the amount of explained variance for any of the other concepts in the model.

MODIFICATION INDICES

The modification indices for the Beta matrix suggested freeing the coefficients linking maternal depression at Time 1 to maternal depression at Time 3 (MI = 20.56) and to maternal depression at Time 4 (MI = 20.47), as was observed previously. In the Psi matrix the modification indices suggested freeing the corresponding error covariances between the maternal depression variables (MI = 9.20 for Time 1 maternal depression error with Time 2 maternal depression error; MI = 24.25 for Time 1 maternal depression error with Time 3 maternal depression error; MI = 19.75 for Time 1 maternal depression error with Time 4 maternal depression error). Theoretically, it is reasonable to assume that income is not the only cause of maternal depression, and that elements outside of the model contribute to maternal depression. Genetic, biological, and environmental attributes have all been implicated with maternal depression (Patten et al., 2006; Zimmer et al., 2003), thus linking the errors of the maternal depression concepts in the model would serve to account for these common causes of maternal depression.

Additional complexity remained when considering the modification indices relating to the income (in)adequacy variables. The Beta modification indices suggested that the coefficients for the relationship between income (in)adequacy at Time 1 and Time 4 (MI = 23.13) and between income (in)adequacy at Time 2 and Time 4 (MI = 35.07) should be freed. However, the Psi matrix modification indices suggest freeing the errors for income (in)adequacy at Time 1 and Time 4 (MI = 21.13) and Time 3 and Time 4 (MI = 35.07). These systematic differences in patterns provide another indication of the complexity of the causal factors associated with income (in)adequacy. However, the implications of freeing additional coefficients in the model for improving the explanation of other variables in the model was not clear since there was a general absence of modification indices connecting income (in)adequacy to those variables.

Model 4 Summary

The initial model that included all of the concepts I had used to represent economic (in)security failed, and the information from the residuals and the modification indices showed that further modifications were not likely to improve that model. I tested two additional economic models: the first included only the concept of income (in)stability and the second included only the concept of income (in)adequacy.

The modification indices for the Beta and Psi matrices also suggested that additional modifications could be made to the relationships among the maternal depression variables and the income (in)adequacy variables. However, based on values of expected change it was not clear how these modifications could best be made. This was further indication of the complexity of the causal factors involved with the income (in)adequacy variables and with the maternal depression variables.

Summary of results

In the first model, I examined the persistence of difficult temperament from infancy to toddlerhood, and the effect of difficult temperament on behaviour in toddlerhood. I also examined the persistence of aggressive behaviour from toddlerhood through to school age. This model fit the data marginally well and results indicated that boys' difficult temperament and aggressive behaviour in infancy and toddlerhood predict aggressive behaviour in boys through the preschool years.

I added parenting behaviours to the second model to test their effects on the development of aggressive behaviour in boys and to test the effect of boys' difficult temperament on parenting behaviour. This model also marginally fit the data. As with aggressive behaviour in boys, negative parenting behaviours persisted, and the effect of parenting behaviour on subsequent parenting behaviour increased over time. In addition, there were moderate positive and significant direct effects of early difficult temperament on negative parenting behaviours, indicating that boys' difficult temperament contributed to mothers' negative parenting behaviours in infancy and toddlerhood. In addition, early difficult temperament had significant indirect effects on later negative parenting. However, the direct effects of boys' difficult temperament in toddlerhood on negative parenting when boys were preschool and school age were not significant.

There was a positive effect of mothers' negative parenting on boys' aggressive behaviour, indicating that higher levels of mothers' negative parenting contributed to higher levels of boys' aggressive behaviour. The concurrent effects of mothers' negative parenting on boys' aggressive behaviour in toddlerhood and at preschool age were about equal in magnitude, whereas mothers' negative parenting at school age (Time 4) had negligible effects on their sons' aggressive behaviour. There was a consistent pattern showing that indirect effects of early negative parenting behaviour had equal or stronger effects than did concurrent effects of later negative parenting. Negative parenting in infancy had a small, but significant, indirect effect, through negative parenting and boys' aggressive behaviour from toddlerhood to school age, on boys' aggressive behaviour at school age (Time 4). This effect was larger than the concurrent, insignificant, direct effect of negative parenting when the boys were school-aged. In addition, the standardized indirect effects of negative parenting in toddlerhood (through boys' aggressive behaviour in toddlerhood and negative parenting at preschool age and) on boys' aggressive behaviour at preschool age were equal in magnitude to the standardized direct effect of negative parenting at preschool age. Finally, the standardized indirect effects of negative parenting in toddlerhood and at preschool age on boys' aggressive behaviour (through subsequent negative parenting and boys' aggressive behaviour) were nearly equal when boys were school-aged.

In the third model, I added maternal depression as concurrent predictors of negative parenting at Time 1, Time 2, Time 3, and Time 4. This model did not fit the data well. Maternal depression demonstrated some persistence over time; however, the persistence of maternal depression decreased slightly from one measurement period to the next. This decrease in effects of previous depression on subsequent depression resulted in difficulty modeling the persistence of maternal depression over time. It was this difficulty, and not the relationship between maternal depression and the other variables in the model that contributed most to the ill fit of the model. Although the effect of maternal depression on negative parenting behaviour was not consistent over time, maternal depression had small but consistent direct effects on boys' aggressive behaviour. As with negative parenting, by the time the boys were six years old, concurrent effects were no longer significant.

Initially, the intent was to add four income concepts (income (in)stability, income (in)adequacy, income source, and employment (in)stability) to represent economic (in)security. This model was attempted, but the model failed. The complexity arising from the simultaneous addition of so many similar variables and doubling the size of the model made it difficult to approach modifications to the model. As an alternative, two additional models were tested. The first added only income (in)stability to the third model described above. This model also failed, and there was no indication that modifications to the model would improve its fit given the lack of significant effects of income (in) stability on maternal depression.

For the second income model, I added only income (in)adequacy concepts to the model. This model also failed. Income (in)adequacy did have small, but significant effects on maternal depression, with higher levels of income inadequacy predicting higher levels of maternal depression; however, these effects were not consistent over time. At Time 1, income (in)adequacy had a moderate negative and significant effect on maternal depression, so more adequate income produced less depression. At Time 2, the effect of income (in)adequacy on maternal depression was positive but not significant. At Time 3 and 4, the effects were again negative and significant (see Figure7). There is no clear explanation for the small positive effect of inadequate income on maternal depression at Time 2. Examination of the univariate statistics showed that the means for both income (in)adequacy and maternal depression decreased from Time 1 to Time 2. Income (in)adequacy increased from Time 2 to Time 3 to Time 4 but did not provide clear evidence of differences in levels or distribution of maternal depression or income (in)adequacy that might have contributed to this effect. However, the sample mean for income (in)adequacy was lowest at Time 2, and the sample mean for maternal depression had decreased in comparison with the Time 1 sample mean (see Table 5.3). At subsequent periods, the mean for income (in)adequacy increased (meaning income increased) while the mean for maternal depression decreased. It may be that, at that point, the decrease in income accompanied by a decrease in levels of maternal depression changed the direction of the effect of income (in)adequacy on maternal depression.

The greatest ill fit of the final model was concentrated among the persistence of depression and the persistence of income (in)adequacy rather than in the covariances between “different” variables. That is, the connection between the variables of boys’ aggressive behaviour, boys’ difficult temperament, mothers’ negative parenting , maternal depression, and income (in)adequacy seems better characterized by the model than do the over-time changes in just maternal depression or just income (in)adequacy.

CHAPTER 7: DISCUSSION

In this study, I used the Process-Person-Context-Time (PPCT) model (Bronfenbrenner, 1995; Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris, 2006) as a framework for examining the development of aggressive behaviour in boys from infancy to school entry. Following Patterson's model of coercive cycles (Patterson, 2002; Reid & Patterson, 1989), I proposed that boys' characteristics of difficult temperament and early aggressive behaviour, along with the proximal process of mothers' negative parenting behaviours would act as contributors to aggressive behaviour both concurrently and longitudinally. Based on Conger and Elder's family economic stress model (Conger & Elder, 1994) I also proposed that the proximal context of maternal depression would mediate the effects of the more distal context of economic (in)security on negative parenting behaviours and boys' aggressive behaviour. I used a repeated measures longitudinal study design that included indicators at each measurement period of all the concepts hypothesized to influence the outcome variable. The study spanned six years from infancy to school age using a sample of boys in two-parent families. The data for the analysis came from the first four cycles of the NLSCY, a national longitudinal survey being conducted by Statistics Canada to collect information on the development and well-being of Canadian children. The study design allowed for examination of both cross-sectional and longitudinal effects of factors contributing to the development of aggressive behaviour in boys from infancy to school entry. Individually, all of these variables have been established as influences on the development of aggressive behaviour, but prior to this study, they had not been examined together in this way employing Bronfenbrenner's Process-Person-Context-Time model.

I selected the sample to eliminate some potential contributors to aggressive behaviour from the model that may have confounded the results (i.e., single parents, foster and adoptive parents, recent immigrants, activity limitations, twins). All measures of mothers' and boys' behaviours were based on mothers' reports raising some concern about common method bias. However, the correlations among the related indicators over four measurement periods, while consistent, were small to moderate and ranged from 0.14 to 0.52. The patterns of effects observed in this study were consistent with findings from observational studies (Rubin et al., 2003; Shaw et al., 1998).

I used three theoretical models to frame the research for this dissertation. The bioecological PPCT model of human development was the overarching framework for examining early childhood processes that lead to the development of aggressive behaviour in boys. In the bioecological model, person, process, context, and time are viewed as elements that are necessary for understanding development. Under this framework, I used Patterson's model of coercive cycles and Conger and Elder's family economic stress model to focus my study on potential process pathways through which children develop and maintain aggressive behaviour. The model of coercive cycles addresses how person characteristics and proximal processes contribute to the development of aggressive behaviour in boys. The family economic stress model accounts for the contextual effects on proximal processes and boys' behavioural development. In the following sections, I address the implications of the findings from the current study for these theoretical models.

As discussed in the previous chapter, problems with the full economic (in)security model that included source of income, employment (in)stability, income (in)stability, and income (in)adequacy, prompted me to revise my proposed model. Except for income (in)adequacy, none of the economic (in)security concepts had significant effects on maternal depression. Although there were no significant effects from income (in)stability to maternal depression in the full economic (in)security model, I did test a model with income (in)stability. I reasoned that the effects of income (in)stability may have been attenuated by the presence of income (in)adequacy in the full model, since the income (in)stability indicator was derived from the indicators for income (in)adequacy. However, this model failed, and examination of the standardized residuals and modification indices suggested that additional modifications to the model would not result in any significant model improvement.

In the final model, I included only the income (in)adequacy concept as a distal context influencing negative parenting and boys' aggressive behaviour through its effect on maternal depression. Although the revised final model also failed, income (in)adequacy had significant effects on maternal depression when the children were infants and school age, but not when the children were toddlers or preschool age. In addition, income (in)adequacy when the boys were infants had small, but significant, indirect effects on all of the other variables in the model, except maternal depression when the boys were toddlers. The final model accounted for 43 percent of the variance in boys' aggressive behaviour at school entry.

The findings of my analyses confirmed the conceptual hypotheses that influences of person, process, and the proximal context of maternal depression affected the development of aggressive behaviour. The persistence of boys' difficult temperament and early aggressive behaviour (Person) and mothers' negative parenting

(Process) over time provided the strongest explanation of the development of aggressive behaviour in boys. The contextual concepts of maternal depression and income (in)adequacy did have significant indirect effects on the proximal process of mothers' negative parenting behaviours and boys' aggressive behaviour at school age. However, they did not add substantially to the explained variance in boys' aggressive behaviour, when the boys reached school age, over and above what was explained by the process and person variables. Furthermore, the addition of contextual variables of maternal depression and income (in)adequacy compromised the fit of the overall structural model. This ill fit was primarily the result of difficulty modeling the persistence of maternal depression over time, as opposed to difficulty modeling the relationships between income (in)adequacy and maternal depression and the other variables in the model.

In the following sections, I review, in turn, the implications of the study results in terms of the proposed hypotheses in relation to person, process, context, and time. This is followed by a discussion of the implications of my findings for policy and practice related to the development of children's aggressive behaviour. I then address the limitations of the study and directions for future research. The discussion is based on the results from Model 3, presented in Tables 6.5 and 6.6, as the estimates changed little from Model 1 to Model 3. The results Model 4b addressing income (in)adequacy, presented in Tables 6.9 and 6.10, will be referenced when these variables are discussed.

Person

- Early aggressive behaviour in boys predicts their later aggressive behaviour.
- Difficult temperament contributes to the development of aggressive behaviour.

Consistent with research examining developmental trajectories of aggressive behaviour (Alink et al., 2006; Campbell et al., 2006; Côté et al., 2006; Tremblay et al., 2004), the sample means in this study showed boys had higher levels of aggressive behaviour in toddlerhood than at preschool or school age. Studies using observational measures (Shaw et al., 1998; Shaw et al., 2005), teacher report (Miller-Lewis et al., 2006; Shaw et al., 2003), maternal report (Côté et al., 2006; Miller-Lewis et al., 2006; Owens & Shaw, 2003; Shaw et al., 1998; Tremblay et al., 2004), and combined parent and teacher reports (Vitaro et al., 2006) also show that frequency of aggressive behaviour in children and youth is highest between age two and three (Alink, et al., 2006; Tremblay, 2004). This is the period of development when children begin to express their autonomy, and it is often manifested through aggressive and oppositional behaviour (Cichetti, 1988; Lahey et al., 1999).

The findings from my study indicated that, as hypothesized, although there was an overall decrease in levels of boys' aggressive behaviour from toddlerhood to school entry, the relative standing of aggressive behaviour persisted over time. The persistence of aggressive behaviour from toddlerhood to preschool age was not as strong as its persistence from preschool to school age for the children in this sample. These findings are consistent with research on trajectories of aggressive behaviour showing that, as children move from toddlerhood to school age, levels of aggressive behaviour decrease for the majority of them (Côté et al., 2006; Owens & Shaw, 2003; Tremblay et al., 2004). However, those children who do not show a decrease continue to maintain high levels of aggressive behaviour, not only through to school entry (Côté et al., 2006; Lavigne et al., 1998a; Owens & Shaw, 2003; Tremblay et al., 2004), but well into the school years (Shaw et al., 2005).

The results indicated that temperamental characteristics persisted from infancy to toddlerhood. Difficult temperament in infancy alone accounted for 27 percent of the variance in difficult temperament two years later. This is consistent with other evidence that temperament exhibits moderate stability over time (Caspi et al., 2005; Keenan et al., 1998; Lemery et al., 1999; Rothbart & Bates, 2006; Rothbart, Derryberry & Hershey, 2000; Saudino, 2005).

The results also indicated that difficult temperament was an antecedent to development of aggressive behaviour in boys. Difficult temperament in infancy and at age two had significant indirect and direct effects, respectively, on aggressive behaviour at age two. The results of the current study showed that difficult temperament affected concurrent aggressive behaviour in toddlerhood, and that its effect on aggressive behaviour at preschool and school age occurred indirectly through this earlier effect on aggressive behaviour. These effects were evident in the first model I tested, where the effects of difficult temperament accounted for almost 40 percent of the variance in boys' aggressive behaviour at age two. In subsequent models, the addition of other explanatory variables did not diminish the effects of difficult temperament on aggressive behaviour. Other researchers have also found that difficult temperament has independent effects on aggressive behaviour (Miller-Lewis et al., 2006; Rothbart & Bates, 2006; van Zeijl et al., 2007; Vitaro et al., 2006), suggesting difficult temperament in early childhood has enduring effects on the development of aggressive behaviour in the preschool years (Bates, 2001; Dodge et al., 2006; Guerin et al., 1997; Muris &

Ollendick, 2005; Olson et al., 2000; Rubin et al., 2003; Shaw et al., 2001, Trentacosta & Shaw, 2008).

Findings from the current study, and the research on trajectories of aggressive behaviour, point to the importance of including children's characteristics as both predictors and outcomes in the study of development. To understand what contributes to persistence of aggressive behaviour to school entry, I examined the relationships among key predictors of aggressive behaviour, both in terms of the persistence of the predictors themselves, the persistence of the relationships among predictors, and the persistence of their influence on aggressive behaviour over time.

PROCESS

- BOYS' DIFFICULT TEMPERAMENT CONTRIBUTES TO MOTHERS' NEGATIVE PARENTING BEHAVIOURS.
- MOTHERS' NEGATIVE PARENTING BEHAVIOURS CONTRIBUTE TO THE DEVELOPMENT OF BOYS' AGGRESSIVE BEHAVIOUR.

At each measurement period in the study, difficult temperament was linked directly to negative parenting. Concurrent measures of difficult temperament were used in infancy and toddlerhood, and difficult temperament in toddlerhood was linked to negative parenting at preschool and school age. Difficult temperament had significant, direct effects on negative parenting in infancy and toddlerhood, which is consistent with longstanding evidence that difficult temperament contributes to negative parenting behaviours (Belsky, 1984; Collins et al., 2000; Morris et al., 2002; Thomas & Chess, 1989). In this study, the effects of difficult temperament on negative parenting diminished over time, and when the boys were at preschool and school age, the effect was small and no longer significant. This may have been because I was not able to use concurrent measures of temperament for the children when they were preschool and school age, since the NLSCY does not contain these measures. Concurrent measures of temperament at each period may have revealed a stronger relationship between difficult temperament and negative parenting in these later periods, as has been shown in other research with older children (Morris et al. 2002). However, the diminishing effect over time is consistent with the pattern of diminishing effects over time for other predictors in the model. It may be that difficult temperament contributes to increased negative parenting in infancy and toddlerhood, but its effect diminishes over time as negative parenting behaviours become entrenched. This interpretation is consistent with Patterson's view that the process of coercive cycles between a mother and child is initiated in the first few years of the child's life (Patterson, 2002).

Turning to negative parenting, the results showed that mothers' negative parenting behaviour had similar persistence to boys' aggressive behaviour. As time went on, the effect of previous negative parenting behaviour on subsequent negative parenting increased in magnitude. This persistence suggests that mothers' negative parenting, like boys' aggressive behaviour, becomes entrenched over time. These findings are consistent with other researchers' findings that parenting behaviours persist over time and appear to become habitual (Dallaire & Weinraub, 2005; O'Leary et al., 1999; Smeekens et al., 2007). In addition, the model accounted for increasing proportions of explained variance in negative parenting over time. By the time the children were school age, the model explained 76 percent of the variance in negative parenting.

As hypothesized, negative parenting did contribute to the development of aggressive behaviour in boys. Negative parenting had significant, moderate effects on aggressive behaviour in toddlerhood and at preschool age. In addition, the indirect effects of negative parenting when boys were toddlers or preschool age on boys' later aggressive behaviour were significant and consistent in magnitude over time. The finding that early parenting had long-term effects on the development of aggressive behaviour is consistent with other research findings (Côté et al, 2006, 2007; Morrell & Murray, 2003; Romano et al., 2005; Rubin et al., 2003; Vitaro et al., 2006). For example, Côté and her colleagues (2006), in their study of trajectories of the development of aggressive behaviour in children from two to eight years, also found that hostile parenting at age two was a strong predictor of the development and maintenance of physical aggression in children.

Contrary to my expectations, the persistence of negative parenting did not result in increasing the concurrent effects of negative parenting on boys' aggressive behaviour when they were older. In fact, the magnitude of effects decreased, rather than remaining stable or increasing over time, and the concurrent effect of negative parenting on boys' aggressive behaviour at school age was small and insignificant. Although I did not find any research that had included repeated measures of negative parenting from infancy to school age, I assumed that the concurrent effects of negative parenting on boys' aggressive behaviour would persist over time. Findings from other longitudinal research with older children that included measures of parenting over time have shown significant concurrent effects of negative parenting on aggressive behaviour in the early school years (McLeod & Shanahan, 1993; Thomas, 2004). Furthermore, findings from cross-sectional research, suggest that negative parenting has an effect on children's aggressive behaviour at all ages (Eamon, 2001; Miller et al., 2002; Romano et al., 2005). For example, Miller et al. (2002), in their cross-sectional study of two- to three-year-old and eight- to nine-year-old children found that there was a significant relationship between harsh parenting and children's physical aggression for both age groups, which is not consistent with the insignificant effect of negative parenting on physically aggressive behaviour at age six found in the current study. However, because Miller et al. (2002) used a cross-sectional design, the significance of the relationship between harsh parenting and physical aggression for the children in the older age group may have been present because the model did not account for the persistence of earlier harsh parenting and earlier boys' aggressive behaviours (Anstey & Hofer, 2004).

Although the direct effects of difficult temperament on negative parenting diminished over time, there were consistent significant, moderate indirect effects of difficult temperament in infancy and toddlerhood on negative parenting. In turn, this pattern of significant indirect effects of difficult temperament on negative parenting carried over to a similar pattern of significant indirect effects of difficult temperament on boys' aggressive behaviour. This pattern of diminishing direct effects is consistent with findings from other studies where researchers have found the addition of other explanatory variables reduced the direct effect of difficult temperament on later aggressive behaviour suggesting that negative parenting may mediate the relationship between difficult temperament and aggressive behaviour (Owens & Shaw, 2003; Tremblay et al., 2004; Trentacosta & Shaw, 2008).

The findings from this study are supported by Patterson's model of coercive cycles. Patterson notes that the effect of instigators of coercive cycles will wane over time, yet the coercive cycle is maintained (Reid & Patterson, 1989). Results of the current study provide evidence of early influences that remain consistent through the processes they instigated. The concurrent direct effects of income (in)adequacy on maternal depression, and maternal depression on negative parenting were largest when the children were infants. While these concurrent effects weakened over time, the indirect effects of these contextual variables in infancy persisted over time.

CONTEXT

In this study, I used the Family Economic Stress theory to guide my conceptualization of economic (in)security and its potential effects on the development of aggressive behaviour in boys as mediated by maternal depression. In my conceptualization, I focused on employment (in)stability, income (in)stability, source of income, and income (in)adequacy as contributors to maternal depression, which was hypothesized to mediate the effects of economic (in)security on the development of boys' aggressive behaviour. I was not able to test this model adequately because the full economic (in)security model failed and it was not possible to gain a clear interpretation of the findings from the model. In this full model, only income (in)adequacy had significant effects on maternal depression. I tested two revised models, one using income (in)stability and a second using income (in)adequacy, to see if a simpler model would provide more interpretable results. The income (in)stability model failed, and there were no significant effects of income (in)stability on maternal depression. As a result, income (in)adequacy was the only concept related to economic (in)security that was examined as a contributor to the development of boys' aggressive behaviour. In the following sections, I first discuss the findings related to the context of maternal depression, and then those related to the concept of income (in)adequacy, with the hypotheses related to contextual effects revised to reflect the findings from the income (in)adequacy model.

- Higher levels of maternal depression are associated with increased levels of negative parenting behaviours.

Consistent with other research, the sample means for maternal depression decreased as the children in the sample got older, indicating that, overall, mothers reported higher levels of maternal depression when their children were infants and toddlers (Campbell et al., 2007; Lavigne et al., 1998b; McLennan et al. 2001). Although all of the direct effects of maternal depression on subsequent maternal depression were large, the magnitude of the effect size decreased over time, which was in contrast to the increasing magnitude of persistence that was found for boys' aggressive behaviour and mothers' negative parenting. In addition, the explained variance for maternal depression when the children were toddlers was higher than the explained variance of maternal depression when the children were older. The addition of maternal depression to the model resulted in significant ill fit, which was related to the difficulty in modeling the persistence of maternal depression over time. These results suggest that factors not included in the model play a role in the maintenance of maternal depression. There is evidence that individuals are genetically predisposed to depression, and that environmental factors may act to evoke depression, or to suppress it (Silberg & Rutter, 2002). For example, drug therapy or counselling treatment may serve to reduce depressive symptoms (Klein, Shankman & Rose, 2008; Silberg & Rutter, 2002), but other factors, such as marital conflict, parenting stress (Malik et al. 2007), and loss of employment or income, may act to increase depressive symptoms (Dearing et al., 2004). Even though localized within the model, the ill fit of the model resulting from the addition of maternal depression makes it difficult to draw firm conclusions about the effects of maternal depression on mothers' negative parenting and boys' aggressive behaviour, and the results of this model should be interpreted with caution.

I examined the hypothesis that higher levels of maternal depression result in increased levels of negative parenting in the third model. The pattern of effects of maternal depression on parenting behaviour did not provide consistent support for this hypothesis. Maternal depression had moderate but significant direct effects on parenting when the boys were infants and when they were preschool age, but when the boys in the sample were toddlers and school-aged, the effects were small and non-significant. However, maternal depression in infancy, toddlerhood, and preschool had significant indirect effects on all subsequent parenting through its effects on earlier parenting. These significant indirect effects were likely due in part to the large direct effects of negative parenting on subsequent parenting from one period to the next. The lack of significant direct effects of maternal depression on negative parenting at school age was similar to the reduction of the direct effects of negative parenting on boys' aggressive behaviour at this age. This reinforces an interpretation that, by the time the boys reached school age, mothers' negative parenting and boys' aggressive behaviour are well-established, and patterns of interaction between mothers and their sons are entrenched, thus diminishing the influence of variations in context on mothers' behaviour.

In addition to examining the effects of maternal depression on mothers' negative parenting, I also examined the direct and indirect effects of maternal depression on boys' aggressive behaviour. Despite the difficulty in modeling the persistence of maternal depression over time, there were significant concurrent direct effects of maternal depression on boys' aggressive behaviour from infancy to preschool age. Although I did not originally hypothesize a direct effect from maternal depression to boys' aggressive behaviour, the results of these modifications to the model showed the direct effects of maternal depression on boys' aggressive behaviour were more consistent than the direct effects of maternal depression on negative parenting. The results are supported by other research showing that maternal depression in early childhood and concurrent maternal depression are associated with children's externalizing problems in the school years (Lavigne et al., 1998b; Luoma et al. 2004; Munson et al., 2001). The results of the current study also indicate that negative parenting did not fully mediate the relationship between maternal depression and boys' aggressive behaviour and that maternal depression has independent effects on boys' aggressive behaviour. It may also be the case that the effects of maternal depression are mediated by other parenting behaviours associated with maternal depression, such as maternal disengagement and poor attachment (Dawson et al., 2000; Downey &

Coyne, 1990; Lovejoy et al., 2000; Lyons-Ruth, Easterbrooks, & Davidson Cibelli, 1997; Lyons-Ruth et al., 2000; Lyons-Ruth et al., 2002a) or maternal responsiveness, (Dawson et al., 2000; Downey & Coyne, 1990; Lovejoy et al., 2000; Lyons-Ruth et al., 1997).

Income (In)adequacy

- Lower levels of income adequacy lead to increased levels of maternal depression.
- Maternal depression is a mechanism linking income inadequacy to negative parenting behaviours.

Income (in)adequacy was added to the model as a predictor of maternal depression to examine whether maternal depression mediated the effects of income (in)adequacy on negative parenting behaviours, and subsequently boys' aggressive behaviour. I expected that the addition of income (in)adequacy would add to the explained variance of the other variables in the model, particularly maternal depression. Income (in)adequacy did explain four percent of the variance in maternal depression at Time 1, but there were no increases in explained variance for the other concepts related to maternal depression. In addition, there was a one percent increase in the explained variance of negative parenting at Time 1 and Time 2, when the children were infants and toddlers, respectively. Nevertheless, the addition of income (in)adequacy to the model increased the poor fit of the model rather than improving it.

Income (in)adequacy tended to have small and significant negative direct effects on maternal depression, which is consistent with other research examining the effects of income on maternal depression (Dearing et al., 2004; Lyons-Ruth et al., 2002a), and with epidemiological studies examining the prevalence of maternal depression (McLennan et al. 2001). However, these effects were not consistent over time. As expected, maternal depression did mediate the relationship between income and parenting, but again, only income (in)adequacy at Time 1 had significant indirect effects on negative parenting. Small and significant indirect effects of income (in)adequacy at Time 1 were also evident for negative parenting behaviour at Time 1, Time 2, Time 3 and Time 4, as well as for boys' aggressive behaviour at Time 3 and Time 4 when the boys were preschool and school age. Income (in)adequacy at Time 1 was the only income variable that had consistent significant indirect effects on boys' aggressive behaviour or any of the other variables in the model. This is consistent with other research showing that early poverty has the greatest effect on children's behavioural development (Duncan & Brooks-Gunn, 1997; McLeod & Shanahan, 1996; NICHD Early Child Care Research Network, 2005; Phipps & Lethbridge, 2006; Stroschein, 2005).

TIME

In this study, I assessed the hypothesized relationships among boy's difficult temperament and aggressive behaviour, mothers' negative parenting and depression, and family income (in)adequacy, both concurrently and longitudinally. My findings highlight the importance of using a repeated measures model as I did in this study to account for the contribution of time in the developmental process as specified in Bronfenbrenner's PPCT model (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006). The use of repeated measures in this design accounted for the cumulative effects of predictors. Thus, even though concurrent effects diminished over time, the overall effect of predictors remained constant and large. The decrease in strength of concurrent effects of income, maternal depression, and negative parenting on aggressive behaviour as children got older, and the decrease in the effect of difficult temperament on later parenting, is consistent with Patterson's suggestion that the effects of instigators of the coercive process will diminish once the coercive process is established (Reid & Patterson, 1989).

IMPLICATIONS FOR POLICY AND PRACTICE

The research on trajectories of the development of aggressive behaviour indicates that the time between infancy and school entry, when evidence of physical aggression begins to emerge, is an optimal time to examine potential contributors to its development. The results of the current study suggest that, by preschool age, boys' and mothers' behaviours are well-established, and boys' difficult temperament and early aggressive behaviour, negative parenting behaviour, maternal depression, and income (in)adequacy all influence the persistence of boys' aggressive behaviour through to school age. The results also showed that the strength of the effects of these factors increases with their proximity to the developing child, as Bronfenbrenner hypothesizes in his bioecological theory. In the preschool years, children are beginning to develop their social skills, and the extent of their social contexts are limited by their reliance on parents and other caregivers (Rubin & Burgess, 2002; Scaramella & Leve, 2004; Tremblay et al., 2004). The findings of the current study have important implications for policies and programs related to addressing the development of aggressive behaviour in children. First, that prevention and intervention programs that address behavioural development in early childhood are likely to be more successful than later interventions (Tremblay et al., 2004). Second, to be most effective, prevention and intervention programs addressing the development of aggressive behaviour should target children and families based on proximal processes and individual characteristics of the parent and child, rather than more distal contexts. In the following paragraphs, I discuss the implications of the process, person, context, and time factors addressed in this study in the order of their proximity to the developing child.

Consistent with a large body of research on the effects of income on children's development, the results of my study confirm that the effect of income on the development of boys' aggressive behaviour was very small. Furthermore, in the current study, it was only income inadequacy when the boys were infants that had significant effects on negative parenting and boys' aggressive behaviour. Despite the evidence that living in a low-income family increases children's risk for developing aggressive behaviour, studies of prevalence show that, because most children do not live in low-income families, most children exhibiting high levels of aggressive behaviour do not come from low income families (Federal/Provincial/ Territorial Early Childhood Development Agreement, 2003; Offord, Kraemer, Kazdin, Jensen, & Harrington, 1998; Ross & Roberts, 1999). This does not mean that income should be ignored as a risk factor. However, isolating income as a risk factor and targeting only low-income families for prevention and intervention efforts is not likely to have a significant effect on reducing the overall incidence of physically aggressive behaviour in boys.

Maternal depression had inconsistent direct effects on negative parenting, but consistent direct effects on boys' aggressive behaviour. The inconsistent effects on negative parenting may have been due, in part, to limitations of the measures I used for maternal depression and negative parenting, which I address in the limitations section that follows. Other researchers have found that, while maternal depression can compromise parenting behaviours and increase the risks for children's problem behaviours (Downey & Coyne, 1990; Lyons-Ruth et al., 2002; Munson et al. 2001), that effect is relative to the persistence and depth of depression mothers experience (Campbell et al., 2007; Lyons-Ruth et al., 2002b). My findings indicated that as time went on, the concurrent contextual effects of income (in)adequacy and maternal depression on mothers' negative parenting and boys' aggressive behaviour diminished as the behaviours of mothers and their sons became entrenched. By the time the boys were school age, income (in)adequacy and maternal depression had no significant concurrent effects on boys' aggressive behaviour or on mothers' negative parenting. The decrease in effects followed the same pattern that was observed for the effect of negative parenting on boys' aggressive behaviour. The decrease in effect size follows from Patterson's suggestion that while environmental factors may instigate the coercive process, once it is established it becomes self-perpetuating (Reid & Patterson, 1989).

In research and practice, the common focus of policies and programs addressing problems in parenting and child development is on contextual factors, such as family income, social assistance receipt, maternal age, family structure, and maternal mental health (Shaw et al., 2003; Shaw, Dishion, Supplee, Gardner, & Arnds, 2006; Tremblay et al., 2004, Trentacosta & Shaw 2008). This appears to be a logical approach, given the consistent research findings of significant relationships between these contextual risk factors and children's development and that it is easier to identify risk factors related to context (e.g., income and family structure) than risk factors related to process (e.g., parenting behaviours), and person (e.g., child temperament and behaviour). However, Offord and his colleagues (1998) noted, "The potency or strength of a risk factor may be judged very differently when the purpose is risk identification in the real world than when the purpose is increasing the knowledge base about risk factors" (Offord et al., 1998, p.689).

Findings from the current study indicate that while the contextual "risk factors" of income (in)adequacy and maternal depression contribute to the development of aggressive behaviour, maternal depression has a larger and more consistent effect on both negative parenting and boys' aggressive behaviour than income (in)adequacy. Furthermore, the individual characteristics and behaviours of the child and the parent have the greatest effect on the development of aggressive behaviour. My findings are not unique, as other researchers have also found that infant and parent characteristics and coercive parenting processes in "low-risk" samples also contribute to higher levels of aggressive behaviour in preschool children (Smeekens et al., 2007; van Leuwen et al. 2007). This suggests that targeting programs to families and children based on contextual risks increases the risk of not identifying the majority of children with high levels of aggressive behaviour and/or parents engaging in negative parenting behaviours who could benefit from early prevention and intervention efforts. The implication of this oversight is that, in many cases, both mothers' and children's problem behaviours will be well entrenched and negative parenting behaviours or children's aggressive behaviours will have escalated to serious levels by the time any action is taken to address these problems (Bennett & Offord, 2001; Tremblay, 2006). Researchers generally agree that early identification of aggressive behaviour and negative patterns of parent-child interactions, as well as a concerted effort to promote positive social interactions during infancy and early childhood, provide the most promise for successful intervention to prevent the development of boys' aggressive behaviour (Dallaire & Weinraub, 2005; Scaramella & Leve 2004; Shaw et al., 2006; Smeekens et al 2007; Tremblay et al., 2004).

One approach for ensuring broader coverage for early identification of problems with parenting and children's persistent aggressive behaviour and facilitating early intervention for these problems would be to implement routine monitoring of children's behavioural development in infancy and the preschool years. There are many practitioners who have regular contact with young children and their parents, including primary care physicians, pediatricians, public health nurses, community health workers, child care workers, and family resource program workers. These practitioners are well situated for monitoring children's behavioural development and identifying maternal depression and problems with parent-child interaction, either through observation (e.g., in child care or family resource program settings) or through regular parent reports of frequency of problem behaviours, depressive symptoms, or difficulty with parenting (e.g. at regular visits to physicians, or public health nurses in immunization clinics). Research shows that interventions that have a combined focus on both the parent and child are more successful than programs that focus on one or the other (Forman, O'Hara, Stuart, Gorman, Larsen & Coy, 2007; Lyons-Ruth et al., 2002b; Shaw et al., 2006). Regular monitoring of children's behavioural development, maternal depressive symptoms, and parent-child interaction in early childhood would provide opportunities for practitioners to engage in discussions about healthy behavioural development where they could provide parents with strategies that promote positive and responsive parenting to address children's problem behaviours and negative patterns of parent-child interaction. These discussions could also be used to identify concerns about contextual factors, such as family conflict or income inadequacy that may be contributing to difficulties in the parent-child relationship (Powell, Dunlap & Fox, 2006).

To ensure success of prevention and intervention efforts, practitioners need to be familiar with resources for treatment that are available in their communities and create linkages among these community and clinical resources to increase their accessibility to families who require supports. Using a graduated approach, it would follow that parents and children requiring the most intensive interventions could be identified through the monitoring and support process and referred on to appropriate services (Powell et al., 2006). If developed thoughtfully, and monitored carefully, this approach could improve the specificity of identification and the most prudent use of the limited resources for interventions with high needs families (Offord et al., 1998).

Limitations

The findings from this study have some important implications for programs aimed at preventing the development of aggressive behaviour in boys; however, there are some limitations to this study that must be considered in the interpretation of the findings from this research.

SECONDARY DATA

The NLSCY is a rich source of data that has begun to provide a wealth of information about the well-being of Canada's children. As it continues, the NLSCY will become even more valuable for the long-term longitudinal data it provides for understanding processes in children's development. Despite the value of this data set, it is not without limitations.

One of the major problems in using secondary data for a causal model is that one is limited to the measures available in the data set, and one cannot create indicator variables that may be more appropriate for the analysis. For example, I modeled the effect of negative parenting on the development of aggressive behaviour from infancy to age six; however, I had to use different constructs as the indicator for the latent variable. At Time 2, Time 3, and Time 4, I used the punitive parenting scale, but at Time 1, I used the hostile parenting scale, because the NLSCY does not include a measure of punitive parenting for children less than two years old. Hostile parenting at Time 1 is not significantly correlated with later punitive parenting. Thus, it is likely that these indicators represent different underlying processes, and this was not accounted for in the model used in this study.

Another source of potential bias in the analysis was the use of scale scores as single indicators for the majority of the latent variables in the model. The economic variables (income (in)adequacy, income (in)stability, source of income, and employment (in)stability) were the only indicators that were not scale scores. Hayduk (1996) points out that using a scale score for a single indicator is problematic because relationships among the individual items in the scale cannot be accounted for, nor can the relationship of the individual items in the scale to the concept be accounted for. It is possible that some items may actually be indicators of other concepts or related to other concepts (Hayduk, 1996).

For example, only two items in the physical aggression scale for two to three year olds ("gets into many fights" and "kicks, bites, or hits other children") and three items in the physical aggression scale for four to eleven year-olds ("gets into many fights", "physically attacks people", and "kicks, bites, or hits other children") are direct indicators of physical aggression. The remaining items in these scales relate to other types of behaviours, such as opposition ("punishment doesn't change his/her behaviour"), hyperactivity (e.g., "has difficulty awaiting turn in games or groups"), and relational aggression (e.g., "threatens people," and "bullies or is mean to others"). Although the factor structure of these scales was validated in the NLSCY, and the Cronbach's alpha's for these scales were between .73 and .78 in this sample, the intercorrelations among items in the scales may be reflective of the frequent comorbidity of these behaviours (Egger & Angold, 2006) and not of physical aggression per se.

The items on the scale for punitive/aversive parenting, which was used as an indicator of negative parenting at Time 2, Time 3, and Time 4 also appear to represent more than a single concept. The scale was made up of four items that asked about how parents respond when their child “breaks the rules or does things that he/she is not supposed to.” Two of the items (“calmly discuss the problem,” and “describe alternative ways of behaving that are acceptable”), which were reversed in creating the scale score, are reflective of authoritative parenting, while the other two (“raise your voice, scold or yell at him/her” and “use physical punishment”) are reflective of authoritarian parenting (Baumrind, 1966; Lerner & Castellino, 2000). Reversing the authoritative items does not account for these conceptual differences, and the low values for Cronbach’s alpha for this scale provide one indication that this is the case.

My rationale for using scales was to use measures that were consistent with other research based on NLSCY data. However, the majority of other studies in which the scale scores were used employed regression or path analysis. With these methods there is an assumption that there is no measurement error in the variables. In structural equation modeling, one accounts for the error in the indicators for the latent variables. In this study, I assigned a fair amount of error to these scale indicators, which provided a means of accounting for the potential that the full scale may be including indicators of more than one concept. However, that also meant that the scales did not provide particularly strong representations of the concepts, leaving room for the possibility that factors not identified in the model could be contributing to the effects in the model (Hayduk, 1996).

In future research using secondary data, it would be advisable to select one or two items from each scale that provides the best representation of the concept. For example, using the NLSCY data, the item related to annoyance could be used as the indicator for negative parenting in infancy. Of the two hostile parenting items available in the NLSCY, this item has the broadest application. The other item “How often do you tell your child that he/she is bad or not as good as others?” may not be applicable for infants. For older children, the item related to amount of parental yelling and scolding from the punitive/aversive scale could be used as the indicator for negative parenting. This item has a broader application as an indicator for negative parenting than the other items in the scale. It is not as specific as using physical punishment, and not as general as the reverse coded items related to calmly discussing the problem or describing alternative behaviours.

In addition to the specific problem of using a scale as an indicator, the parenting scales also had very low reliability. I used Cronbach's alpha as a measure of the internal consistency of the scales and assigned error based on this statistic. Cronbach's alpha is used consistently in the research literature as a measure of scale reliability and internal consistency; however, despite its general acceptance, it is not an accurate measure of either (Cortina, 1993; Sijtsma, 2009). If we consider internal consistency to be related to the extent that the scale variables provide an overall representation of the factor associated with the scale, then alpha does not provide an accurate measure, because alpha is based on the amount of variance specific to individual items on a scale (Cortina, 1993). Thus, scale items may be interrelated, but still represent multiple dimensions, as long as the variance in the scale is not related to specific items in the scale (Cortina, 1993). In addition, the number of items in a scale affects the estimation of alpha. This may account, in part, for the low Cronbach's alpha values for the parenting scales that were used in the study, because hostile parenting at Time 1 was made up of only two items, and the punitive/aversive scale used at Times 2, 3, and 4 was made up of four items.

Finally, because I did use Cronbach's alpha as a reference for adjusting the measurement error variance, negative parenting had substantial measurement error. As a result, the identity of the negative parenting latents was not tightly restrained and the high level of error suggests that many other elements, both within and outside of the model could be affected. This limits the ability to make strong claims for the effectiveness of the tested theory, and reinforces the need to re-examine the indicators for the latent variables in the model and explore using single item indicators for the latent variables for negative parenting for future research.

In future research using NLSCY data, it would be advisable to use selected items from each scale that provide the best representation of the concept. For example, in their study examining the distinction between indirect aggression and physical aggression, Vaillancourt et al. (2003) found the three items in the physical aggression scale for four to eleven year-olds mentioned above ("gets into many fights", "physically attacks people", and "kicks, bites, or hits other children") provided a stable measurement structure for physical aggression over time. Using these three items as indicators of physical aggression may provide a better representation of the concept of physical aggression than the total scale score. Similarly, using the two items from the punitive/aversive parenting scale associated with authoritarian parenting behaviour two (“raise your voice, scold or yell at him/her” and “use physical punishment”) could replace the full scale as indicators of negative parenting.

Skewed data

A number of the indicator variables showed positive skewness and kurtosis including, hostile parenting at Time 1; maternal depression, income (in)adequacy, at Time 1, Time 2, Time3, and Time 4; and the final outcome variable, aggressive behaviour at Time 4. This suggested that the assumption of multivariate normality for maximum likelihood estimation would be violated, making it more difficult to detect effects in the model. To assess the impact of the non-normality on the models, I compared the values of the Minimum Fit Function chi-square and the Normal Theory Weighted Least Squares chi-square for each model. The chi-square values for these statistics were equivalent for all of the models, indicating that the non-normality did not present a problem for estimation and that adjusting the data to address the non-normality was not necessary.

Data prompted revisions

The diagnostic information in the LISREL output provides information about where problems may be present in the model. This output also suggests model modifications that could improve the model fit. In the current study, I used the diagnostic information primarily to facilitate interpretation of the findings, since adjusting the model to improve fit could have serious implications for interpreting the hypotheses that were tested in this study. However, I did make two data prompted revisions to the models. The first was to free the estimates between maternal depression and boys’ aggressive behaviour in Model 3, and the second was to reduce the number of latent concepts related to economic (in)security in Model 4.

In the data-prompted revision to Model 3, I chose to free the parameter estimates from maternal depression to boys’ aggressive behaviour, even though the modification indices suggested that freeing the parameter estimates from boys’ aggressive behaviour to maternal depression was more desirable. I chose the less supported revision as it was consistent with my theoretical assumption regarding the effects of negative parenting on boys’ aggressive behaviour in Model 2. In that model, I did not include effects from boys’ aggressive behaviour to negative parenting based on the assumption that parents will exert more influence on children than the reverse, because parents have established patterns of social interaction, while young children are only beginning to develop these skills (Maccoby, 1992). This approach was further supported by findings from a cross-lagged panel study that indicated maternal depression preceded aggressive behaviour (Elgar et al., 2003).

If I had chosen an exploratory approach to this study, some alternative models could have been tested. For example, I could have modeled the reverse effects, freeing the paths from aggressive behaviour to maternal depression. According to the modification indices this would have resulted in a better fitting model than was achieved by freeing the paths from maternal depression to aggressive behaviour. Alternatively, a cross-lagged analysis of these concepts may have resulted in the best model fit, since the modification indices suggested freeing both the paths from maternal depression to aggressive behaviour and the reverse. A cross-lagged model would entail freeing the parameter estimates from boys' aggressive behaviour at one time period to maternal depression at the subsequent period, and from maternal depression to boys' aggressive behaviour in the same manner. However, neither of these strategies would have addressed an even more prominent issue identified in the modification indices. These were the indices that suggested freeing the paths from maternal depression at Time 1 to maternal depression at Time 3 and Time 4 would result in the greatest improvement in the model. I did not make this change in Model 3, because I had anticipated that the economic (in)security model (Model 4) would address what seemed to be the need to account for a common cause of maternal depression that had not been included in Model 3. However, none of the economic models altered the modification indices with respect to this relationship. In future studies, consideration should be given to the predictive power that earlier maternal depression would have for later maternal depression.

The second data-prompted revision was to run two additional economic models: one using income (in)stability and a second using income (in)adequacy. Both of these models failed, and there may have been additional revisions that could have been made in attempts to improve the models, but these revisions would have entailed theoretical revisions, which was not the central purpose of the current study. The income (in)stability model fit most closely with my original hypotheses, but the parameter estimates showed no significant effects of income (in)stability on maternal depression, which was the hypothesized mediator of effects to other variables. In future research, alternative operationalization of income (in)stability may provide a clearer explanation of the relationship, if any, between maternal depression and income (in)stability. One alternative operationalization of income (in)stability would be to use an absolute measure of income change. However, the absolute change value may provide explanation for the overall effect of changes in income over time, but it would not capture the effect of the direction of change. An approach used by Miller-Lewis et al. (2006) may be more useful for capturing the effects of income change. They calculated change scores by subtracting the value of the Time 1 variable from the value of the Time 2 variable as I did in this study. However, they also included the average score of the Time 1 and Time 2 values of the variable. This score was included in their regression analysis to provide information on the overall background level of their key variables, as a change score alone may be highly correlated with the baseline measures (Miller-Lewis et al., 2006).

Restricted Sample

First, the sample included only families with two parents who remained together for the full study period. This was to ensure that instability in the family environment arising from changes in family structure was not confounded with income instability. Second, even though new immigrants are more likely to experience employment and income instability than non-immigrants (Beiser et al. 2000), children of recent immigrants were also excluded from the sample because these families experience other stressors related to moving from their homeland to a new country that can affect parental mental health and parenting (Foss, Chantal & Hendrickson, 2004). I also excluded any children who were a twin or a triplet because mothers of twins and triplets are more likely to experience depression (Thorpe, Golding, MacGillivray & Greenwood, 1991). Finally, I excluded children with long-term medical problems and activity limitations (e.g. mental disabilities, physical disabilities, heart disease, epilepsy, and other long-term conditions) to eliminate alternative explanations for problem behaviours. Although the exclusions limit the generalizability of the findings to some extent, they also strengthen the argument that difficult temperament, negative parenting and maternal depression are key contributors to the development of aggressive behaviour. The findings of this study showed these factors are present and operate in environments that are not affected by risk factors that have commonly been used to target children for interventions, such as family structure, immigrant status, and children's disability.

Future Research

The structural equation model I used in this study indicates that the factors included in the model do not provide a complete picture of what contributes to the development of aggressive behaviour in boys and points to directions for future research. I selected the sample in the current study to eliminate some potential contributors to aggressive behaviour that may have confounded the results (i.e., single parents, foster and adoptive parents, recent immigrants, activity limitations). However, I did not control many other factors that have also been associated with negative parenting or aggressive behaviour, such as number of siblings, parental education (Tremblay et al., 2004), fathers' parenting behaviours (Sarkadi, Kristiansson, Oberklaid,

& Bremberg, 2008), marital stress (Benzies, Harrison & McGill-Evans, 2004), marital conflict (Conger et al., 1994; Cummings et al., 2005), and parents' antisocial behaviour (Elgar et al. 2004a; Kim-Cohen et al., 2005). The structural model that I used is a straightforward model that could be used as a template for future research to examine the effects of these factors on the development of aggressive behaviour. In addition, the model could be used with larger, more inclusive samples to increase the generalizability of the findings. Alternatively, it would be interesting to examine how the results of the current study model would vary when other specified samples are used. These could include girls, children in single parent families, or children in low-income families. It could also be used to model the development of other behaviours in children or the effects of other parenting behaviours on behavioural development.

Mothers' negative parenting behaviours were the focus of this study, and although there is recognition that fathers play an important role in children's behavioural development, there is limited research in this area (Lewis & Lamb, 2003; Sarkadi et al., 2008). Further research is needed to understand the effects of proximal processes between fathers and their children and their effects on children's behavioural outcomes. It would also be useful to consider the effects of other types of parenting behaviours. Negative parenting behaviours are not carried out in isolation from other types of parenting, and different combinations of parenting behaviours have been found to have different effects on outcomes (Aunola & Nurmi, 2005; Chao & Willms, 2002). It would be particularly interesting to examine how combinations of parenting behaviours, and combinations of maternal and paternal parenting styles might have different effects on the development of children's aggressive behaviour. As Tremblay (2004) suggests, children need to learn how to regulate their physical aggression. In future research, examining whether particular parenting styles, or combinations of parenting styles, contribute to reduction of aggressive behaviour in preschool children would provide valuable information for guiding practice in working with families of preschool children who show high levels of aggressive behaviour.

Considering the Person characteristics of the child, it would also be useful to gain a better understanding of co-occurring behaviours and their effects on the development of aggressive behaviour. For example, Shaw et al. (2005) examined the co-occurrence of hyperactivity and physical aggression and found distinctive patterns of combined trajectories that suggest hyperactivity, when combined with aggression, predicts more serious long-term problems for children. In the current study, I examined the development of aggressive behaviour in boys. Gaining a clearer understanding of the differences and similarities in the development of aggressive behaviour for both boys and girls is also important. The research developing in this area suggests there are unique differences in the patterns of trajectories of aggressive behaviour for boys and girls (Fontaine, Carbonneau, Vitaro, Barker, & Tremblay, 2009).

Difficult temperament was identified as an important contributor to the development of aggressive behaviour in this study. However, I did not consider what elements contribute to the development of difficult temperament. Just as findings from research on trajectories of the development of physical aggression from school entry through to adolescence pointed to the need to examine the person, processes and contexts in preschool years (Tremblay, 2000), findings from the current study and other research on the development of aggressive behaviour from infancy to school entry point to the need to examine prenatal processes and contexts that may contribute to development (Romano et al., 2005; Tremblay et al., 2004). These studies may help draw more substantial causal linkages between income and the development of aggressive behaviour as prenatal environments have significant effects on shaping genetic expression (Tremblay et al., 2004).

The model in this study accounted for 43 percent of the variance in boys' physical aggression at school entry indicating that other factors, not included in the model, contribute to the outcome. Recent research from the field of behaviour genetics suggests that of intergenerational transmission of genetic traits may account, in part, for the relationship between negative parenting and boys' aggressive behaviour demonstrated in this study (Silberg & Eaves, 2004). In the current study, I used temperament to account for the potential contribution of heritable traits to the development of aggressive behaviour, and the results indicate that temperament does play a role. However, the NLSCY does not provide the type of data needed to address the contribution of genetic factors in behavioural development. Continued research is needed using data from twin and adoption studies that are suited to examining the combined contribution of genetic and environmental factors to the development of aggressive behaviour (Dodge, Coie & Lynam, 2006; Rutter, 2007). To date, research in behaviour genetics (epigenetic effects of environments on genes; variations in heritability according to environmental circumstances; gene–environment correlations; and gene–environment interactions) has not provided a clear interpretation of the mechanisms that operate to predict specific outcomes (Rutter, 2007).

CONCLUSION

In this study, I employed the Process-Person-Context-Time model proposed by Bronfenbrenner (Bronfenbrenner, 1995; 2001; Bronfenbrenner & Ceci, 1994; Bronfenbrenner & Evans, 2000; Bronfenbrenner & Morris, 2006) to examine the relationships among income (in)adequacy, maternal depression, mothers' negative parenting, boys' difficult temperament, and early aggressive behaviour as predictors of the development of boys' aggressive behaviour from infancy to school entry. Although all of these variables have been linked to the development of aggressive behaviour in previous research, there have been no studies that have examined the relationships among these variables systematically over time. In addition, the majority of previous studies examining precursors of aggressive behaviour in children have used samples with older children ranging from four to six years old (Lacourse, Côté, Nagin, Vitaro, Brendgen, & Tremblay, 2002; Morris et al., 2002). This study adds to a growing body of newer research that shows that precursors to the development of aggressive behaviour in children are evident in toddlerhood and the preschool years (Campbell, 2000; Côté et al., 2006; Guerin et al., 1997; Vitaro et al., 2006) and these precursors include maternal depression (Munson et al., 2001; Shaw et al., 2003), negative parenting (Shaw et al., 2001) and children's difficult temperament (Vitaro et al., 2006). The findings from this study further suggest that, by the time children reach school age, aggressive behaviour is already strongly entrenched, emphasizing the importance of identifying and addressing children's problems with aggressive behaviour in the preschool years.

I used a sample of boys from stable, two-parent families for this study. While the specificity of the sample limits the generalizability of the study findings, the model accounted for 43 percent of the variance in boys' aggressive behaviour at six years old, which is substantial, considering the small number of concepts included in the analysis relative to the large number of potential contributors to children's behavioural development (Dodge et al., 2006; Rubin & Burgess, 2002). The conceptual model used for this study with the inclusion of measures of each concept at each measurement period did provide new understanding of the factors affecting the development of aggressive behaviour in boys.

My research findings contribute further evidence to a growing body of research on the development of aggressive behaviour in children and underscore the importance of examining the contribution of the multiple levels of process, person, context, and time to the development of aggressive behaviour. The results showed that both children's own characteristics and parents' behaviours affect the development of aggressive behaviour and that examination of these effects over time is crucial for understanding how timing affects children's behavioural outcomes, underscoring the relevance of using the Process-Person-Context-Time model for examining children's development. These findings provide clear evidence that the effects of proximal processes and proximal contexts on the development of boys' aggressive behaviour are strongest in infancy and toddlerhood, and their consequences extend through to school entry.

The findings support examination of hypothesized relationships among all variables hypothesized both concurrently and longitudinally because omitting one or another may result in findings that suggest stronger relationships than exist. Time is a particularly crucial element because development is not static. The findings are consistent with other research, but using repeated measures over time provided a clearer understanding of the importance of timing in development. This study showed that precursors of aggressive behaviour are evident very early in childhood, which has important implications for early childhood development policy and practice. Systematically examining these relationships over time provided a better understanding of how the development of aggressive behaviour progresses, giving direction for policy and practice on how best to address the development of aggressive behaviour in children. The findings clarify the importance of using systematic longitudinal analysis to understand the processes affecting child development.

While there is ample evidence that children living in low-income families and in single parent families are at higher risk for developing problem behaviours, this sample of boys from stable two-parent families provide strong evidence that the roots of negative parenting and aggressive behaviour are established in early childhood and are not limited to families identifiable as "high-risk" on the basis of contextual variables. Importantly, the findings of the current study suggest that targeting so-called children in "high-risk" families may result in missing large segments of the population that need support and assistance in carrying out this most important role in fostering healthy child development. Providing parents-to-be and parents of young children with practical direction in ways to engage in positive and responsive interactions with their children would do more to reduce the development of aggressive behaviour in children than would later interventions aimed at changing entrenched behaviours in both parents and children. These programs would focus on helping parents and parents-to-be to learn appropriate responses to the individual characteristics of their children and to develop positive parenting strategies early to promote maintenance of positive and responsive parenting behaviours that would contribute to healthy behavioural development in children.

Children's behavioural development is a complex process affected by a host of variables. The variables included in this study represent only a handful of the variables that can contribute to the development of aggressive behaviour in children. However, the findings of this study add to our understanding of the role the relationships among these variables play in the processes leading to the development of aggressive behaviour.

Reference List

Ackerman, B. P., Brown, E., & Izard, C. E. (2003). Continuity and change in levels of externalizing behavior in school of children from economically disadvantaged families. *Child Development, 74*, 694-709.

Ackerman, B. P., Brown, E. D., & Izard, C. E. (2004a). The relations between contextual risk, earned income, and the school adjustment of children from economically disadvantaged families. *Developmental Psychology, 40*, 204-216.

Ackerman, B. P., Brown, E. D., & Izard, C. E. (2004b). The relations between persistent poverty and contextual risk and children's behavior in elementary school. *Developmental Psychology, 40*, 367-377.

Ackerman, B. P., Izard, C. E., Schoff, K., Youngstrom, E. A., & Kogos, J. (1999). Contextual Risk, Caregiver Emotionality, and the Problem Behaviors of Six- and Seven-Year-Old Children From Economically Disadvantaged Families. *Child Development*, *70*, 1415-1427.

Ahluwalia, S. K., McGroder, S. M., Zaslow, M. J., & Hair, E. C. (2001, December). Symptoms of depression among welfare recipients: A concern for two generations. *Child Trends Research Brief*.

Alink, L. R. A., Mesman, J., Van Zeijl, J. , Stolk, M. N., Juffer, F., Koot, H. M., Bakermans-Kranenburg, M. J., & Van IJzendoorn, M. H. (2006). The early childhood aggression curve: development of physical aggression in 10-to 50-month-old children. *Child Development, 77*, 954-966.

Anstey, K. J., & Hofer, S. M. (2004). Longitudinal designs, methods and analysis in psychiatric research. *Australian and New Zealand Journal of Psychiatry, 38*(3), 93-104.

Archer, J. (2004). Sex differences in aggression in real-world settings: a meta-analytic review. *Review of General Psychology, 8*, 291-322.

Aunola, K., & Nurmi, J.-E. (2005). The role of parenting styles in children’s problem behavior. *Child Development, 76*, 1144-1159.

Baillargeon, R. H., Normand, C. L., Seguin, J. R., Zoccolillo, M., Japel, C., Perusse, D., Wu, H. X., Boivin, M., & Tremblay, R. E. (2007). The evolution of problem and social competence behaviors during toddlerhood: a prospective population-based cohort survey. *Infant Mental Health Journal, 28*, 12-38.

Baillargeon, R., Tremblay, R. E., & Willms, J. D. (December, 1999). *The prevalence of physical aggression in canadian children: a multi-group latent class analysis of data from the first collection cycle (1994-1995) of the NLSCY (T-00-2E*). Ottawa: Human Resources Development Canada (Cat. No./Node cat. MP32-30/00-2E).

Baillargeon, R. H., Zoccolillo, M., Keenan, K., Côté, S., Perusse, D., Wu, H. X., Boivin, M., & Tremblay, R. E. (2007b). Gender differences in physical aggression: a prospective population-based survey of children before and after 2 years of age. *Developmental Psychology, 43*, 13-26.

Bates, J. E. (1989). Concepts and measures of temperament. G. A. Kohnstamm, J. E. Bates, & M. K. Rothbart (Editors), *Temperament in childhood.* (pp. 3-26). Chichester: John Wiley & Sons.

Bates, J. E. (2001). Adjustment style in childhood as a product of parenting and temperament. In T. D. Wachs, & G. A. Kohnstamm (Editors), *Temperament in context* (pp. 173-200). Mahwah, N.J. L. Erlbaum Associates.

Bates, J. E., & McFadyen-Ketchum, S. (2000). Temperament and parent-child relations as interacting factors in children's behavioral adjsutment. In V. J. Molfese, & D. L. Molfese (Editors), *Temperament and personality across the life span.* Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Bates , J. E., Pettit, G. S., Dodge, K. A. , & Ridge, B. (1998). Interaction of temperamental resistance to control and restrictive parenting in the development of externalizing behavior. *Developmental Psychology , 34*, 982-995.

Baumrind, D. (1966). Effects of Authoritative Parental Control on Child Behavior. *Child Development*, *37*, 887-907.

Beiser, M., Hou, F., Kaspar, V., & Noh, S. (2000). *Changes in poverty status and developmental behaviours: a comparison of immigrant and non-immigrant children in Canada.* (W-01-1-1E). Hull, Quebec: Applied Research Branch Strategic Policy, Human Resources Development Canada.

Belsky, J. (1984). The determinants of parenting: a process model. *Child Development, 55*, 83-96.

Belsky, J., Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2007). For better and for worse: Differential susceptibility to environmental influences*. Current Directions in Psychological Science, 16*, 300-304.

Belsky, J., Hsieh, K.-H., & Crnic, K. (1998). Mothering, fathering, and infant negativity as antecedents of boys' externalizing problems and inhibition at age 3 years: Differential susceptibility to rearing experience? *Development and Psychopathology, 10*, 301-319.

Bennett, K. J., & Offord, D. R. (2001). Conduct Disorder: Can It Be Prevented? *Current Opinion in Psychiatry*, *14*, 333-337.

Benzies, K. M., Harrison, M. J., & Magill-Evans, J. (2004). Parenting stress, marital quality, and child behavior problems at age 7 years. *Public Health Nursing, 21*, 111-121.

Berg-Nielsen, T. S., Vikan, A., & Dahl, A. A. (2002). Parenting related to child and parental psychopathology: a descriptive review of the literature. *Clinical Child Psychology and Psychiatry, 7* , 529-552.

Blau, D. M. (1999). The effect of income on child development. *Journal of Economics and Statistics, 81*, 261-276.

Bolger, K. E., Patterson, C. J., Thompson, W. W., & Kupersmidt, J. B. (1995). Psychosocial adjustment among children experiencing persistent and intermittent family economic hardship. *Child Development, 66*, 1107-1129.

Bor, W., Najman, J. M., Andersen, M. J., O'Callaghan, M., Williams, G. M., & Behrens, B. C. (1997). The relationship between low income and psychological disturbance in young children: An Australian longitudinal study. *Australian and New Zealand Journal of Psychiatry, 31*, 664-675.

Bor, W., & Sanders, M. R. (2004). Correlates of self-reported coercive parenting of preschool-aged children at high risk for the development of conduct problems. *Australian and New Zealand Journal of Psychiatry, 38*, 738-745.

Bradley, R. H., Corwyn, McAdoo, H. P., & Garcia Coll, C. (2001a). The home environments of children in the United States Part I: Variations by age, ethnicity, and poverty status. *Child Development, 72*, 1844-1867.

Bradley, R. H., Corwyn, McAdoo, H. P., & Garcia Coll, C. (2001b). The home environments of children in the United States: Part II: Relations with behavioral development through age thirteen. *Child Development, 72*, 1868-1886.

Brady-Smith, C., Brooks-Gunn, J., Waldfogel, J., & Fauth, R. (2001). Work or welfare? Assessing the impacts of recent employment and policy changes on very young children. *Evaluation and Program Planning, 24*, 409-425.

Brenner, V., & Fox, R. A. (1998). Parental discipline and behavior problems in young children. *Journal of Genetic Psychology, 159*, 251-256.

Broidy, L. M., Nagin, D. S., Tremblay, R. E., Bates, J. E., Brame, B., Dodge, K. A., Fergusson, D., Horwood, J. L., Loeber, R., Laird, R., Lynam, D. R., Moffitt, T. E., & Pettit, G. S. (2003). Developmental trajectories of childhood disruptive behaviors and adolescent delinquency: A six-site, cross-national study. *Developmental Psychology, 39*, 222-245.

Bronfenbrenner, U. (1979). *The ecology of human development.* Cambridge, MA: Harvard University Press.

Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. *Developmental Psychology, 22*, 723-742.

Bronfenbrenner, U. (1995). Developmental ecology through space and time: A future perspective. In P. Moen, G. H. Jr. Elder, & K. Lüscher (Editors), *Examining lives in context: Perspectives on the ecology of human development.* (pp. 619-647). Washington, DC: American Psychological Association.

Bronfenbrenner, U. (2001). Ecological models of human development. In M. Gauvain , & M. Cole (Editors), *Readings on the development of children* (3rd ed., pp. 3-8). New York: Worth Publishers.

Bronfenbrenner, U., & Ceci, S. J. (1994). Nature-Nurture reconceptualized in developmental perspective - A bioecological model. *Psychological Review, 101*, 568-586.

Bronfenbrenner, U., & Evans, G. W. (2000). Developmental science in the 21st Century: Emerging questions, theoretical models, research designs and empirical findings. *Social Development, 9*, 115-125.

Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In W. Damon, & R. M. Lerner (editors-in-chief), *Handbook of child psychology* (6th ed., Vol. 1. Theoretical models of human development. pp. 793-828). Hoboken, N.J.: John Wiley & Sons.

Campbell, S. B. (1995). Behavior problesm in preschool children: A review of recent research. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 36*, 113-149.

Campbell, S. B. (1997). Behavior problems in preschool children: Developmental and family issues. In T. H. Ollendick, & R. J. Prinz (Editors), *Advances in clinical child psychology* (Vol. 19). New York: Plenum Press.

Campbell, S. B. (2002). *Behavior problems in preschool children: Clinical and developmental issues* (2nd ed.). New York: Guilford Press.

Campbell, S. B., Matestic, P., Von Stauffenberg, C., Mohan, R., & Kirchner, T. (2007). Trajectories of maternal depressive symptoms, maternal sensitivity, and children's functioning at school entry. *Developmental Psychology, 43*, 1202-1215.

Campbell, S. B., Shaw, D. S., & Gilliom, M. (2000). Early externalizing behavior problems: toddlers and preschoolers at risk for later maladjustment. *Development and Psychopathology, 12*, 467-488.

Campbell, S. B., Spieker, S., Burchinal, M., & Poe, M. D. (2006). Trajectories of Aggression From Toddlerhood to Age 9 Predict Academic and Social Functioning Through Age 12. *Journal of Child Psychology and Psychiatry, 47*, 791-800.

Canadian Mental Health Association. (1995). *Depression: An overview of the literature.* Ottawa: Canadian Mental Health Association.

Caspi, A., Roberts, B. W., & Shiner, R. (2005). Personality development: stability and change. *Annual Review of Psychology, 56*, 453-484.

Chao, R. K., & Willms, J. D. (2002). The effects of parenting practices on children's outcomes. In J. D. Willms (Editor), *Vulnerable Children* (pp. 149-165). Edmonton, AB: University of Alberta Press.

Cicchetti, D. (1988). The organization and coherence of socioemotional, cognitive, and representational development: Illustrations through a developmental psychopathology perspective on Down Syndrome and child maltreatment. In R. A. Thompson (Editor), *Nebraska symposium on motivation* (Vol. 36, Socioemotional development, pp. 259-366). Lincoln, NE: University of Nebraska Press.

Cicchetti, D., & Aber, J. L. (1998). Contextualism and developmental psychopathology. *Development and Psychopathology, 10*, 137-141.

Cole, D. A., & Maxwell, S. E. (2003). Testing mediational models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology, 112*, 558-577.

Collins, W. A., Maccoby, E. E., Steinberg, L., Hetherington, E. M., & Bornstein, M. H. (2000). Contemporary research on parenting: The case for nature or nurture. *American Psychologist, 55*, 218-232.

Conger, R. D., & Elder, G. H. Jr. (1994a). *Families in troubled times : adapting to change in rural America*. New York: A. de Gruyter.

Conger, R. D., & Elder, G. H. Jr. (1994b). Families in Troubled Times: The Iowa Youth and Families Project. In R. D. Conger, & G. H. Jr. Elder (in collaboration with Frederick O. Lorenz, Ronald L. Simons, and Lee B. Whitbeck.), *Families in troubled times : adapting to change in rural America*. New York: A. de Gruyter.

Conger, R. D., Ge, X., Elder, G. H. Jr., Lorenz, F. O., & Simons, R. L. (1994). Economic stress, coercive family process, and developmental problems of adolescents. *Child Development, 65*, 541-561.

Cooksey, E. C., Menaghan, E. G., & Jekielek, S. M. (1997). Life-course effects of work and family circumstances on children. *Social Forces, 76*, 637-667.

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology., 78*, 98-104.

Côté, S., Tremblay, R. E., Nagin, D., Zoccolillo, M., & Vitaro, F. (2002). The development of impulsivity, fearfulness, and helpfulness during childhood: patterns of consistency and change in the trajectories of boys and girls. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 43*, 609-618.

Côté, S. M., Vaillancourt, T., Barker, E. D., Nagin, D., & Tremblay, R. E. (2007). The joint development of physical and indirect aggression: predictors of continuity and change during childhood. *Development and Psychopathology, 19*, 37-55.

Côté, S. M., Vaillancourt, T., Leblanc, J. C., Nagin, D. S., & Tremblay, R. E. (2006). The development of physical aggression from toddlerhood to pre-adolescence: a nation wide longitudinal study of Canadian children. *Journal of Abnormal Child Psychology, 34*, 71-85.

Cummings, E. M., Davies, P. T., & Campbell, S. B. (2000). *Developmental psychopathology and family process: Theory, research, and clinical implications.* New York: Guilford Press.

Cummings, E. M., Keller, P. S., & Davies, P. T. (2005). Towards a family process model of maternal and paternal depressive symptoms: exploring multiple relations with child and family functioning. *Journal of Child Psychology and Psychiatry, 46*, 479-489.

Cunningham, C. E., & Boyle, M. H. (2002). Preschoolers at risk for attention-deficit hyperactivity disorder and oppositional defiant disorder: family, parenting, and behavioral correlates. *Journal of Abnormal Child Psychology, 30*, 555-569.

Dallaire, D. H., & Weinraub, M. (2005). The Stability of parenting behaviors over the first 6 years of life. *Early Childhood Research Quarterly, 20*, 201-219.

Dawson, G., Ashman, S. B., & Carver, L. J. (2000). The role of early experience in shaping behavioral and brain development and its implications for social policy. *Development and Psychopathology, 12*, 695-712.

Dawson, G., Ashman, S. B., Panagiotides, H., Hessl, D., Self, J., Yamada, E., & Embry, L. (2003). Preschool outcomes of children of depressed mothers: role of maternal behavior, contextual risk, and children's brain activity. *Child Development, 74*, 1158-1175.

de Raaf, S., Motte, A., & Vincent, C. (2003). *The Dynamics of Reliance on EI Benefits: Evidence From the SLID - The Earnings Supplement Project.* SRDC Working Paper Series 03-08. Ottawa: Social Research Demonstration Corporation.

Dearing, E., McCartney, K., & Taylor, B. A. (2001). Change in family income to needs matters more for children with less. *Child Development, 72*, 1779-1793.

Dearing, E., McCartney, K., & Taylor, B. A. (2006). Within-child associations between family income and externalizing and internalizing problems. *Developmental Psychology, 42*, 237-252.

Dearing, E., Taylor, B. A., & McCartney, K. (2004). Implications of family income dynamics for women's depressive symptoms during the first 3 years after childbirth. *American Journal of Public Health, 94*, 1372-1377.

Dodge, K. A., Coie, J. D., & Lynam, D. (2006). Aggression and antisocial behavior in youth. In W. Damon, & R. M. Lerner (editors-in-chief), *Handbook of child psychology* (6th ed., Vol. 3. Social, emotional, and personality development. pp. 719-788). Hoboken, N.J.: John Wiley & Sons.

Downey, G., & Coyne, J. C. (1990). Children of depressed parents: An integrative review. *Psychological Bulletin, 108*, 50-76.

Duncan, G. J., & Brooks-Gunn, J. (1997). *Consequences of growing up poor.* New York: Russell Sage Foundation.

Dunifon, R., Kalil, A., & Danziger, S. K. (2003). Maternal work behavior under welfare reform: How does the transition from welfare to work affect child development? *Children and Youth Services Review, 25*(1/2), 55–82.

Eamon, M. K. (2001). Antecedents and socioemotional consequences of physical punishment on children in two-parent families*. Child Abuse & Neglect, 25*, 787–802.

Elgar, F. J., Curtis, L. J., Mcgrath, P. J., Waschbusch, D. A., & Stewart, S. H. (2003). Antecedent-consequence conditions in maternal mood and child adjustment: a four-year cross-lagged study. *Journal of Clinical Child and Adolescent Psychology, 32*, 362-374.

Elgar, F. J., Mcgrath, P. J., Waschbusch, D. A., Stewart, S. H., & Curtis, L. J. (2004a). Mutual influences on maternal depression and child adjustment problems. *Clinical Psychology Review, 24*, 441-459.

Federal/Provincial/Territorial Early Childhood Development Agreement. (2003). *The well-being of Canada's young children: Government of Canada report 2003.* Ottawa: Human Resources Development Canada and Health Canada.

Federal, Provincial and Territorial Ministers Responsible for Social Services. (2005). *Evaluation of the National Child Benefit Initiative: Synthesis Report*. Ottawa (Catalogue No. SP-AH-215-10-04E).

Fergusson, D. M., & Lynskey, M. T. (1993). The effects of maternal depression on child conduct disorder and attention-deficit behaviors. *Social Psychiatry and Psychiatric Epidemiology, 28*(3), 116-123.

Fontaine, N., Carbonneau, R., Vitaro, F., Barker, E. D., & Tremblay, R. E. (2009). Research review: A critical review of studies on the developmental trajectories of antisocial behavior in females. *Journal of Child Psychology and Psychiatry* , *50*, 363–385.

Forman, D. R., O'Hara, M. W., Stuart, S., Gorman, L. L., Larsen, K. E., & Coy, K. C. (2007). Effective treatment for postpartum depression is not sufficient to improve the developing mother-child relationship. *Development and Psychopathology, 19*, 585-602.

Foss, G. F., Chantal, A. W., & Hendrickson, S. (2004). Maternal depression and anxiety and infant development: a comparison of foreign-born and native-born mothers. *Public Health Nursing, 21*, 237-246.

Gallagher, K. C. (2002). Does child temperament moderate the influence of parenting on adjustment? *Developmental Review, 22*, 623-643.

Garson, G. D. (1998) Structural Equation Modeling [Web Page]. URL http://www2.chass.ncsu.edu/garson/pa765/structur.htm [2006, November 12].

Gershoff, E. T. (2002). Corporal punishment by parents and associated child behaviors and experiences: a meta-analytic and theoretical review. *Psychological Bulletin, 128*, 539-579.

Giles, P. (2004). *Low income measurement in Canada*. (Catalogue no. 75F0002MIE — No. 011). Ottawa: Statistics Canada, Income Statistics Division.

Government of Canada. (2008). *The well-being of Canada's young children: Government of Canada report 2006*. Ottawa: Human Resources and Social Development Canada, the Public Health Agency of Canada and Indian and Northern Affairs Canada.

Grewal, R. C. J. A., & Baumgartner, H. (2004). Multicollinearity and Measurement Error in Structural Equation Models: Implications for Theory Testing. *Marketing Science*, *23*, 519–529.

Guerin, D. W., Gottfried, A. W., & Thomas, C. W. (1997). Difficult Temperament and Behaviour Problems: A Longitudinal Study from 1.5 to 12 Years. *International Journal of Behavioral Development, 21*, 71–90.

Harland, P., Reijneveld, S. A., Brugman, E., Verloove-Vanhorick, S. P., & Verhulst, F. C. (2002). Family factors and life events as risk factors for behavioural and emotional problems in children. *European Child & Adolescent Psychiatry, 11*(4), 176-184.

Hayduk, L. A. (1987). *Structural equation modeling with LISREL.* Baltimore, MD: Johns Hopkins University Press.

Hayduk, L. A. (1996). *LISREL issues, debates, and strategies.* Baltimore, MD: Johns Hopkins University Press.

Health Canada. (2002). *A report on mental illnesses in Canada*. Ottawa: Canada, Health Canada.

Ingoldsby, E. M., Shaw, D. S., Owens, E. B., & Winslow, E. B. (1999). A longitudinal study of interparental conflict, emotional and behavioral reactivity, and preschoolers' adjustment problems among low-income families. *Journal of Abnormal Child Psychology, 27*, 343-356.

Jackson, A., & Scott, K. (2002). *Does work include children?: The effects of the labour market on family income, time and stress.* Toronto: The Laidlaw Foundation.

Janz, T. (2004). *Low-paid employment and 'moving up' 1996-2001*. (Catalogue no. 75F0002MIE — No. 003). Ottawa: Statistics Canada, Income Statistics Division.

Jöreskog, K. G., & Sörbom, D. (1996). *LISREL 8: User's Reference Guide.* Chicago: Scientific Software International.

Kalil, A., & Dunifon, R. (2007). Maternal work and welfare use and child well-being: evidence from 6 years of data from the Women's Employment Study. *Children and Youth Services Review, 29*, 742-761.

Keenan, K., Shaw, D., Delliquadri, E., Giovannelli, J., & Walsh, B. (1998). Evidence for the continuity of early problem behaviors: application of a developmental model. *Journal of Abnormal Child Psychology, 26*, 441-452.

Kim-Cohen, J., Moffitt, T. E., Caspi, A., & Taylor, A. (2004). Genetic and Environmental Processes in Young Children's Resilience and Vulnerability to Socioeconomic Deprivation. *Child Development, 75*, 651-668.

Kim-Cohen, J., Moffitt, T. E., Taylor, A., Pawlby, S. J., & Caspi, A. (2005). Maternal depression and children's antisocial behavior - Nature and nurture effects. *Archives of General Psychiatry, 62*, 173-181.

Klein, D. N., Shankman, S. A., & Rose, S. (2008). Dysthymic disorder and double depression: Prediction of 10-year course trajectories and outcomes. *Journal of Psychiatric Research, 42*, 408-415.

Lacourse, E., Côté, L., Nagin, D. S., Vitaro, F., Brendgen, M., & Tremblay, R. E. (2002). A Longitudinal-experimental approach to testing theories of antisocial behavior development. *Development and Psychopathology, 14*, 909-924.

Lahey, B. B., Waldman, I. D., & Mcburnett, K. (1999). Annotation: the development of antisocial behavior: an integrative causal model. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 40*, 669-682.

Lavigne, J. V., Arend, R., Rosenbaum, D., Binns, H. J., Christoffel, K. K., & Gibbons, R. D. (1998a). Psychiatric disorders with onset in the preschool years: I. Stability of diagnoses. *Child and Adolescent Psychiatry, 37*, 1246-1254.

Lavigne, J. V., Arend, R., Rosenbaum, D., Binns, H. J., Christoffel, K. K., & Gibbons, R. D. (1998b). Psychiatric disorders with onset in the preschool years: II. Correlates and predictors of stable case status. *Child and Adolescent Psychiatry, 37*, 1255-1261.

Lei, M., & Lomax, R. G. (2005). The effect of varying degrees of nonnormality in structural equation modeling. *Structural Equation Modeling-A Multidisciplinary Journal, 12*, 1-27.

Lemery, K. S., Essex, M. J., & Smider, N. A. (2002). Revealing the relation between temperament and behavior problem symptoms by eliminating measurement confounding: Expert ratings and factor analyses. *Child Development, 73*, 867-882.

Leung, D. W., & Slep, A. M. S. (2006). Predicting inept discipline: the role of parental depressive symptoms, anger, and attributions. *Journal of Consulting and Clinical Psychology, 74*, 524-534.

Lerner, Jacqueline V; Castellino, Domini R. (2000). Parent-Child Relationship: Childhood. In, Kazdin, A. E (Ed), *Encyclopedia of psychology*, *Vol. 6*. (pp. 46-50). Washington, DC, US; New York, NY, US: American Psychological Association; Oxford University Press.

Lewis, C., & Lamb, M. E. (2003). Fathers' influences on children's development: the evidence from two-parent families. *European Journal of Psychology of Education, 18*, 211-228.

Lin, Z. (1998). *Employment Insurance in Canada: Recent Trends and Policy Changes* (Catalogue No. 11F0019MPE No.125 ed.). Ottawa: Statistics Canada.

Lipman, E. L., & Offord, D. R. (1997). Psychosocial morbidity among poor children in Ontario. In G. J. Duncan, & J. Brooks-Gunn (Editors), *Consequences of growing up poor.* (pp. 239-287). New York: Russell Sage Foundation.

Lorant, V., Croux, C., Weich, S., Deliege, D., Mackenbach, J., & Ansseau, M. (2007). Depression and socio-economic risk factors: 7-year longitudinal population study. *British Journal of Psychiatry, 190*, 293-298.

Lovejoy, M. C., Graczyk, P. A., O'Hare, E., & Neuman, G. (2000). Maternal depression and parenting behavior: a meta-analytic review. *Clinical Psychology Review, 20*, 561-592.

Luoma, I., Kaukonen, P., Mantymaa, M., Puura, K., Tamminen, T., & Salmelin, R. (2004). A longitudinal study of maternal depressive symptoms, negative expectations and perceptions of child problems. *Child Psychiatry & Human Development, 35*, 37-53.

Lyons-Ruth, K., Easterbrooks, M. A., & Davidson Cibelli, C. (1997). Infant attachment strategies, infant mental lag, and maternal depressive symptoms: Predictors of internalizing and externalizing problems at age 7. *Developmental Psychology, 33*, 681-692.

Lyons-Ruth, K., Lyubchik, A., Wolfe, R., & Bronfman, E. (2002a). Parental depression and child attachment: Hostile and helpless profiles of parent and child behavior among families at risk. S. H. Goodman, & I. H. Gotlib (Editiors), *Children of depressed parents: Mechanisms of risk and implications for treatment.* (pp. 89-120). Washington, DC: American Psychological Association.

Lyons-Ruth, K., Wolfe, R., Lyubchik, A., & Steingard, R. (2002b). Depressive symptoms in parents of children under age 3: Sociodemographic predictors, current correlates, and associated parenting behaviors. In N. Halfon, K. T. McLearn, & et al. (Editors), *Child rearing in America: Challenges facing parents with young children.* (pp. 217-259). New York, NY: Cambridge University Press.

Lyons-Ruth, K., Wolfe, R., & Lyubchik, A. (2000). Depression and the parenting of young children: Making the case for early preventive mental health services. *Harvard Review of Psychiatry, 8*(3), 148-153.

Maccoby, E. E. (2000). Parenting and its effects on children: On reading and misreading behavior genetics. *Annual Review of Psychology, 51*, 1-27.

Maccoby, E. E. (1992). The role of parents in the socialization of children: An historical overview. *Developmental Psychology, 28*, 1006-1017.

Macmillan, R., McMorris, B. J., & Kruttschnitt, C. (2004). Linked lives: stability and change in maternal circumstances and trajectories of antisocial behavior in children. *Child Development, 75*, 205-220.

Magnusson, D. (1995). Individual development: A holistic, integrated model. In P. Moen, G. H. Jr. Elder, & K. Lüscher (Editors), *Examining lives in context: Perspectives on the ecology of human development.* (pp. 19-60). Washington, DC: American Psychological Association.

Malik, N. M., Boris, N. W., Heller, S. S., Harden, B. J., Squires, J., Chazan-Cohen, R., Beeber, L. S., & Kaczynski, K. J. (2007). Risk for maternal depression and child aggression in early head start families: a test of ecological models. *Infant Mental Health Journal, 28*, 171-191.

Mayer, S. E. (2002). *The Influence of Parental Income on Children's Outcomes*. Wellington, NZ: Knowledge Management Group, Ministry of Social Development, Te Manatu Whakahiato Ora.

McKee, L., Colletti, C., Rakow, A., Jones, D. J., & Forehand, R. (2008). Parenting and child externalizing behaviors: Are the associations specific or diffuse? *Aggression and Violent Behavior, 13*, 201-215.

McLennan, J. D., & Offord, D. R. (2002). Should postpartum depression be targeted to improve child mental health? *Journal of the American Academy of Child and Adolescent Psychiatry, 41*, 28-35.

McLeod, J. D., & Shanahan, M. J. (1993). Poverty, parenting and children's mental health. *American Sociological Review, 58*, 351-366.

McLeod, J. D., & Shanahan, M. J. (1996). Trajectories of poverty and children's mental health. *Journal of Health and Social Behavior, 37*, 207-220.

McLoyd, V. C. (1998). Socioeconomic disadvantage and child development. *American Psychologist, 53*, 185-204.

McLoyd, V. C., Jayaratne, T. E., Ceballo, R., & Borquez, J. (1994). Unemployment and work interruption among African American single mothers: Effects on parenting and adolescent socioemotional functioning. *Child Development, 65*, 562-589.

Miller, F., Jenkins, J., & Keating, D. (2002). Parenting and children's behavior problems. In J. D. Willms (Editor), *Vulnerable Children* (pp. 167-181). Edmonton, AB: University of Alberta Press.

Miller-Lewis, L. R., Baghurst, P. A., Sawyer, M. G., Prior, M. R., Clark, J. J., Arney, F. M., & Carbone, J. A. (2006). Early childhood externalising behaviour problems: child, parenting, and family-related predictors over time. *Journal of Abnormal Child Psychology, 34*, 891-906.

Mistry, R. S., Biesanz, J. C., Taylor, L. C., Burchinal, M., & Cox, M. J. (2004). Family income and its relation to preschool children's adjustment for families in the NICHD Study of Early Child Care. *Developmental Psychology, 40* , 727–745.

Mistry, R. S., Vandewater, E. A., Huston, A. C., & McLoyd, V. C. (2002). Economic well-being and children's social adjustment: The role of family process in an ethnically diverse low-income sample. *Child Development, 73*, 935-951.

Moore, K. A., Glei, D. A., Driscoll, A. K. , Zaslow, M. J., & Redd, Z. (2002). Poverty and welfare patterns: Implications for children. *Journal of Social Policy, 31*, 207-227.

Morissette, R., & Ostrovsky, Y. (2005). *The instability of family earnings and family income in Canada, 1986 to 1991 and 1996 to 2001*. (11F0019 No. 265). Ottawa: Statistics Canada, Business and Labour Market Analysis Division.

Morrell, J., & Murray, L. (2003). Parenting and the development of conduct disorder and hyperactive symptoms in childhood: a prospective longitudinal study from 2 months to 8 years. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 44*, 489-508.

Morris, A. S., Silk, J. S., Steinberg, L., Sessa, F. M., Avenevoli, S., & Essex, M. J. (2002). Temperamental vulnerability and negative parenting as interacting predictors of child adjustment. *Journal of Marriage and the Family, 64*, 461-471.

Mulvaney, M. K., Mebert, C. J., & Flint, J. (2007). Parental affect and childrearing beliefs uniquely predict mothers' and fathers' ratings of children's behavior problems. *Journal of Applied Developmental Psychology, 28*(5-6), 445-457.

Munson, J. A., McMahon, R., & Spieker, S. J. (2001). Structure and variability in the developmental trajectory of children's externalizing problems: Impact of infant attachment, maternal depressive symptomatology, and child sex. *Development and Psychopathology, 13*, 277–296.

Muris, P., & Ollendick, T. H. (2005). The role of temperament in the etiology of child psychopathology. *Clinical Child and Family Psychology Review, 8*, 271-289.

Nachtigall, C., Kroehne, U., Funke, F., & Steyer, R. (2003). (Why) should we use SEM? Pros and cons of structural equation modeling. *Methods of Psychological Research Online, 8*(2), 1-22.

Nagin, D., & Tremblay, R. E. (1999). Trajectories of boys' physical aggression, opposition, and hyperactivity on the path to physically violent and non-violent juvenile delinquency. *Child Development, 70*, 1181-1196.

National Council of Welfare. (Spring, 1998). *Profiles of welfare: myths and realities.* Ottawa: Minister of Public Works and Government Services Canada.

National Council of Welfare. (2001). *Child poverty profile, 1998*. Ottawa: Minister of Public Works and Government Services Canada.

National Institute of Child Health and Human Development (NICHD) Early Child Care Research Network. (2005). Duration and developmental timing of poverty and children's cognitive and social development from birth through third grade. *Child Development, 76*, 795-810.

Normand, C. L., Zoccolillo, M., Tremblay, R. E., McIntyre, L., Boulerice, B., McDuff, P., Pérusse, D., & Barr, R. G. (1996). In the beginning: Looking for the roots of babies' difficult temperament. In Human Resources Development Canada, & Statistics Canada, *Growing up in Canada: national longitudinal survey of children and youth* (pp. 57-68). Ottawa, ON: Statistics Canada; Human Resources Development Canada.

O'Connor, T. G. (2002). Annotation: The 'effects' of parenting reconsidered: findings, challenges, and applications. *Journal of Child Psychology and Psychiatry, 43*, 555-572.

O'Leary, S. G., Slep, A. M. S., & Reid, M. J. (1999). A Longitudinal Study of Mothers' Overreactive Discipline and Toddlers' Externalizing Behavior. *Journal of Abnormal Child Psychology, 27*, 331-341.

Offord, D. R., Kraemer, H. C., Kazdin, A. E., Jensen, P. S., & Harrington, R. (1998). Lowering the burden of suffering from child psychiatric disorder: Trade-offs among clinical, targeted, and universal interventions. *Journal of the American Academy of Child and Adolescent Psychiatry, 37*, 686-694.

Olson, S. L., Bates, J. E., Sandy, J. M., & Lanthier, R. (2000). Early developmental precursors of externalizing behavior in middle childhood and adolescence. *Journal of Abnormal Child Psychology, 28*, 119-133.

Owens, E. B., & Shaw, D. S. (2003). Predicting Growth Curves of Externalizing Behavior Across the Preschool Years. *Journal of Abnormal Child Psychology, 31*, 575-590.

Owens, E. B., Shaw, D. S., & Vondra, J. I. (1998). Relations Between Infant Irritability and Maternal Responsiveness in Low-Income Families. *Infant Behavior & Development, 21*, 761-777.

Paquet, B. (2002). *Low Income Cutoffs from 1992 to 2001 and Low Income Measures from 1991 to 2000*. (Catalogue no. 75F0002MIE — No. 005). Ottawa: Income Statistics Division, Statistics Canada.

Parcel, T. L., & Menaghan, E. G. (1994). Early parental work, family social capital, and early childhood outcomes. *American Journal of Sociology, 99*, 972-1009.

Parcel, T. L., & Menaghan, E. G. (1997). Effects of low-wage employment on family well-being. *Future of Children, 7*(1), 116-121.

Parke, R. D. (2004). Development in the family. *Annual Review of Psychology, 55*, 365-399.

Paterson, G., & Sanson, A. (1999). The association of behavioural adjustment to temperament, parenting, and family characteristics among 5-year-old children. *Social Development, 8*, 293-309.

Patten, S. B., Wang, J. L., Williams, J. V. A., Currie, S., Beek, C. A., Maxwell, C. J., & El-Guebaly, N. (2006). Descriptive epidemiology of major depression in Canada. *Canadian Journal of Psychiatry-Revue Canadienne De Psychiatrie, 51*, 84-90.

Patterson, G. R. (1986). Performance models for antisocial boys. *American Psychologist, 41*, 432-444.

Patterson, G. R. (2002). The early development of coercive family process. In J. B. Reid, G. R. Patterson, & J. J. Snyder (Editor), *Antisocial behavior in children and adolescents: A developmental analysis and model for intervention.* (pp. 25-44). Washington, DC: US: American Psychological Association.

Phipps, S., & Lethbridge, L. (May 2006). *Income and the outcomes of children*. (Catalogue No. 11F0019-281). Ottawa: Statistics Canada, Business and Labour Market Analysis.

Picot, G., Morissette, R., & Myles, J. (2003). *Low-income intensity during the 1990s: The role of economic growth, employment earnings and social transfers.* (Catalogue no. 11F0019MIE — No. 172). Ottawa: Statistics Canada: Business and Labour Market Analysis Division.

Picot, G., Zyblock, M., & Pyper, W. (1999). *Why do children move into and out of low income: Changing labour market conditions or marriage and divorce?* (132, Research Paper Series). Ottawa: Statistics Canada, Analytical Studies Branch.

Picot, G., & Heisz, A. (2000). *The performance of the 1990s Canadian labour market.* (11F0019MPE No. 148). Ottawa: Statistics Canada. Business and Labour Market Analysis Division.

Podsakoff, P. M., MacKenzie, S. B., Podsakoff, N. P., & Lee, J.-Y. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies, *88*, 879–903.

Powell, D., Dunlap, G., & Fox, L. (2006). Prevention and Intervention for the Challenging Behaviors of Toddlers and Preschoolers. *Infants and Young Children*, *19*, 25-35.

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement., 1*, 385-401.

Rashid, A. (1999). Family income: 25 years of stability and change. *Perspectives, 11*, 9-15.

Raver, C. C. (2003). Does Work Pay Psychologically as Well as Economically? The Role of Employment in Predicting Depressive Symptoms and Parenting Among Low-Income Families. *Child Development, 74*, 1720-1736.

Reid, J. B., & Patterson, G. R. (1989). The development of antisocial behaviour patterns in childhood and adolescence. *European Journal of Personality , 3*, 107-119.

Roberts, P., Smith, P., & Nason, H. (2001, April). *Children and familial economic welfare: The effect of income on child development.* (W-01-1-11E). Ottawa: Applied Research Branch, Strategic Policy, Human Resources Development Canada.

Romano, E., Tremblay, R., Boulerice, B., & Swisher, R. (2005). Multilevel correlates of childhood physical aggression and prosocial behavior. *Journal of Abnormal Child Psychology, 33*, 565-578.

Ross, D. P., & Roberts, P. (1999). *Income and child well-being: A new perspective on the poverty debate*. Ottawa: Canadian Council on Social Development.

Rothbart, M. K., & Bates, J. E. (1998). Temperament. In N. Eisenberg (Editor), *Social, emotional and personality development* (5th ed., Vol. 3, pp. 105-176). New York: Wiley.

Rothbart, M. K., & Bates, J. E. (2006). Temperament. In W. Damon, & R. M. Lerner (editors-in-chief), *Handbook of child psychology* (6th ed., Vol. 3. Social, emotional, and personality development. pp. 99-166). Hoboken, N.J.: John Wiley & Sons.

Rothbart, M. K., Derryberry, D., & Hershey, K. (2000). Stability of temperament in childhood: laboratory infant assessment to parent report at seven years. In V. J. Molfese, & D. L. Molfese (Editors), *Temperament and personality across the life span.* (pp. 85-119). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Rubin, K. H., & Burgess, K. B. (2002). Parents of aggressive and withdrawn children. in M. H. Bornstein (Editor), *Handbook of parenting* (Vol. 1). Mahwah, N.J. Erlbaum.

Rubin, K. H., Burgess, K. B., Dwyer, K. M. , & Hastings, P. D. (2003). Predicting preschoolers' externalizing behaviors from toddler temperament, conflict, and maternal negativity. *Developmental Psychology, 39*, 164-176.

Rutter, M. (2002). Nature, nuture, and development: From evangelism through science toward policy and practice. *Child Development, 73*, 1-21.

Michael Rutter (2007). Gene–environment interdependence. *Developmental Science* 10, 12–18.

Sameroff, A. (1994). Developmnetal systems and family functioning. In R. D. Parke, & S. G. Kellam (Editors), *Exploring family relationships with other social contexts.* (pp. 199-214). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Sanson, A., Hemphill, S. A., & Smart, D. (2004). Connections between temperament and social development: a review. *Social Development, 13*, 142-170.

Sarkadi, A., Kristiansson, R., Oberklaid, F., & Bremberg, S. (2008). Fathers' involvement and children's developmental outcomes: a systematic review of longitudinal studies. *Acta Paediatrica, 97*, 153-158.

Saudino, K. J. (2005). Behavioral Genetics and Child Temperament. *Journal of Developmental and Behavioral Pediatrics, 26*, 214-223.

Scaramella, L. V., & Leve, L. D. (2004). Clarifying parent-child reciprocities during early childhood: the early childhood coercion model. *Clinical Child and Family Psychology Review, 7*, 89-107.

Scott, E. K., Edin, K., London, A. S., & Kissane, R. J. (2004). Unstable work, unstable income: implications for family well-being in the era of time-limited welfare. *Journal of Poverty, 8*, 61-88.

Service Canada. (2007) Employment Insurance (EI) and Violations [Web Page]. URL http://www1.servicecanada.gc.ca/en/ei/fraud/violation_chart.shtml [2008, February 1].

Shanahan, M. J., Davey, A., & Brooks, J. (July, 1998). Dynamic models of poverty and psychosocial adjustment through childhood. Paper presented at the 1997 Meeting of the American Sociological Association, Toronto.

Shaw, D. S., Dishion, T. J., Supplee, L., Gardner, F., & Arnds, K. (2006). Randomized trial of a family-centered approach to the prevention of early conduct problems: 2-year effects of the Family Check-up in early childhood. *Journal of Consulting and Clinical Psychology, 74*, 1-9.

Shaw, D. S., Gilliom, M., Ingoldsby, E. M. , & Nagin, D. S. (2003). Trajectories leading to school-age conduct problems. *Developmental Psychology, 39*, 189-200.

Shaw, D. S., Keenan, K., & Vondra, J. I. (1994). Developmental precursors of externalizing behavior - ages 1 to 3. *Developmental Psychology, 30*, 355-364.

Shaw, D. S., Lacourse, E., & Nagin, D. S. (2005). Developmental trajectories of conduct problems and hyperactivity from ages 2 to 10. *Journal of Child Psychology and Psychiatry, 46*, 931-942.

Shaw, D. S., Owens, E. B., Giovannelli, J. , & Winslow, E. B. (2001). Infant and Toddler Pathways Leading to Early Externalizing Disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*, 36–43.

Shaw, D. S., Owens, E. B., Vondra, J. I., Keenan, K., & Winslow, E. B. (1996). Early risk factors and pathways in the development of early disruptive behavior problems. *Development and Psychopathology, 8*, 679-699.

Shaw, D. S., Winslow, E. B., Owens, E., Vondra, J. I., Cohn, J. F., & Bell, R. Q. (1998a). The development of early externalizing problems among children from low-income families: A transformational perspective. *Journal of Abnormal Child Psychology, 26*, 95-107.

Shaw, D. S., Winslow, E. B., Owens, E. B., & Hood, N. (1998b). Young children's adjustment to chronic family adversity: A longitudinal study of low-income families. *Journal of the American Academy of Child and Adolescent Psychiatry, 37*, 545-553.

Shiner, R., & Caspi, A. (2003). Personality differences in childhood and adolescence: measurement, development, and consequences. *Journal of Child Psychology and Psychiatry, 44*, 2–32.

Siefert, K., Bowman, P. J., Heflin, C. M., Danziger, S., & Williams, D. R. (2000). Social and environmental predictors of maternal depression in current and recent welfare recipients. *American Journal of Orthopsychiatry, 70*, 510-522.

Sijtsma, K. (2009). On the use, misuse, and the very limited usefulness of Cronbach's alpha. *Psychometrika*, *74*, 107-120.

Silberg J. L. & Eaves L. J. (2004). Analysing the contributions of genes and parent–child interaction to childhood behavioural and emotional problems: a model for the children of twins. *Psychological Medicine*, 34, 347–356.

Silberg, J., & Rutter, M. (2002). Nature-nurture interplay in the risks associated with parental depression. In S. H. Goodman, & I. H. Gotlib (Editors), *Children of Depressed Parents : Mechanisms of Risk and Implications for Treatment* (pp. 13-36). Washington, DC: American Psychological Association.

Sivo, S. A., Fan, X. T., Witta, E. L., & Willse, J. T. (2006). The search for "optimal" cutoff properties: Fit index criteria in structural equation modeling. *Journal of Experimental Education, 74*, 267-288.

Smeekens, S., Riksen-Walraven, J. M., & Van Bakel, H. J. A. (2007). Multiple determinants of externalizing behavior in 5-year-olds: a longitudinal model. *Journal of Abnormal Child Psychology, 35*, 347-361.

Smith, C. L., Calkins, S. D., Keane, S. P. , Anastopoulos, A. D., & Shelton, T. L. (2004). Predicting stability and change in toddler behavior problems: Contributions of maternal behavior and child gender. *Developmental Psychology, 40*, 29-42.

Smith, M. (2004). Parental mental health: disruptions to parenting and outcomes for children. *Child and Family Social Work, 9*, 3–11.

Snyder, J., Cramer, A., Afrank, J., & Patterson, G. R. (2005). The contributions of ineffective discipline and parental hostile attributions of child misbehavior to the development of conduct problems at home and school. *Developmental Psychology, 41*, 30-41.

Somers, M.-A., & Willms, J. D. (2002). Maternal depression and childhood vulnerability. In J. D. Willms (Editor), *Vulnerable Children* (pp. 211-228). Edmonton, AB: University of Alberta Press.

Sourander, A. (2001). Emotional and behavioural problems in a sample of Finnish three-year-olds. *European Child and Adolescent Psychiatry, 10*, 98-104.

Statistics Canada. Census Operations Division. (2003). 2001 Census: analysis series. Income of Canadian families. Vol. Catalogue no. 96F0030XIE2001014. Ottawa: Ministry of Industry.

Statistics Canada. (2007). *Guide to the Labour Force Survey, Catalogue no. 71-543-GIE*. Ottawa: Statistics Canada.

Statistics Canada. Special Surveys Division. (1996). *Microdata User Guide: National Longitudinal Survey of Chilcren and Youth - Cycle 1, September 1994 to May 1995*. Hull, Quebec:

Statistics Canada. Special Surveys Division. (2000). *Microdata User Guide: National Longitudinal Survey of Chilcren and Youth - Cycle 2, September 1996 to May 1997*. Hull, Quebec:

Statistics Canada. Special Surveys Division. (2002). *Microdata User Guide: National Longitudinal Survey of Chilcren and Youth - Cycle 3, September 1998 to May 1999*. Hull, Quebec:

Statistics Canada. Special Surveys Division. (2004). *Microdata User Guide: National Longitudinal Survey of Chilcren and Youth - Cycle 4, September 2000 to May 2001*. Hull, Quebec:

Stright, A. D., Gallagher, K. C., & Kelley, K. (2008). Infant temperament moderates relations between maternal parenting in early childhood and children's adjustment in first grade. *Child Development, 79*, 186-200.

Strohschein, L. (2005). Household income histories and child mental health trajectories. *Journal of Health and Social Behavior, 46*, 359-375.

Taylor, B. A., Dearing, E., & McCartney, K. (2004). Incomes and outcomes in early childhood. *The Journal of Human Resources, 39*, 980-1007.

Thomas, A., & Chess, S. (1989). Temperament and personality. G. A. Kohnstamm, J. E. Bates, & M. K. Rothbart (Editors), *Temperament in childhood.* (pp. 249-262). Chichester: John Wiley & Sons.

Thomas, E. M. (2004). *Agressive behaviour outcomes for young children: Change in parenting environment predicts change in behaviour.* (Catalogue no. 89-599-MIE). Ottawa: Statistics Canada. Special Surveys Division.

Thompson, R. A. (2000). The legacy of early attachments. *Child Development, 71*, 145-152.

Thorpe, K., Golding, J., MacGillivray, I., & Greenwood, R. (1991). Comparison of prevalence of depression in mothers of twins and mothers of singletons. *British Medical Journal, 302*(6781), 875.

Tremblay, R. E. (2000). The development of aggressive behaviour during childhood: What have we learned in the past century? *International Journal of Behavioral Development, 24*, 129–141.

Tremblay, R. E. (2004). Decade of Behavior Distinguished Lecture: Development of physical aggression during infancy. *Infant Mental Health Journal, 25*, 399-407.

Tremblay, R. E. (2006). Prevention of youth violence: Why not start at the beginning? *Journal of Abnormal Child Psychology, 34*, 481-487.

Tremblay, R. E., Nagin, D. S., Seguin, J. R., Zoccolillo, M., Zelazo, P. D., Boivin, M., Perusse, D., & Japel, C. (2004). Physical aggression during early childhood: trajectories and predictors. *Pediatrics, 114*, E43-E50.

Trentacosta, C. J., & Shaw, D. S. (2008). Maternal predictors of rejecting parenting and early adolescent antisocial behavior. *Journal of Abnormal Child Psychology, 36*, 247-259.

U.S. Department of Health and Human Services. Administration for Children and Families. (2004) Temporary Assistance for Needy Families (TANF), Sixth Annual Report to Congress: [Web Page]. URL http://www.acf.hhs.gov/programs/ofa/annualreport6/ar6index.htm [2007, October 15].

Vaillancourt, T., Brendgen, M., Boivin, M. , & Tremblay, R. E. (2003). A longitudinal confirmatory factor analysis of indirect and physical aggression: Evidence of two factors over time? *Child Development, 74*, 1628-1638.

Van Aken, C., Junger, M., Verhoeven, M., Van Aken, M. A. G., & Dekovic, M. (2007). The interactive effects of temperament and maternal parenting on toddlers externalizing behaviours. *Infant and Child Development, 16*, 553-572.

Van Leeuwen, K. G., Mervielde, I., De Clercq, B. J., & De Fruyt, F. (2007). Extending the spectrum idea: child personality, parenting and psychopathology. *European Journal of Personality, 21*, 63-89.

Van Zeijl, J., Mesman, J., Stolk, M. N., Alink, L. R. A., Van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., Juffer, F., & Koot, H. M. (2007). Differential susceptibility to discipline: the moderating effect of child temperament on the association between maternal discipline and early childhood externalizing problems. *Journal of Family Psychology, 21*, 626-636.

Vitaro, F., Barker, E. D., Boivin, M., Brendgen, M., & Tremblay, R. E. (2006). Do early difficult temperament and harsh parenting differentially predict reactive and proactive aggression? *Journal of Abnormal Child Psychology, 34*, 685-695.

Willms, J. D. (2002). *Vulnerable Children*. Edmonton, AB: University of Alberta Press.

Yeung, W. J., Linver, M. R., & Brooks-Gunn, J. (2002). How money matters for young children's development: parental investment and family processes. *Child Development, 73*, 1861-1879.

Yoshikawa, H., & Hsueh, J. (2001). Child development and public policy: Toward a dynamic systems perspective. *Child Development, 72*, 1887-1903.

Yoshikawa, H., & Seidman, E. (2001). Multidimensional profiles of welfare and work dynamics: Development, validation, and associations with child cognitive and mental health outcomes. *American Journal of Community Psychology, 29*, 907-936.

Youngstrom, E., Izard, C., & Ackerman, B. (1999). Dysphoria-related bias in maternal ratings of children, *67*, 905-916.

Zaslow, M. J., Moore, K. A., Brooks, J. L., Morris, P. A., Tout, K., Redd, Z. A., & Emig, C. A. (2002). Experimental studies of welfare reform and children. *The Future of Children, 12*(1), 79-95.

Zimmer, K. P., & Minkovitz, C. S. (2003). Maternal depression: an old problem that merits increased recognition by child healthcare practitioners. *Current Opinion in Pediatrics, 15*, 636-640.

APPENDIX A: SPSS SAMPLE SELECTION SYNTAX

CASE SELECTION SYNTAX (SPSS)

```
******************************************************************************.
*SELECT CASES FROM CYCLE 4 DATA FILE IF AGE = 6 AND CHILD HAS PARTICIPATED SINCE CYCLE
1.
*CASES SELECTED IF MEMCYCLE = 1 (PARTICPATED SINCE CYCLE 1), AND DMMCQ01  = 6 (AGE).

GET FILE=’CYCLE4 DATA.sav'.

SELECT IF (MEMCYCLE = 1) AND (DMMCQ01 = 6).
EXECUTE.
SAVE OUTFILE='CYCLE4 LONG.sav'.
******************************************************************************.
*MERGE CYCLE 4 WITH OTHER FILES TO GET SAMPLE.
```

1.SORT FILES.

```
GET
  FILE='CYCLE1 DATA.sav'.
SORT CASES BY
  PERSRUK (A) .
SAVE OUTFILE='CYCLE1 DATA.sav'
 /COMPRESSED.

GET
  FILE='CYCLE2 DATA.sav'.
SORT CASES BY
  PERSRUK (A) .
SAVE OUTFILE='CYCLE2 DATA.sav'
 /COMPRESSED.

GET
  FILE='CYCLE3 DATA.sav'.
SORT CASES BY
  PERSRUK (A) .
SAVE OUTFILE='CYCLE3 DATA.sav'
 /COMPRESSED.

GET FILE ='CYCLE4 LONG.sav'.

SORT CASES BY
  PERSRUK (A) .
SAVE OUTFILE='CYCLE4 LONG.sav'.
******************************************************************************.
```

2. START WITH CYCLE 4 LONG AND MERGE AND SELECT CASES BASED ON INITIAL SELECTION FOR THE CYCLE 4 LONG FILE.

```
*CYCLE 3.
MATCH FILES /FILE=*
 /FILE='CYCLE3 DATA.sav'
 /RENAME (fieldruk longflg memcycle outflag = d0 d1 d2 d3)
 /BY PERSRUK
 /DROP= d0 d1 d2 d3.
EXECUTE.
```

```
SAVE OUTFILE='ALLCYCLES SAMPLE.sav'.

SELECT IF (MEMCYCLE = 1) AND (DMMCQ01 = 6).
EXECUTE.

FREQ VARS = MEMCYCLE DMMCQ01.

SORT CASES BY
  PERSRUK (A) .
SAVE OUTFILE='ALLCYCLES SAMPLE.sav'.

*CYCLE 2.
MATCH FILES /FILE=*
 /FILE='CYCLE2 DATA.sav'
 /RENAME (fieldruk longflg xsecflg = d0 d1 d2)
 /BY PERSRUK
 /DROP= d0 d1 d2.
EXECUTE.

SAVE OUTFILE='ALLCYCLES SAMPLE.sav'.

SELECT IF (MEMCYCLE = 1) AND (DMMCQ01 = 6).
EXECUTE.

SORT CASES BY
  PERSRUK (A) .
SAVE OUTFILE='ALLCYCLES SAMPLE.sav'.

*CYCLE 1.
MATCH FILES /FILE=*
 /FILE='CYCLE1 DATA.sav'
 /RENAME (CHILDID FIELDRUK = d0 d1)
 /BY PERSRUK
 /DROP= d0 d1.
EXECUTE.

SAVE OUTFILE='ALLCYCLES SAMPLE.sav'.

SELECT IF (MEMCYCLE = 1) AND (DMMCQ01 = 6).
EXECUTE.
SAVE OUTFILE='ALLCYCLES SAMPLE.sav'.
```

```
*****************************************************************************.
```

****3. SELECT CASES THAT MEET RESTRICTIONS FOR SAMPLE.***
**** BIOLOGICAL MOTHER IS PMK IN ALL 4 CYCLES.***
**** CHILD LIVES WITH BOTH PARENTS ALL 4 CYCLES.***
**** CHILD HAS NO ACTIVITY LIMITATIONS IN ANY CYCLE.***
**** CHILD'S PARENTS ARE NOT RECENT IMMIGRANTS.***
**** CHILD IS NOT A TWIN OR A TRIPLET.***

```
*****************************************************************************.
*SELECT CASES WHERE PMK IS BIO MOTHER IN ALL CYCLES.

SELECT IF (DDMCD06=11) AND (cdmcd06 =11) AND (bdmcd06 =11) AND (ADMCD06 =11).
EXECUTE.
****************************************************************************.
*SELECT CASES WHERE PMK PARTNER HAS NOT CHANGED OVER THE 4 CYCLES.

FREQ VARS = DMMPQ04 CMMPQ04 BMMPQ04 AMMPQ04.

SELECT IF (DMMPQ04 LE 2) AND (CMMPQ04 LE 2) AND (BMMPQ04 LE 2) AND (AMMPQ04 LE 2).
EXECUTE.

*SELECT OUT CASES USING CYCLE 3 AND CYCLE 2 VARIABLE RE: SPOUSE CHANGE.

SELECT IF (cdmsbd28 = 1) AND (bdmSbd28 = 1).
EXECUTE.

*SELECT CASES WHERE PARENT STATUS = CHILD LIVES WITH DOESN'T CHANGE FROM CYCLE TO
CYCLE.

SELECT IF (((ADMCD03 = BDMCD03) AND (ADMCD03 = CDMCD03) AND (ADMCD03 = DDMCD03))
AND ((BDMCD03 = CDMCD03) AND (BDMCD03 = DDMCD03)) AND (CDMCD03 = DDMCD03)).
EXECUTE.

*ALL KIDS LIVING WITH BOTH BIOLOGICAL PARENTS.
*****************************************************************************.
*SELECT CASES THAT HAVE NO ACTIVITY LIMITATIONS IN ANY CYCLE.

*START WITH _HLCQ45L SELECTION FROM CYCLES 1 TO 3).
SELECT IF (AHLCQ45L = 2) AND (BHLCQ45L = 2) AND (CHLCQ45L = 2).
EXECUTE.

FREQUENCIES
  VARIABLES=AHLCQ45K AHLCQ45L bhlcq45l chlcq45l DHLCdQ5A DHLCdQ5B DHLCdQ5C
DHLCdQ5D
  /ORDER= ANALYSIS .

*SELECT CASES BASED ON NO ACTIVITY LIMITATION IN CYCLE 4.
SELECT IF (DHLCdQ5B = 3) AND (DHLCdQ5C = 3) AND (DHLCdQ5D = 3).
EXECUTE.

SAVE OUTFILE='ALLCYCLES SAMPLE.sav'.
```

```
****************************************************************************.
*SELECT OUT RECENT IMMIGRANTS.

FREQ VARS =  DSDPD02B csdpd02b bsdpd02b ASDPD02B DSDSD02B csdSd02b bsdSd02b
ASDSD02B.

*SELECT IF IMMIGRATED MORE THAN FOUR YEARS AGO.
*NO MISSING VALUES SO THAT NON-IMMIGRANTS NOT EXCLUDED.
MISSING VALUES DSDPD02B csdpd02b bsdpd02b ASDPD02B DSDSD02B csdSd02b bsdSd02b
ASDSD02B ().
EXECUTE.

SELECT IF (csdpd02b GT 1) AND (bsdpd02b GT 1) AND (ASDPD02B GT 1) AND ( csdSd02b GT 1)
AND ( bsdSd02b GT 1) AND ( ASDSD02B GT 1).
EXECUTE.

SAVE OUTFILE='ALLCYCLES SAMPLE.sav'.
*****************************************************************************.
*SELECT OUT IF A TWIN OR A TRIPLET.

SELECT IF AMDCQ15 = 1.
EXECUTE.

SAVE OUTFILE='ALLCYCLES SAMPLE.sav'.
```

APPENDIX B: DIFFICULT TEMPERAMENT SCALE - FACTOR ANALYSIS

FACTOR ANALYSIS DIFFICULT TEMPERAMENT SCALE.
SPSS SYNTAX AND OUTPUT.

C1. Cycle 1 Difficult Temperament Scale Factor Analysis and Reliability - Boys.

C1.1 – Factor Analysis

```
TEMP.
SELECT IF CHILDSEX = 1.
FACTOR
  /VARIABLES ATMCQ01 ATMCQ05 ATMCQ06 ATMCQ07 ATMCQ08 ATMCQ12 ATMCQ17
  ATMCQ33  /MISSING LISTWISE /ANALYSIS ATMCQ01 ATMCQ05 ATMCQ06 ATMCQ07
  ATMCQ08 ATMCQ12 ATMCQ17 ATMCQ33
  /PRINT INITIAL CORRELATION SIG EXTRACTION
  /FORMAT SORT
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25)
  /METHOD=CORRELATION .
```

Correlation Matrix

		ATMCQ 01	ATMCQ 05	ATMCQ 06	ATMCQ 07	ATMCQ 08	ATMCQ 12	ATMCQ 17	ATMCQ 33
Correlation	ATMCQ01 Calm or soothe child when upset	1.000	.350	.439	.399	.292	.354	.384	.569
	ATMCQ05 Child gets fussy and	.350	1.000	.376	.283	.260	.283	.268	.409
	ATMCQ06 In general, child cries, fusses or whines	.439	.376	1.000	.434	.275	.391	.443	.498
	ATMCQ07 How easily child gets upset	.399	.283	.434	1.000	.255	.307	.359	.490
	ATMCQ08 When upset, child cries, fusses or whines	.292	.260	.275	.255	1.000	.142	.307	.310
	ATMCQ12 What kind of mood is child generally in?	.354	.283	.391	.307	.142	1.000	.374	.461
	ATMCQ17 How changeable is mood of child?	.384	.268	.443	.359	.307	.374	1.000	.455
	ATMCQ33 Overall degree of	.569	.409	.498	.490	.310	.461	.455	1.000
Sig. (1-tailed)	ATMCQ01 Calm or soothe child when upset		.000	.000	.000	.000	.000	.000	.000
	ATMCQ05 Child gets fussy and	.000		.000	.000	.000	.000	.000	.000
	ATMCQ06 In general, child cries, fusses or whine	.000	.000		.000	.000	.000	.000	.000
	ATMCQ07 How easily child	.000	.000	.000		.000	.000	.000	.000
	ATMCQ08 When upset, child cries, fusses or whine	.000	.000	.000	.000		.005	.000	.000
	ATMCQ12 What kind of mood is child generally in?	.000	.000	.000	.000	.005		.000	.000
	ATMCQ17 How changeable is mood of child?	.000	.000	.000	.000	.000	.000		.000
	ATMCQ33 Overall degree of	.000	.000	.000	.000	.000	.000	.000	

Communalities

	Initial	Extraction
ATMCQ01 Calm or soothe child when upset	1.000	.524
ATMCQ05 Child gets fussy and irritable	1.000	.349
ATMCQ06 In general, child cries, fusses or whine	1.000	.540
ATMCQ07 How easily child gets upset	1.000	.444
ATMCQ08 When upset, child cries, fusses or whine	1.000	.245
ATMCQ12 What kind of mood is child generally in?	1.000	.385
ATMCQ17 How changeable is mood of child?	1.000	.456
ATMCQ33 Overall degree of difficulty	1.000	.651

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.595	44.933	44.933	3.595	44.933	44.933
2	.876	10.947	55.880			
3	.752	9.396	65.277			
4	.689	8.616	73.893			
5	.609	7.618	81.510			
6	.572	7.151	88.661			
7	.515	6.437	95.098			
8	.392	4.902	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix(a)

	Component
	1
ATMCQ33 Overall degree of difficulty	.807
ATMCQ06 In general, child cries, fusses or whine	.735
ATMCQ01 Calm or soothe child when upset	.724
ATMCQ17 How changeable is mood of child?	.675
ATMCQ07 How easily child gets upset	.667
ATMCQ12 What kind of mood is child generally in?	.621
ATMCQ05 Child gets fussy and irritable	.591
ATMCQ08 When upset, child cries, fusses or whine	.495

Extraction Method: Principal Component Analysis.
a 1 components extracted.

C1.2 – Reliability Analysis

```
TEMP.
SELECT IF CHILDSEX=1.
RELIABILITY
  /VARIABLES=ATMCQ01 ATMCQ05 ATMCQ06 ATMCQ07 ATMCQ08 ATMCQ12 ATMCQ17
ATMCQ33
  /SCALE('TEMPc1')  ALL/MODEL=ALPHA
/STATISTICS=SCALE CORR ANOVA
  /SUMMARY=TOTAL MEANS CORR .
```

Case Processing Summary

		N	%
Cases	Valid	318	88.1
	Excluded(a)	43	11.9
	Total	361	100.0

a Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.801	.820	8

Inter-Item Correlation Matrix

	ATMCQ 01	ATMCQ 05	ATMCQ 06	ATMCQ 07	ATMCQ 08	ATMCQ 12	ATMCQ 17	ATMCQ 33
ATMCQ01 Calm or soothe child when upset	1.000	.350	.439	.399	.292	.354	.384	.569
ATMCQ05 Child gets fussy and irritable	.350	1.000	.376	.283	.260	.283	.268	.409
ATMCQ06 In general, child cries, fusses or whine	.439	.376	1.000	.434	.275	.391	.443	.498
ATMCQ07 How easily child gets upset	.399	.283	.434	1.000	.255	.307	.359	.490
ATMCQ08 When upset, child cries, fusses or whine	.292	.260	.275	.255	1.000	.142	.307	.310
ATMCQ12 What kind of mood is child generally in?	.354	.283	.391	.307	.142	1.000	.374	.461
ATMCQ17 How changeable is mood of child?	.384	.268	.443	.359	.307	.374	1.000	.455
ATMCQ33 Overall degree of difficulty	.569	.409	.498	.490	.310	.461	.455	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.509	1.443	3.821	2.377	2.647	.498	8
Inter-Item Correlations	.363	.142	.569	.427	3.996	.008	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ATMCQ01 Calm or soothe child when upset	17.98	39.940	.591	.386	.766
ATMCQ05 Child gets fussy and irritable	17.74	46.668	.461	.231	.791
ATMCQ06 In general, child cries, fusses or whine	17.72	39.691	.603	.384	.764
ATMCQ07 How easily child gets upset	17.12	39.162	.534	.310	.775
ATMCQ08 When upset, child cries, fusses or whine	16.25	39.455	.386	.167	.811
ATMCQ12 What kind of mood is child generally in?	18.63	46.815	.475	.277	.791
ATMCQ17 How changeable is mood of child?	17.21	38.537	.550	.318	.773
ATMCQ33 Overall degree of difficulty	17.85	38.894	.683	.507	.753

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
20.07	52.254	7.229	8

ANOVA

		Sum of Squares	df	Mean Square	F	Sig
Between People		2070.560	317	6.532		
Within People	Between Items	1108.118	7	158.303	121.669	.000
	Residual	2887.132	2219	1.301		
	Total	3995.250	2226	1.795		
Total		6065.810	2543	2.385		

Grand Mean = 2.51

C2. Cycle 2 Difficult Temperament Scale Factor Analysis and Reliability - Boys.

C2.1 – Factor Analysis

```
TEMP.
SELECT IF CHILDSEX = 1.
FACTOR
  /VARIABLES  BTMCQ01 BTMCQ05 BTMCQ06 BTMCQ07 BTMCQ08 BTMCQ12 BTMCQ17
BTMCQ33
  /MISSING LISTWISE /ANALYSIS  BTMCQ01 BTMCQ05 BTMCQ06 BTMCQ07 BTMCQ08 BTMCQ12
BTMCQ17 BTMCQ33
  /PRINT INITIAL CORRELATION SIG EXTRACTION
  /FORMAT SORT
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25)
  /METHOD=CORRELATION .
EXECUTE.
```

Correlation Matrix

		BTMCQ 01	BTMCQ 05	BTMCQ 06	BTMCQ 07	BTMCQ 08	BTMCQ 12	BTMCQ 17	BTMCQ 33
Correlation	BTMCQ01 Easy/difficult to calm/soothe child	1.000	.304	.469	.344	.390	.174	.342	.400
	BTMCQ05 Times child gets fussy and irritable	.304	1.000	.435	.291	.303	.212	.342	.367
	BTMCQ06 How much child cries, fusses, whines	.469	.435	1.000	.406	.395	.261	.424	.429
	BTMCQ07 How easily does child get upset	.344	.291	.406	1.000	.358	.195	.465	.353
	BTMCQ08 How vigorous child cries, fusses, whines	.390	.303	.395	.358	1.000	.128	.298	.371
	BTMCQ12 What kind of mood is child generally in?	.174	.212	.261	.195	.128	1.000	.315	.327
	BTMCQ17 How changeable is mood of child?	.342	.342	.424	.465	.298	.315	1.000	.450
	BTMCQ33 Overall degree of difficulty	.400	.367	.429	.353	.371	.327	.450	1.000
Sig. (1-tailed)	BTMCQ01 Easy/difficult to calm/soothe child		.000	.000	.000	.000	.000	.000	.000
	BTMCQ05 Times child gets fussy and irritable	.000		.000	.000	.000	.000	.000	.000
	BTMCQ06 How much child cries, fusses, whines	.000	.000		.000	.000	.000	.000	.000
	BTMCQ07 How easily does child get upset	.000	.000	.000		.000	.000	.000	.000
	BTMCQ08 How vigorous child cries, fusses, whines	.000	.000	.000	.000		.008	.000	.000
	BTMCQ12 What kind of mood is child generally in?	.000	.000	.000	.000	.008		.000	.000
	BTMCQ17 How changeable is mood of child?	.000	.000	.000	.000	.000	.000		.000
	BTMCQ33 Overall degree of	.000	.000	.000	.000	.000	.000	.000	

Communalities

	Initial	Extraction
BTMCQ01 Easy/difficult to calm/soothe child	1.000	.442
BTMCQ05 Times child gets fussy and irritable	1.000	.385
BTMCQ06 How much child cries, fusses, whines	1.000	.561
BTMCQ07 How easily does child get upset	1.000	.436
BTMCQ08 How vigorous child cries, fusses, whines	1.000	.388
BTMCQ12 What kind of mood is child generally in?	1.000	.208
BTMCQ17 How changeable is mood of child?	1.000	.498
BTMCQ33 Overall degree of difficulty	1.000	.515

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.432	42.904	42.904	3.432	42.904	42.904
2	.949	11.862	54.766			
3	.751	9.383	64.149			
4	.703	8.787	72.936			
5	.623	7.786	80.722			
6	.578	7.225	87.946			
7	.487	6.087	94.033			
8	.477	5.967	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix(a)

	Component
	1
BTMCQ06 How much child cries, fusses, whines	.749
BTMCQ33 Overall degree of difficulty	.718
BTMCQ17 How changeable is mood of child?	.706
BTMCQ01 Easy/difficult to calm/soothe child	.665
BTMCQ07 How easily does child get upset	.660
BTMCQ08 How vigorous child cries, fusses, whines	.623
BTMCQ05 Times child gets fussy and irritable	.621
BTMCQ12 What kind of mood is child generally in?	.456

Extraction Method: Principal Component Analysis.

C2.2 – Reliability Analysis

```
TEMP.
SELECT IF CHILDSEX=1.
RELIABILITY
  /VARIABLES= BTMCQ01 BTMCQ05 BTMCQ06 BTMCQ07 BTMCQ08 BTMCQ12 BTMCQ17
BTMCQ33
  /SCALE('TEMPc2')  ALL/MODEL=ALPHA
/STATISTICS=SCALE CORR ANOVA
  /SUMMARY=TOTAL MEANS CORR .
EXECUTE.
```

Case Processing Summary

		N	%
Cases	Valid	361	100.0
	Excluded(a)	0	.0
	Total	361	100.0

a Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.800	.805	8

Inter-Item Correlation Matrix

	BTMCQ 01	BTMCQ 05	BTMCQ 06	BTMCQ 07	BTMCQ 08	BTMCQ 12	BTMCQ 17	BTMCQ 33
BTMCQ01 Easy/difficult to calm/soothe child	1.000	.304	.469	.344	.390	.174	.342	.400
BTMCQ05 Times child gets fussy and irritable	.304	1.000	.435	.291	.303	.212	.342	.367
BTMCQ06 How much child cries, fusses, whines	.469	.435	1.000	.406	.395	.261	.424	.429
BTMCQ07 How easily does child get upset	.344	.291	.406	1.000	.358	.195	.465	.353
BTMCQ08 How vigorous child cries, fusses, whines	.390	.303	.395	.358	1.000	.128	.298	.371
BTMCQ12 What kind of mood is child generally in?	.174	.212	.261	.195	.128	1.000	.315	.327
BTMCQ17 How changeable is mood of child?	.342	.342	.424	.465	.298	.315	1.000	.450
BTMCQ33 Overall degree of difficulty	.400	.367	.429	.353	.371	.327	.450	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.889	1.482	4.147	2.665	2.798	.663	8
Inter-Item Correlations	.341	.128	.469	.341	3.676	.008	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
BTMCQ01 Easy/difficult to calm/soothe child	20.11	38.850	.537	.311	.774
BTMCQ05 Times child gets fussy and irritable	20.92	46.238	.486	.254	.789
BTMCQ06 How much child cries, fusses, whines	20.37	38.112	.619	.402	.760
BTMCQ07 How easily does child get upset	19.52	39.650	.536	.307	.773
BTMCQ08 How vigorous child cries, fusses, whines	18.96	38.451	.492	.268	.783
BTMCQ12 What kind of mood is child generally in?	21.63	47.334	.334	.153	.800
BTMCQ17 How changeable is mood of child?	19.97	37.316	.569	.363	.769
BTMCQ33 Overall degree of difficulty	20.30	39.160	.586	.359	.766

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
23.11	51.604	7.184	8

ANOVA

		Sum of Squares	df	Mean Square	F	Sig
Between People		2322.196	360	6.451		
Within People	Between Items	1676.623	7	239.518	185.575	.000
	Residual	3252.502	2520	1.291		
	Total	4929.125	2527	1.951		
Total		7251.321	2887	2.512		

Grand Mean = 2.89

APPENDIX C: SPSS SYNTAX-INCOME TO LICO IMPUTATION

Imputation of Income to LICO values for missing values.

In the following syntax, the information on cases that was used to impute the Income to LICO ratio was suppressed because there were so few cases, and each case had to be imputed individually. The syntax is presented here to show the steps that were taken for imputing the values for these cases.

*OUTPUT VARIABLES FROM THE IMPUTATION ARE **C1INCLIC C2INCLIC_96 C2INCLIC_91 C3INCLIC C4INCLIC** .
*THERE ARE NO MISSING DATA FOR CYCLE 1 VARIABLE.
*THERE ARE NO MISSING VALUES FOR INCOME, BUT THE LICO RATIO ACCOUNTS FOR FAMILY SIZE, REGION ETC.
*CREATE NEW VARIABLE AND ASSIGN NEW VALUES BASED ON THE SYNTAX FOLLOWING VARIABLE CREATION.
*IF NO VALUE FOR _GEHBD04 (SIZE OF AREA OF RESIDENCE), THEN USE ESTIMATE - OTHERWISE CALCULATE RATIO.

```
COMPUTE C1INCLIC = AINHD04.
COMPUTE C2INCLIC_96 = BINHD04A.
COMPUTE C2INCLIC_91 = BINHD04B.
COMPUTE C3INCLIC = CINHD04A.
COMPUTE C4INCLIC = DINHD04A.
EXECUTE.

VARIABLE LABELS
C1INCLIC 'AINHD04 -RATIO OF HH INCOME TO LICO -IMPUTED'
C2INCLIC_96 = 'BINHD04A-RATIO OF HH INCOME TO LICO –IMPUTED_1996 CENSUS'
C2INCLIC_91 = 'BINHD04B-RATIO OF HH INCOME TO LICO -IMPUTED_1991 CENSUS'
C3INCLIC = 'CINHD04A-RATIO OF HH INCOME TO LICO -IMPUTED'
C4INCLIC = 'DINHD04A-RATIO OF HH INCOME TO LICO -IMPUTED'.
EXECUTE.

FORMATS C1INCLIC C2INCLIC_96 C2INCLIC_91 C3INCLIC C4INCLIC (F5).
*******************************************************************.
*1-SELECT CASES.
*2-LIST
HHSIZE (PERSONS IN ECONOMIC HH - BDMHD02),
 # OF CHILDREN (bdmhd07)
GEOGRAPHIC AREA (PROVINCE bgehd03,
SIZE AREA OF RESIDENCE (bgehbd04 bgehbd05(91),
EA (bgehbd07),
SES (binhd08) ,
INCOME ADEQUACY (BINHD07),
AND INCOME (binhq03) .
*3-MATCH CASES WITH SIMILAR CASES IN THE DATA SET.
*******************************************************************.
*IMPUTE MISSING VALUES FOR RATIO OF INCOME TO LICO.
*3-MATCH CASES WITH SIMILAR CASES IN THE DATA SET.
*4-CREATE NEW VARIABLE AND ASSIGN NEW VALUES BASED ON FAMILY SIZE AND SIZE OF AREA OF RESIDENCE AND LICO FOR AREA/FAMILY SIZE.
*******************************************************************.
```

D1.1 SELECT AND LIST CASES.

(In Cycle 2, there were two variables for the Income to LICO ratio. The first was based on the 1991 census, and the second was based on the 1996 census.

*1-SELECT CASES.
*2-LIST

- HHSIZE (PERSONS IN ECONOMIC HH - BDMHD02),
- # OF CHILDREN (bdmhd07)
- GEOGRAPHIC AREA (PROVINCE bgehd03,
- SIZE AREA OF RESIDENCE (bgehbd04 bgehbd05(91),
- EA (bgehbd07),
- SES (binhd08) ,
- INCOME ADEQUACY (BINHD07),
- AND INCOME (binhq03) .

MISSING VALUES BINHD04A BINHD04B().
EXECUTE.

TEMP.
SELECT IF BINHD04A = 99999.
LIST VARS = PERSRUK bdmhd02 bdmhd07 bgehd03 bgehbd04 bgehbd05 bgehbd06 BINHQ03 binhd07 binhd08 binhd03a binhd04a binhd04B binhd05a .
EXECUTE.

TEMP.
SELECT IF BINHD04B = 99999.
LIST VARS = PERSRUK bdmhd02 bdmhd07 bgehd03 bgehbd04 bgehbd05 bgehbd06 BINHQ03 binhd07 binhd08 binhd03a binhd04a binhd04B binhd05a .
EXECUTE.

*3-MATCH CASES WITH SIMILAR CASES IN THE DATA SET TO ASSIGN AN INCOME TO LICO RATIO VALUE.
This procedure was carried out on a case by case basis. Matching cases was carried out in the following order – income, household size, size of area of residence, number of children, geographic area,

SYNTAX
(This syntax was used to find cases that shared the same values on the variables listed above.)
TEMP.
SELECT IF (BDMHD02 = X) and (BDMHD07 = X) AND (BGEHD03 = X) AND ((BINHQ03 GT X) AND (BINHQ03 LT X)) AND (BINHD07 = X).
LIST VARS = PERSRUK bdmhd02 bdmhd07 bgehd03 bgehbd04 bgehbd05 bgehbd06 BINHQ03 binhd07 binhd08 binhd03a binhd04a binhd04B binhd05a .
EXECUTE.

**.
CYCLE 3.
*1-SELECT CASES.
*2-LIST
HHSIZE (PERSONS IN ECONOMIC HH - CDMHD02),
 # OF CHILDREN (Cdmhd07)
GEOGRAPHIC AREA (PROVINCE Cgehd03,
SIZE AREA OF RESIDENCE (Cgehbd04),

```
INCOME ADEQUACY (CINHD07),
AND INCOME (binhq03) .
*3-MATCH CASES WITH SIMILAR CASES IN THE DATA SET.
*****************************************************************************.
MISSING VALUES CINHD04A ().
EXECUTE.

TEMP.
SELECT IF CINHD04A = 99999.
LIST VARS = PERSRUK Cdmhd02 Cdmhd07 Cgehd03 Cgehbd04 Cgehbd06 CINHQ03 Cinhd07
Cinhd08 Cinhd03a Cinhd04a CInhd05a C3INCLIC.
EXECUTE.

*****************************************************************************.
TEMP.
SELECT IF (CDMHD02 = X) and (CDMHD07 = X) AND (CGEHD03 = X) AND ((CINHQ03 GE X) AND
(CINHQ03 LE X))AND (CINHD07 = X).
LIST VARS = PERSRUK Cdmhd02 Cdmhd07 Cgehd03 Cgehbd04 Cgehbd06 CINHQ03 Cinhd07
Cinhd08 Cinhd03a Cinhd04a Cinhd05a .
EXECUTE.

*****************************************************************************.
CYCLE 4.
*1-SELECT CASES.
*2-LIST
HHSIZE (PERSONS IN ECONOMIC HH - CDMHD02),
 # OF CHILDREN (Cdmhd07)
GEOGRAPHIC AREA (PROVINCE Cgehd03,
SIZE AREA OF RESIDENCE (Cgehbd04),
INCOME ADEQUACY (CINHD07),
AND INCOME (binhq03) .
*3-MATCH CASES WITH SIMILAR CASES IN THE DATA SET.
****************************************************************************.
MISSING VALUES DINHD04A ().
EXECUTE.

TEMP.
SELECT IF DINHD04A = 99999.
LIST VARS = PERSRUK Ddmhd02 Ddmhd07 Dgehd03 Dgehbd04 Dgehbd06 DINHQ03 Dinhd07
Dinhd03a Dinhd04a DInhd05a C4INCLIC.
EXECUTE.
*************************************************************************.
```

(It was not possible to find matches on all variables for large families, so I selected cases based on family size and size of area of residence to find nearest matches. Values for LICOs that I used are listed by geographic area and family size.)

```
*FIND LICO VALUES BASED ON FAMILY SIZE AND SIZE OF AREA OF RESIDENCE.
TEMP.
SELECT IF (DDMHD02 GE 6) AND (DGEHBD04 = 1).
LIST VARS = Ddmhd02 Ddmhd07 Dgehd03 Dgehbd04 DINHQ03 Dinhd03a Dinhd04a DInhd05a.
EXECUTE.

*	LICO
```

```
RURAL - 7+          32340
RURAL - 6+          29524    .

TEMP.
SELECT IF (CDMHD02 GE 6) AND (CGEHBD04 = 1).
LIST VARS = Cdmhd02 Cdmhd07 Cgehd03 Cgehbd04 CINHQ03 Cinhd03a Cinhd04a CInhd05a.
EXECUTE.

*CYCLE 3
            LICO
RURAL - 7+          30928
RURAL - 6+          28235    .

TEMP.
SELECT IF (BDMHD02 GE 6) AND (BGEHBD04 = 1).
LIST VARS = Bdmhd02 Bdmhd07 Bgehd03 Bgehbd04 BINHQ03 Binhd03a Binhd04a BInhd05a.
EXECUTE.

*CYCLE 2
            LICO
RURAL - 7+          30156
RURAL - 6+          27530    .
***********************************************************************.
TEMP.
SELECT IF (DDMHD02 GE 6) AND (DGEHBD04 = 2).
LIST VARS = Ddmhd02 Ddmhd07 Dgehd03 Dgehbd04 DINHQ03 Dinhd03a Dinhd04a DInhd05a.
EXECUTE.

*CYCLE 4
            LICO
2 - 7+      37085
2 - 6+      33857    .

TEMP.
SELECT IF (CDMHD02 GE 6) AND (CGEHBD04 = 2).
LIST VARS = Cdmhd02 Cdmhd07 Cgehd03 Cgehbd04 CINHQ03 Cinhd03a Cinhd04a CInhd05a.
EXECUTE.

*C3
            LICO
2 - 7+      35467
2 - 6+      32379    .

TEMP.
SELECT IF (BDMHD02 GE 6) AND (BGEHBD04 = 2).
LIST VARS = Bdmhd02 Bdmhd07 Bgehd03 Bgehbd04 BINHQ03 Binhd03a Binhd03B Binhd04a
BInhd05a.
EXECUTE.

*CYCLE 2
            LICO
2 - 7+      34581
```

```
2 - 6+     31571    .
************************************************************************.

TEMP.
SELECT IF (DDMHD02 GE 6) AND (DGEHBD04 = 3).
LIST VARS = Ddmhd02 Ddmhd07 Dgehd03 Dgehbd04 DINHQ03 Dinhd03a Dinhd04a DInhd05a.
EXECUTE.

*CYCLE 4
           LICO
3 - 7+     39857
3 - 6+     36387    .

TEMP.
SELECT IF (CDMHD02 GE 6) AND (CGEHBD04 = 3).
LIST VARS = Cdmhd02 Cdmhd07 Cgehd03 Cgehbd04 CINHQ03 Cinhd03a Cinhd04a CInhd05a.
EXECUTE.

*CYCLE 3
           LICO
3 - 7+     38117
3 - 6+     34798    .

TEMP.
SELECT IF (BDMHD02 GE 6) AND (BGEHBD04 = 3).
LIST VARS = Bdmhd02 Bdmhd07 Bgehd03 Bgehbd04 BINHQ03 Binhd03a Binhd03B Binhd04a
BInhd05a.
EXECUTE.

*CYCLE 2
           LICO
3 - 7+     37166
3 - 6+     33930    .
************************************************************************.
TEMP.
SELECT IF (DDMHD02 GE 6) AND (DGEHBD04 = 4).
LIST VARS = Ddmhd02 Ddmhd07 Dgehd03 Dgehbd04 DINHQ03 Dinhd03a Dinhd04a DInhd05a.
EXECUTE.

*CYCLE 4
           LICO
4 - 7+     40137
4 -6+      36642.


TEMP.
SELECT IF (CDMHD02 GE 6) AND (CGEHBD04 = 4).
LIST VARS = Cdmhd02 Cdmhd07 Cgehd03 Cgehbd04 CINHQ03 Cinhd03a Cinhd04a CInhd05a.
EXECUTE.

*CYCLE 3
           LICO
```

```
4 - 7+     38385
4 -6+      35043    .

TEMP.
SELECT IF (BDMHD02 GE 6) AND (BGEHBD04 = 4).
LIST VARS = Bdmhd02 Bdmhd07 Bgehd03 Bgehbd04 BINHQ03 Binhd03a Binhd03B Binhd04a
BInhd05a.
EXECUTE.

*CYCLE 2
           LICO
4 - 7+     37427
4 -6+      34168    .
***************************************************************************.

TEMP.
SELECT IF (DDMHD02 GE 6) AND (DGEHBD04 = 5).
LIST VARS = Ddmhd02 Ddmhd07 Dgehd03 Dgehbd04 DINHQ03 Dinhd03a Dinhd04a DInhd05a.
EXECUTE.

*CYCLE 4
           LICO
5 - 7+     46793
5 -6+      42719    .


TEMP.
SELECT IF (CDMHD02 GE 6) AND (CGEHBD04 = 5).
LIST VARS = Cdmhd02 Cdmhd07 Cgehd03 Cgehbd04 CINHQ03 Cinhd03a Cinhd04a CInhd05a.
EXECUTE.

*CYCLE 3
           LICO
5 - 7+     40855
5 -6+      44751    .

TEMP.
SELECT IF (BDMHD02 GE 6) AND (BGEHBD04 = 5).
LIST VARS = Bdmhd02 Bdmhd07 Bgehd03 Bgehbd04 BINHQ03 Binhd03a Binhd03B Binhd04a
BInhd05a.
EXECUTE.

*CYCLE 2
           LICO
5 - 7+  43634
5 -6+      39835    .
```

APPENDIX D: SPSS SYNTAX-SOURCE OF INCOME VARIABLES

***CREATE SOURCE OF INCOME VARIABLES (_INHRAA TO _INHRAG).**
***CREATE VARIABLE NAMES AND RECODE FOR ALL CYCLES.**
**.
***RECODE CYCLE 1 AND CYCLE 2 TO FIT CYCLE 3 AND CYCLE 4 CATEGORIES.**

*NLSCY Variables Cycle 1 and Cycle 2.
*_inhq01a WAGES AND SALARIES.
*_inhq01b INCOME FROM SELF-EMPLOYMENT.
*_inhq01c DIVIDENDS AND INTEREST ON BONDS, DEPOSITS AND SAVINGS, STOCKS, MUTUAL FUNDS, ETC.
*_inhq01d UNEMPLOYMENT INSURANCE.
*_inhq01e WORKERS COMPENSATION.
*_inhq01f BENEFITS FROM CANADA OR QUEBEC PENSION PLAN.
*_inhq01g RETIREMENT PENSIONS, SUPERANNUATION AND ANNUITIES.
*_inhq01h OLD AGE SECURITY AND GUARANTEED INCOME SUPPLEMENT.
*_inhq01i CHILD TAX BENEFIT.
*_inhq01jPROVINCIAL OR MUNICIPAL SOCIAL ASSISTANCE OR WELFARE.
*_inhq01k CHILD SUPPORT.
*_inhq01l ALIMONY.
*_inhq01m OTHER INCOME (EG. RENTAL INCOME, SCHOLARSHIPS, OTHER GOVERNMENT INCOME, ETC.)

***CYCLE 1 RECODE.**
*AINHRAA - WAGES.
*AINHRAB - SELF-EMPLOYMENT.
*AINHRAC - EMPLOYMENT INSURANCE.
*AINHRAD - CHILD TAX BENEFIT.
*AINHRAE - SOCIAL ASSISTANCE.
*AINHRAF - CHILD AND SPOUSAL SUPPORT.
*AINHRAG - OTHER.

COMPUTE AINHRAA = 0.
COMPUTE AINHRAB = 0.
COMPUTE AINHRAC = 0.
COMPUTE AINHRAD = 0.
COMPUTE AINHRAE = 0.
COMPUTE AINHRAF = 0.
COMPUTE AINHRAG = 0.
EXECUTE.

VARIABLE LABELS
AINHRAA 'HH INCOME - WAGES'
AINHRAB 'HH INCOME - SELF-EMPLOYMENT'
AINHRAC 'HH INCOME - EMPLOYMENT INSURANCE'
AINHRAD 'HH INCOME - CHILD TAX BENEFIT'
AINHRAE 'HH INCOME - SOCIAL ASSISTANCE'
AINHRAF 'HH INCOME - CHILD AND SPOUSAL SUPPORT'
AINHRAG 'HH INCOME - OTHER'.

```
VALUE LABELS
AINHRAA  AINHRAB  AINHRAC AINHRAD AINHRAE AINHRAF AINHRAG
0 'NOT A SOURCE OF INCOME'
1 'SOURCE OF INCOME'
8 'REFUSAL'.
EXECUTE.

FORMATS AINHRAA  AINHRAB  AINHRAC AINHRAD AINHRAE AINHRAF AINHRAG
 (F2).

IF  ainhq01a =1 AINHRAA = 1.
IF ainhq01b = 1 AINHRAB  = 1.
IF ainhq01d = 1 AINHRAC = 1.
IF ainhq01i = 1 AINHRAD = 1.
IF ainhq01j = 1 AINHRAE = 1.
IF ((ainhq01k = 1) OR (ainhq01l =1)) AINHRAF = 1.
IF ((ainhq01c = 1) OR (ainhq01e = 1) OR (ainhq01f = 1) OR (ainhq01g = 1) OR (ainhq01h  = 1) OR
(ainhq01m= 1)) AINHRAG = 1.
EXECUTE.

IF  ainhq01a =8 AINHRAA = 8.
IF ainhq01b = 8 AINHRAB  = 8.
IF ainhq01d = 8 AINHRAC = 8.
IF ainhq01i = 8 AINHRAD = 8.
IF ainhq01j = 8 AINHRAE = 8.
IF ((ainhq01k = 8) OR (ainhq01l =8)) AINHRAF = 8.
IF ((ainhq01c = 8) OR (ainhq01e = 8) OR (ainhq01f = 8) OR (ainhq01g = 8) OR (ainhq01h  = 8) OR
(ainhq01m= 8)) AINHRAG = 8.
EXECUTE.
```

***CYCLE 2 RECODE.**

```
*BINHRAA - WAGES.
*BINHRAB - SELF-EMPLOYMENT.
*BINHRAC - EMPLOYMENT INSURANCE.
*BINHRAD - CHILD TAX BENEFIT.
*BINHRAE - SOCIAL ASSISTANCE.
*BINHRAF - CHILD AND SPOUSAL SUPPORT.
*BINHRAG - OTHER.

COMPUTE BINHRAA = 0.
COMPUTE BINHRAB = 0.
COMPUTE BINHRAC = 0.
COMPUTE BINHRAD = 0.
COMPUTE BINHRAE = 0.
COMPUTE BINHRAF = 0.
COMPUTE BINHRAG = 0.

VARIABLE LABELS
BINHRAA 'HH INCOME - WAGES'
BINHRAB 'HH INCOME - SELF-EMPLOYMENT'
BINHRAC 'HH INCOME - EMPLOYMENT INSURANCE'
```

BINHRAD 'HH INCOME - CHILD TAX BENEFIT'
BINHRAE 'HH INCOME - SOCIAL ASSISTANCE'
BINHRAF 'HH INCOME - CHILD AND SPOUSAL SUPPORT'
BINHRAG 'HH INCOME - OTHER'.

VALUE LABELS
BINHRAA BINHRAB BINHRAC BINHRAD BINHRAE BINHRAF BINHRAG
0 'NOT A SOURCE OF INCOME'
1 'SOURCE OF INCOME'
8 'REFUSAL'.
EXECUTE.

FORMATS BINHRAA BINHRAB BINHRAC BINHRAD BINHRAE BINHRAF BINHRAG
 (F2).

IF BINhq01a =1 BINHRAA = 1.
IF BINhq01b = 1 BINHRAB = 1.
IF BINhq01d = 1 BINHRAC = 1.
IF BINhq01i = 1 BINHRAD = 1.
IF BINhq01j = 1 BINHRAE = 1.
IF ((BINhq01k = 1) OR (BINhq01l =1)) BINHRAF = 1.
IF ((BINhq01c = 1) OR (BINhq01e = 1) OR (BINhq01f = 1) OR (BINhq01g = 1) OR (BINhq01h = 1) OR (BINhq01m= 1)) BINHRAG = 1.
EXECUTE.

IF BINhq01a =8 BINHRAA = 8.
IF BINhq01b = 8 BINHRAB = 8.
IF BINhq01d = 8 BINHRAC = 8.
IF BINhq01i = 8 BINHRAD = 8.
IF BINhq01j = 8 BINHRAE = 8.
IF ((BINhq01k = 8) OR (BINhq01l =8)) BINHRAF = 8.
IF ((BINhq01c = 8) OR (BINhq01e = 8) OR (BINhq01f = 8) OR (BINhq01g = 8) OR (BINhq01h = 8) OR (BINhq01m= 8)) BINHRAG = 8.
EXECUTE.

***.
***RECODE CYCLE 3 AND CYCLE 4 TO GET HH SOURCES OF INCOME.**
*NLSCY Cycle 3 and 4 variables – PMK and Spouse source and amount of income.
_INPc1AA _INSc1AA Wages and salaries (before deductions)
_INPc1AB _INSc1AB Child and spousal support?
_INPc1AC _INSc1AC Social assistance (welfare) and provincial income supplements?
_INPc1AD _INSc1AD Child Tax Benefit/National Child Benefit and provincial child benefits?
_INPc1AE _INSc1AE Employment Insurance Benefits (before deductions and repayments)?
_INPc1AF _INSc1AF Self-employment net income (including business, professional, commission,child care, etc.?)
_INPc1AG _INSc1AG All other sources,including dividends, interest, capital gains, tips, etc.?

***CYCLE 3 RECODE.**

```
*CINHRAA - WAGES.
*CINHRAB - SELF-EMPLOYMENT.
*CINHRAC - EMPLOYMENT INSURANCE.
*CINHRAD - CHILD TAX BENEFIT.
*CINHRAE - SOCIAL ASSISTANCE.
*CINHRAF - CHILD AND SPOUSAL SUPPORT.
*CINHRAG - OTHER.

COMPUTE CINHRAA = 0.
COMPUTE CINHRAB = 0.
COMPUTE CINHRAC = 0.
COMPUTE CINHRAD = 0.
COMPUTE CINHRAE = 0.
COMPUTE CINHRAF = 0.
COMPUTE CINHRAG = 0.
FORMATS CINHRAA  CINHRAB  CINHRAC CINHRAD CINHRAE CINHRAF CINHRAG  (F2).

VARIABLE LABELS
CINHRAA 'HH INCOME - WAGES'
CINHRAB 'HH INCOME - SELF-EMPLOYMENT'
CINHRAC 'HH INCOME - EMPLOYMENT INSURANCE'
CINHRAD 'HH INCOME - CHILD TAX BENEFIT'
CINHRAE 'HH INCOME - SOCIAL ASSISTANCE'
CINHRAF 'HH INCOME - CHILD AND SPOUSAL SUPPORT'
CINHRAG 'HH INCOME - OTHER'.

VALUE LABELS
CINHRAA  CINHRAB  CINHRAC CINHRAD CINHRAE CINHRAF CINHRAG
0 'NOT A SOURCE OF INCOME'
1 'SOURCE OF INCOME'
9 'NOT STATED'.
EXECUTE.

IF ((cinpc1aa NE 0) OR (cinSc1aa NE 0)) CINHRAA = 1.
IF ((cinpc1aB NE 0) OR (cinSc1aB NE 0)) CINHRAB = 1.
IF ((cinpc1aC NE 0) OR (cinSc1aC NE 0)) CINHRAC = 1.
IF ((cinpc1aD NE 0) OR (cinSc1aD NE 0)) CINHRAD = 1.
IF ((cinpc1aE NE 0) OR (cinSc1aE NE 0)) CINHRAE = 1.
IF ((cinpc1aF NE 0) OR (cinSc1aF NE 0)) CINHRAF = 1.
IF ((cinpc1aG NE 0) OR (cinSc1aG NE 0)) CINHRAG = 1.
EXECUTE.

IF ((cinpc1aa = 999999) AND (cinSc1aa = 999999)) CINHRAA = 9.
IF ((cinpc1aB = 999999) AND (cinSc1aB = 999999)) CINHRAB = 9.
IF ((cinpc1aC = 999999) AND (cinSc1aC = 999999)) CINHRAC = 9.
IF ((cinpc1aD = 999999) AND (cinSc1aD = 999999)) CINHRAD = 9.
IF ((cinpc1aE = 999999) AND (cinSc1aE = 999999)) CINHRAE = 9.
IF ((cinpc1aF = 999999) AND (cinSc1aF = 999999)) CINHRAF = 9.
IF ((cinpc1aG = 999999) AND (cinSc1aG = 999999)) CINHRAG = 9.
EXECUTE.
```

```
*****************************************************************************.
*CREATE VARIABLE FOR HH INCOME FROM EACH SOURCE.
MISSING VALUES CINPc1AA CINPc1AB CINPc1AC CINPc1AD CINPc1AE CINPc1AF CINPc1AG
CINSc1AA CINSc1AB CINSc1AC CINSc1AD CINSc1AE CINSc1AF CINSc1AG (999996 THRU 999999).

COMPUTE CINRHHA = CINPc1AA + CINSc1AA .
VARIABLE LABELS CINRHHA 'HH INCOME FROM WAGES - PMK & SPOUSE' .

COMPUTE CINRHHB = CINPc1AB + CINSc1AB .
VARIABLE LABELS CINRHHB 'HH INCOME FROM SELF-EMPLOYMENT - PMK & SPOUSE' .

COMPUTE CINRHHC = CINPc1AC + CINSc1AC .
VARIABLE LABELS CINRHHC 'HH INCOME FROM EI - PMK & SPOUSE' .

COMPUTE CINRHHD = CINPc1AD + CINSc1AD .
VARIABLE LABELS CINRHHD 'HH INCOME FROM CTB - PMK & SPOUSE' .

COMPUTE CINRHHE = CINPc1AE + CINSc1AE .
VARIABLE LABELS CINRHHE 'HH INCOME FROM SA - PMK & SPOUSE' .

COMPUTE CINRHHF = CINPc1AF + CINSc1AF .
VARIABLE LABELS CINRHHF 'HH INCOME FROM CHILD SUPP - PMK & SPOUSE' .

COMPUTE CINRHHG = CINPc1AG + CINSc1AG .
VARIABLE LABELS CINRHHG 'HH INCOME FROM OTHER - PMK & SPOUSE' .
EXECUTE .

FORMATS CINRHHA CINRHHB CINRHHC CINRHHD CINRHHE CINRHHF CINRHHG (F6).

*CREATE TOTAL HH INCOME VARIABLE.

COMPUTE CINRHTOT = CINRHHA + CINRHHB + CINRHHC + CINRHHD + CINRHHE + CINRHHF +
CINRHHG .
VARIABLE LABELS CINRHTOT 'TOTAL HH INCOME ALL SOURCES'.

FORMATS CINRHTOT (F6).
EXECUTE.

*****************************************************************************.
*CYCLE 4 RECODE.

*DINHRAA - WAGES.
*DINHRAB - SELF-EMPLOYMENT.
*DINHRAC - EMPLOYMENT INSURANCE.
*DINHRAD - CHILD TAX BENEFIT.
*DINHRAE - SOCIAL ASSISTANCE.
*DINHRAF - CHILD AND SPOUSAL SUPPORT.
*DINHRAG - OTHER.

COMPUTE DINHRAA = 0.
COMPUTE DINHRAB = 0.
COMPUTE DINHRAC = 0.
```

```
COMPUTE DINHRAD = 0.
COMPUTE DINHRAE = 0.
COMPUTE DINHRAF = 0.
COMPUTE DINHRAG = 0.

FORMATS DINHRAA DINHRAB DINHRAC DINHRAD DINHRAE DINHRAF DINHRAG (F2).

VARIABLE LABELS
DINHRAA 'HH INCOME - WAGES'
DINHRAB 'HH INCOME - SELF-EMPLOYMENT'
DINHRAC 'HH INCOME - EMPLOYMENT INSURANCE'
DINHRAD 'HH INCOME - CHILD TAX BENEFIT'
DINHRAE 'HH INCOME - SOCIAL ASSISTANCE'
DINHRAF 'HH INCOME - CHILD AND SPOUSAL SUPPORT'
DINHRAG 'HH INCOME - OTHER'.

VALUE LABELS
DINHRAA  DINHRAB  DINHRAC DINHRAD DINHRAE DINHRAF DINHRAG
0 'NOT A SOURCE OF INCOME'
1 'SOURCE OF INCOME'
9 'NOT STATED'.
EXECUTE.

IF ((DINpc1aa NE 0) OR (DINSc1aa NE 0)) DINHRAA = 1.
IF ((DINpc1aB NE 0) OR (DINSc1aB NE 0)) DINHRAB = 1.
IF ((DINpc1aC NE 0) OR (DINSc1aC NE 0)) DINHRAC = 1.
IF ((DINpc1aD NE 0) OR (DINSc1aD NE 0)) DINHRAD = 1.
IF ((DINpc1aE NE 0) OR (DINSc1aE NE 0)) DINHRAE = 1.
IF ((DINpc1aF NE 0) OR (DINSc1aF NE 0)) DINHRAF = 1.
IF ((DINpc1aG NE 0) OR (DINSc1aG NE 0)) DINHRAG = 1.
EXECUTE.

IF ((DINpc1aa = 999999) AND (DINSc1aa = 999999)) DINHRAA = 9.
IF ((DINpc1aB = 999999) AND (DINSc1aB = 999999)) DINHRAB = 9.
IF ((DINpc1aC = 999999) AND (DINSc1aC = 999999)) DINHRAC = 9.
IF ((DINpc1aD = 999999) AND (DINSc1aD = 999999)) DINHRAD = 9.
IF ((DINpc1aE = 999999) AND (DINSc1aE = 999999)) DINHRAE = 9.
IF ((DINpc1aF = 999999) AND (DINSc1aF = 999999)) DINHRAF = 9.
IF ((DINpc1aG = 999999) AND (DINSc1aG = 999999)) DINHRAG = 9.
EXECUTE.

****************************************************************************.
*CREATE VARIABLE FOR HH INCOME FROM EACH SOURCE.
MISSING VALUES DINPc1AA DINPc1AB DINPc1AC DINPc1AD DINPc1AE DINPc1AF DINPc1AG
DINSc1AA DINSc1AB DINSc1AC DINSc1AD DINSc1AE DINSc1AF DINSc1AG (999996 THRU 999999).
EXECUTE.

 FREQ VARS = DINPc1AA DINPc1AB DINPc1AC DINPc1AD DINPc1AE DINPc1AF DINPc1AG
DINSc1AA DINSc1AB DINSc1AC DINSc1AD DINSc1AE DINSc1AF DINSc1AG .

COMPUTE DINRHHA = DINPc1AA + DINSc1AA .
VARIABLE LABELS DINRHHA 'HH INCOME FROM WAGES - PMK & SPOUSE' .
```

COMPUTE DINRHHB = DINPc1AB + DINSc1AB .
VARIABLE LABELS DINRHHB 'HH INCOME FROM SELF-EMPLOYMENT - PMK & SPOUSE' .

COMPUTE DINRHHC = DINPc1AC + DINSc1AC .
VARIABLE LABELS DINRHHC 'HH INCOME FROM EI - PMK & SPOUSE' .

COMPUTE DINRHHD = DINPc1AD + DINSc1AD .
VARIABLE LABELS DINRHHD 'HH INCOME FROM CTB - PMK & SPOUSE' .

COMPUTE DINRHHE = DINPc1AE + DINSc1AE .
VARIABLE LABELS DINRHHE 'HH INCOME FROM SA - PMK & SPOUSE' .

COMPUTE DINRHHF = DINPc1AF + DINSc1AF .
VARIABLE LABELS DINRHHF 'HH INCOME FROM CHILD SUPP - PMK & SPOUSE' .

COMPUTE DINRHHG = DINPc1AG + DINSc1AG .
VARIABLE LABELS DINRHHG 'HH INCOME FROM OTHER - PMK & SPOUSE' .

FORMATS DINRHHA DINRHHB DINRHHC DINRHHD DINRHHE DINRHHF DINRHHG (F6).
EXECUTE .
**.
***CREATE TOTAL HH INCOME VARIABLE.**

COMPUTE DINRHTOT = DINRHHA + DINRHHB + DINRHHC + DINRHHD + DINRHHE + DINRHHF + DINRHHG .
VARIABLE LABELS DINRHTOT 'TOTAL HH INCOME ALL SOURCES'.
EXECUTE.

FORMATS DINRHTOT (F6).
EXECUTE.
**.
***CREATE MAIN SOURCE OF INCOME VARIABLE: _INHQR2A.**

*CYCLE 1 AND 2 - RECODE TO MATCH CYCLE 3 AND 4.

FREQ VARS = ainhq02a binhq02a .

*VALUES FOR ainhq02a binhq02a
01 WAGES AND SALARIES
02 INCOME FROM SELF-EMPLOYMENT
03 DIVIDENDS & INTEREST(BONDS,DEPOSITS,ETC)
04 UNEMPLOYMENT INSURANCE
05 WORKER-S COMPENSATION
06 BENEFITS - CANADA/QUEBEC PENSION PLAN
07 PENSIONS, SUPERANNUATION, ANNUITIES
08 OLD AGE SECURITY/GUARANTEED INCOME SUP.
09 CHILD TAX BENEFIT
10 SOCIAL ASSISTANCE OR WELFARE
11 CHILD SUPPORT
12 ALIMONY
13 OTHER INCOME

```
96 NOT APPLICABLE
97 DON-T KNOW
98 REFUSAL
99 NOT STATED.

MISSING VALUES ainhq02a binhq02a ().
EXECUTE.

COMPUTE AINHQR2A = 0.
COMPUTE BINHQR2A = 0.

FORMATS AINHQR2A BINHQR2A (F2).

VARIABLE LABELS
AINHQR2A 'MAIN SOURCE OF HH INCOME CYCLE 1'
BINHQR2A 'MAIN SOURCE OF HH INCOME CYCLE 2'.

VALUE LABELS
AINHQR2A BINHQR2A
01 'WAGES AND SALARIES'
02 INCOME FROM SELF-EMPLOYMENT'
03 'EMPLOYMENT INSURANCE'
04 'CHILD TAX BENEFIT'
05 'SOCIAL ASSISTANCE'
06  'CHILD AND SPOUSAL SUPPORT'
07  'OTHER'
97 "DON'T KNOW"
98 'REFUSAL'
99 'NOT STATED'.
EXECUTE.

IF AINHQ02A = 1 AINHQR2A = 1.
IF AINHQ02A = 2 AINHQR2A = 2.
IF AINHQ02A = 3 AINHQR2A = 7.
IF AINHQ02A = 4 AINHQR2A = 3.
IF AINHQ02A = 5 AINHQR2A = 7.
IF AINHQ02A = 6 AINHQR2A = 7.
IF AINHQ02A = 7 AINHQR2A = 7.
IF AINHQ02A = 8 AINHQR2A = 7.
IF AINHQ02A = 9 AINHQR2A = 4.
IF AINHQ02A = 10 AINHQR2A = 5.
IF AINHQ02A = 11 AINHQR2A = 6.
IF AINHQ02A = 12 AINHQR2A = 6.
IF AINHQ02A = 13 AINHQR2A = 7.
IF AINHQ02A = 96 AINHQR2A = 96.
IF AINHQ02A = 97 AINHQR2A = 97.
IF AINHQ02A = 98 AINHQR2A = 98.
IF AINHQ02A = 99 AINHQR2A = 99.
EXECUTE.

IF BINHQ02A = 1 BINHQR2A = 1.
IF BINHQ02A = 2 BINHQR2A = 2.
```

```
IF BINHQ02A = 3 BINHQR2A = 7.
IF BINHQ02A = 4 BINHQR2A = 3.
IF BINHQ02A = 5 BINHQR2A = 7.
IF BINHQ02A = 6 BINHQR2A = 7.
IF BINHQ02A = 7 BINHQR2A = 7.
IF BINHQ02A = 8 BINHQR2A = 7.
IF BINHQ02A = 9 BINHQR2A = 4.
IF BINHQ02A = 10 BINHQR2A = 5.
IF BINHQ02A = 11 BINHQR2A = 6.
IF BINHQ02A = 12 BINHQR2A = 6.
IF BINHQ02A = 13 BINHQR2A = 7.
IF BINHQ02A = 96 BINHQR2A = 96.
IF BINHQ02A = 97 BINHQR2A = 97.
IF BINHQ02A = 98 BINHQR2A = 98.
IF BINHQ02A = 99 BINHQR2A = 99.
EXECUTE.

*CYCLE 3 AND 4.
COMPUTE CINHQR2A = 0.
COMPUTE DINHQR2A = 0.

VARIABLE LABELS
CINHQR2A 'MAIN SOURCE OF HH INCOME CYCLE 3'
DINHQR2A 'MAIN SOURCE OF HH INCOME CYCLE 4'.

VALUE LABELS
CINHQR2A DINHQR2A
01 'WAGES AND SALARIES'
02 INCOME FROM SELF-EMPLOYMENT'
03 'EMPLOYMENT INSURANCE'
04 'CHILD TAX BENEFIT'
05 'SOCIAL ASSISTANCE'
06  'CHILD AND SPOUSAL SUPPORT'
07  'OTHER'
97 "DON'T KNOW"
98 'REFUSAL'
99 'NOT STATED'.

FORMATS CINHQR2A DINHQR2A (F2).
EXECUTE.
```

***CYCLE 3.**

```
IF ((CINRHHA GT CINRHHB) AND (CINRHHA GT CINRHHC)  AND (CINRHHA GT CINRHHD)  AND
(CINRHHA GT CINRHHE)  AND (CINRHHA GT CINRHHF)  AND (CINRHHA GT CINRHHG)) CINHQR2A
= 1.
IF ((CINRHHB GT CINRHHA) AND (CINRHHB GT CINRHHC)  AND (CINRHHB GT CINRHHD)  AND
(CINRHHB GT CINRHHE)  AND (CINRHHB GT CINRHHF)  AND (CINRHHB GT CINRHHG)) CINHQR2A
= 2.
IF ((CINRHHC GT CINRHHA)  AND (CINRHHC GT CINRHHB) AND (CINRHHC GT CINRHHD)  AND
(CINRHHC GT CINRHHE)  AND (CINRHHC GT CINRHHF)  AND (CINRHHC GT CINRHHG)) CINHQR2A
= 3.
```

IF ((CINRHHD GT CINRHHA) AND (CINRHHD GT CINRHHB) AND (CINRHHD GT CINRHHC) AND (CINRHHD GT CINRHHE) AND (CINRHHD GT CINRHHF) AND (CINRHHD GT CINRHHG)) CINHQR2A = 4.
IF ((CINRHHE GT CINRHHA) AND (CINRHHE GT CINRHHB) AND (CINRHHE GT CINRHHC) AND (CINRHHE GT CINRHHD) AND (CINRHHE GT CINRHHF) AND (CINRHHE GT CINRHHG)) CINHQR2A = 5.
IF ((CINRHHF GT CINRHHA) AND (CINRHHF GT CINRHHB) AND (CINRHHF GT CINRHHC) AND (CINRHHF GT CINRHHD) AND (CINRHHF GT CINRHHE) AND (CINRHHF GT CINRHHG)) CINHQR2A = 6.
IF ((CINRHHG GT CINRHHA) AND (CINRHHG GT CINRHHB) AND (CINRHHG GT CINRHHC) AND (CINRHHG GT CINRHHD) AND (CINRHHG GT CINRHHE) AND (CINRHHG GT CINRHHF)) CINHQR2A = 7.
EXECUTE.

***CYCLE 4.**
IF ((DINRHHA GT DINRHHB) AND (DINRHHA GT DINRHHC) AND (DINRHHA GT DINRHHD) AND (DINRHHA GT DINRHHE) AND (DINRHHA GT DINRHHF) AND (DINRHHA GT DINRHHG)) DINHQR2A = 1.
IF ((DINRHHB GT DINRHHA) AND (DINRHHB GT DINRHHC) AND (DINRHHB GT DINRHHD) AND (DINRHHB GT DINRHHE) AND (DINRHHB GT DINRHHF) AND (DINRHHB GT DINRHHG)) DINHQR2A = 2.
IF ((DINRHHC GT DINRHHA) AND (DINRHHC GT DINRHHB) AND (DINRHHC GT DINRHHD) AND (DINRHHC GT DINRHHE) AND (DINRHHC GT DINRHHF) AND (DINRHHC GT DINRHHG)) DINHQR2A = 3.
IF ((DINRHHD GT DINRHHA) AND (DINRHHD GT DINRHHB) AND (DINRHHD GT DINRHHC) AND (DINRHHD GT DINRHHE) AND (DINRHHD GT DINRHHF) AND (DINRHHD GT DINRHHG)) DINHQR2A = 4.
IF ((DINRHHE GT DINRHHA) AND (DINRHHE GT DINRHHB) AND (DINRHHE GT DINRHHC) AND (DINRHHE GT DINRHHD) AND (DINRHHE GT DINRHHF) AND (DINRHHE GT DINRHHG)) DINHQR2A = 5.
IF ((DINRHHF GT DINRHHA) AND (DINRHHF GT DINRHHB) AND (DINRHHF GT DINRHHC) AND (DINRHHF GT DINRHHD) AND (DINRHHF GT DINRHHE) AND (DINRHHF GT DINRHHG)) DINHQR2A = 6.
IF ((DINRHHG GT DINRHHA) AND (DINRHHG GT DINRHHB) AND (DINRHHG GT DINRHHC) AND (DINRHHG GT DINRHHD) AND (DINRHHG GT DINRHHE) AND (DINRHHG GT DINRHHF)) DINHQR2A = 7.
EXECUTE.

***.
***THE FOLLOWING SYNTAX WAS USED TO CREATE THE SOURCE OF INCOME VARIABLE USED FOR THE ANALYSIS.**
***SEE ABOVE FOR SYNTAX THAT CREATES THE _INHQR2A (MAIN SOURCE OF INCOME) AND _INHRAA TO _INHRAG (SOURCE OF INCOME) VARIABLES.**

***VARIABLE NAME: _INHSRCa**
***.
***CREATE INCOME SOURCE VARIABLES.**

COMPUTE AINHSRCa = 9.

FORMATS AINHSRCa (F2).

```
VARIABLE LABELS AINHSRCa "COMBINED INCOME SOURCES-ANALYSIS".
VALUE LABELS AINHSRCa
0 "EMPLOYMENT ONLY - NO GT'S EXCEPT CTB"
1 'EMPLOYMENT/CS/OTHER MAIN, GOV TRANSFERS AND NO EI, NO SA'
2 'EMPLOYMENT/CS/OTHER MAIN AND EI, OTHER GTs, BUT NOT SA'
3 'EI, CTB OR SA MAIN-OR RECEIVED SA'
96 'NOT APPLICABLE'
97 "DON'T KNOW"
98 'REFUSAL'
99 'NOT STATED'.

IF (((AINHQR2A = 1) OR (AINHQR2A = 2)) AND ((AINHRAC = 0) AND (AINHRAE = 0)))  AINHSRCa =
0.
IF (((AINHQR2A = 1) OR (AINHQR2A = 2) OR (AINHQR2A = 6) OR (AINHQR2A = 7)) AND (((AINHRAF
= 1) OR (AINHRAG = 1)) AND ((AINHRAC = 0) AND (AINHRAE = 0)))) AINHSRCa = 1.
IF (((AINHQR2A = 1) OR (AINHQR2A = 2) OR (AINHQR2A = 6) OR (AINHQR2A = 7)) AND ((AINHRAC
= 1) AND (AINHRAE = 0))) AINHSRCa = 2.
IF ((AINHQR2A = 3) OR (AINHQR2A = 4) OR (AINHQR2A = 5))  OR (AINHRAE = 1) AINHSRCa = 3.
EXECUTE.

*****************************************************************************.
COMPUTE BINHSRCa = 9.

FORMATS BINHSRCa (F2).

VARIABLE LABELS BINHSRCa "COMBINED INCOME SOURCES-ANALYSIS".
VALUE LABELS BINHSRCa
0 "EMPLOYMENT ONLY - NO GT'S EXCEPT CTB"
1 'EMPLOYMENT/CS/OTHER MAIN, GOV TRANSFERS AND NO EI, NO SA'
2 'EMPLOYMENT/CS/OTHER MAIN AND EI, OTHER GTs, BUT NOT SA'
3 'EI, CTB OR SA MAIN-OR RECEIVED SA'
96 'NOT APPLICABLE'
97 "DON'T KNOW"
98 'REFUSAL'
99 'NOT STATED'.

IF (((BINHQR2A = 1) OR (BINHQR2A = 2)) AND ((BINHRAC = 0) AND (BINHRAE = 0)))  BINHSRCa =
0.
IF (((BINHQR2A = 1) OR (BINHQR2A = 2) OR (BINHQR2A = 6) OR (BINHQR2A = 7)) AND (((BINHRAF
= 1) OR (BINHRAG = 1)) AND ((BINHRAC = 0) AND (BINHRAE = 0)))) BINHSRCa = 1.
IF (((BINHQR2A = 1) OR (BINHQR2A = 2) OR (BINHQR2A = 6) OR (BINHQR2A = 7)) AND ((BINHRAC
= 1) AND (BINHRAE = 0))) BINHSRCa = 2.
IF ((BINHQR2A = 3) OR (BINHQR2A = 4) OR (BINHQR2A = 5))  OR (BINHRAE = 1) BINHSRCa = 3.
EXECUTE.
*****************************************************************************.
COMPUTE CINHSRCa = 9.

FORMATS CINHSRCa (F2).

VARIABLE LABELS CINHSRCa "COMBINED INCOME SOURCES-ANALYSIS".
VALUE LABELS CINHSRCa
0 "EMPLOYMENT ONLY - NO GT'S EXCEPT CTB"
```

1 'EMPLOYMENT/CS/OTHER MAIN, GOV TRANSFERS AND NO EI, NO SA'
2 'EMPLOYMENT/CS/OTHER MAIN AND EI, OTHER GTs, BUT NOT SA'
3 'EI, CTB OR SA MAIN-OR RECEIVED SA'
96 'NOT APPLICABLE'
97 "DON'T KNOW"
98 'REFUSAL'
99 'NOT STATED'.

IF (((CINHQR2A = 1) OR (CINHQR2A = 2)) AND ((CINHRAC = 0) AND (CINHRAE = 0))) CINHSRCa = 0.
IF (((CINHQR2A = 1) OR (CINHQR2A = 2) OR (CINHQR2A = 6) OR (CINHQR2A = 7)) AND (((CINHRAF = 1) OR (CINHRAG = 1)) AND ((CINHRAC = 0) AND (CINHRAE = 0)))) CINHSRCa = 1.
IF (((CINHQR2A = 1) OR (CINHQR2A = 2) OR (CINHQR2A = 6) OR (CINHQR2A = 7)) AND ((CINHRAC = 1) AND (CINHRAE = 0))) CINHSRCa = 2.
IF ((CINHQR2A = 3) OR (CINHQR2A = 4) OR (CINHQR2A = 5)) OR (CINHRAE = 1) CINHSRCa = 3.
EXECUTE.
**.
CREATE INCOME SOURCE VARIABLES TO ACCOUNT FOR VARIATIONS IN SOURCE -- AS PER PROPOSAL.
***CHOSE TO PUT OTHER AND CHILD SUPPORT IN WITH EMPLOYMENT & GOV TRANSFER (2) -- SEEMS TO BE RELATIVELY STABLE SOURCE**
*** IN CYCLE 1, NONE HAD SA.**
**.
COMPUTE DINHSRCa = 9.

FORMATS DINHSRCa (F2).

VARIABLE LABELS DINHSRCa "COMBINED INCOME SOURCES-ANALYSIS".
VALUE LABELS DINHSRCa
0 "EMPLOYMENT ONLY - NO GT'S EXCEPT CTB"
1 'EMPLOYMENT/CS/OTHER MAIN, GOV TRANSFERS AND NO EI, NO SA'
2 'EMPLOYMENT/CS/OTHER MAIN AND EI, OTHER GTs, BUT NOT SA'
3 'EI, CTB OR SA MAIN-OR RECEIVED SA'
96 'NOT APPLICABLE'
97 "DON'T KNOW"
98 'REFUSAL'
99 'NOT STATED'.

IF (((DINHQR2A = 1) OR (DINHQR2A = 2)) AND ((DINHRAC = 0) AND (DINHRAE = 0))) DINHSRCa = 0.
IF (((DINHQR2A = 1) OR (DINHQR2A = 2) OR (DINHQR2A = 6) OR (DINHQR2A = 7)) AND (((DINHRAF = 1) OR (DINHRAG = 1)) AND ((DINHRAC = 0) AND (DINHRAE = 0)))) DINHSRCa = 1.
IF (((DINHQR2A = 1) OR (DINHQR2A = 2) OR (DINHQR2A = 6) OR (DINHQR2A = 7)) AND ((DINHRAC = 1) AND (DINHRAE = 0))) DINHSRCa = 2.
IF ((DINHQR2A = 3) OR (DINHQR2A = 4) OR (DINHQR2A = 5)) OR (DINHRAE = 1) DINHSRCa = 3.
EXECUTE.

**.
*RECODE ABOVE TO ACCOUNT FOR THE FACT THAT "OTHER" INCOME, AND GOVERNMENT TRANSFERS CAN RESULT IN HIGHER AVERAGE INCOME.

MISSING VALUES AINHSRCa BINHSRCa CINHSRCa DINHSRCa ().
RECODE AINHSRCa BINHSRCa CINHSRCa DINHSRCa

```
 (0=1)  (1=0)  (ELSE=Copy)  INTO  AINHSRCR  BINHSRCR  CINHSRCR  DINHSRCR .
VARIABLE LABELS AINHSRCR 'CYCLE 1 INCOME SOURCE RECODE' /BINHSRCR 'CYCLE 2 INCOME
SOURCE RECODE' /CINHSRCR 'CYCLE 3 INCOME SOURCE RECODE' /DINHSRCR 'CYCLE 4 INCOME
SOURCE RECODE'.

VALUE LABELS AINHSRCR  BINHSRCR  CINHSRCR  DINHSRCR
0 'EMPLOYMENT/CS/OTHER MAIN, GOV TRANSFERS AND NO EI, NO SA'
1 "EMPLOYMENT ONLY - NO GT'S EXCEPT CTB"
2 'EMPLOYMENT/CS/OTHER MAIN AND EI, OTHER GTs, BUT NOT SA'
3 'EI, CTB OR SA MAIN-OR RECEIVED SA'
96 'NOT APPLICABLE'
97 "DON'T KNOW"
98 'REFUSAL'
99 'NOT STATED'.

MISSING VALUES  AINHSRCa BINHSRCa CINHSRCa DINHSRCa AINHSRCR  BINHSRCR  CINHSRCR
DINHSRCR (96 THRU 99).
```

APPENDIX E: LISREL OUTPUT

E.1: MODEL 1 – DIFFICULT TEMPERAMENT AND AGGRESSIVE BEHAVIOUR (BOYS)

L I S R E L 8.80
BY
Karl G. Jöreskog and Dag Sörbom
<u>THIS PROGRAM IS PUBLISHED EXCLUSIVELY BY</u>
Scientific Software International, Inc.
7383 N. Lincoln Avenue, Suite 100
Lincolnwood, IL 60712, U.S.A.
Phone: (800)247-6113, (847)675-0720, Fax: (847)675-2140

Website: www.ssicentral.com

The following lines were read from file **C:…:**

```
 DA NI=32 NO=355 MA=CM
 CM
 53.3989
 21.9581 51.6044
 5.3593 9.7438 8.1783
 0.3830 4.2845 2.4755 4.4794
 0.7093 3.3094 1.3331 2.0943 3.6683
 2.1417 1.3929 0.4449 0.1716 0.2402 1.6790
 0.8380 2.8381 1.5101 0.9905 0.2101 0.5192 4.8366
 1.9538 2.9331 0.9889 1.1426 0.6271 0.3829 1.9394 3.7882
 2.3186 2.5725 1.0143 0.8814 0.8032 0.3532 1.5198 1.8849 3.7959
 3.9513 4.5873 1.7406 1.1983 1.4253 0.9829 1.3741 1.3856 2.0750 18.2830
 -0.3770 2.3654 1.9971 1.1084 0.8024 0.5984 1.1652 0.3120 0.7963 8.4968 17.2841
 -2.2889 2.4139 1.9180 2.0057 1.9623 0.6941 1.0822 1.8384 1.7961 7.5455 6.1930 19.4633
 -0.7928 1.7401 1.4618 1.4096 1.2749 0.2435 1.7865 1.4923 1.4546 6.8203 4.0741 6.8405
14.6422
 0.1926 -0.4345 0.0431 -0.0123 -0.1386 -0.0643 -0.3111 -0.2234 -0.2032 -0.9715 -0.0770 -0.4208
-0.7124 1.6487
 0.0378 -0.8637 -0.1084 -0.0556 -0.0907 -0.0841 -0.1277 -0.1838 -0.1124 -0.9450 -0.2306 -0.5698
-0.7332 1.1986 1.5901
-0.6089 -1.5641 -0.2335 -0.1057 -0.1670 -0.1737 -0.2932 -0.2750 -0.1955 -0.9472 -0.5161
-0.7200 -0.7362 0.9265 1.1893 1.4427
-0.6196 -1.3759 0.0165 0.0906 -0.0422 -0.2456 -0.2713 -0.3159 -0.2589 -1.0741 -0.3769 -0.7070
-0.8564 1.1354 1.3765 1.3828 1.9677
 0.8690 0.9137 0.1405 0.0410 0.0237 0.0305 -0.0146 -0.0025 -0.0628 0.1745 -0.0533 -0.0771
0.1158 -0.0812 -0.1220 -0.1187 -0.0472 1.0897
 0.2134 0.8166 0.1272 0.1986 0.1715 -0.0247 0.0749 0.0638 0.2190 0.3363 0.1785 0.3571 0.1736
-0.1307 -0.1605 -0.1662 -0.1455 0.2873 0.8885
 -0.1014 -0.1017 -0.1926 0.0258 -0.1064 0.0197 -0.1076 -0.1634 -0.0548 -0.0557 0.1860 0.1270
0.1587 -0.1201 -0.1318 -0.1629 -0.1292 0.2042 0.2747 0.8874
 0.2897 0.3375 -0.0761 0.1426 0.2139 0.0326 -0.0447 -0.0427 0.1743 0.2307 0.0314 -0.0044
0.1784 -0.1311 -0.1677 -0.1201 -0.1636 0.1826 0.2079 0.2260 0.6542
 0.3613 0.4162 -0.0646 -0.0495 -0.0917 0.0726 -0.0471 0.0254 -0.0992 0.0870 -0.2052 -0.0421
0.1143 -0.0626 -0.1243 -0.0840 -0.1084 0.6641 0.1955 0.0987 0.1199 0.6332
 -0.3424 0.0760 -0.2159 0.0057 0.0419 -0.0366 -0.2107 -0.0794 -0.0274 0.1266 0.0205 0.3047
```

```
0.0516 -0.1441 -0.2380 -0.1470 -0.1667 0.1899 0.4237 0.1810 0.1463 0.1938 0.5586
 -0.0015 0.2284 -0.1112 -0.0991 -0.0373 0.0132 -0.0145 -0.0706 -0.0321 -0.1119 0.1439 0.0305
0.0587 -0.1828 -0.2280 -0.2335 -0.2575 0.1420 0.1992 0.4375 0.1551 0.1270 0.1747 0.4519
 0.1899 0.0540 -0.0191 -0.0500 0.0386 0.0556 -0.0711 -0.0627 0.0501 0.1891 -0.0270 -0.0492
0.0969 -0.0815 -0.1051 -0.1084 -0.1303 0.0796 0.1090 0.1161 0.2947 0.0759 0.1229 0.1002
0.2843
 0.0761 -0.2144 -0.0958 -0.0383 -0.0076 0.0014 0.0768 -0.0118 -0.0042 0.1141 -0.0168 -0.0582
-0.0393 -0.1393 0.1519 0.0833 0.0754 -0.0079 -0.0276 -0.0086 -0.0162 -0.0070 -0.0478 -0.0121
-0.0093 0.1832
 -0.0874 -0.1320 -0.0096 0.0122 0.0253 -0.0168 -0.1207 -0.0581 0.0077 0.0314 -0.1244 -0.0965
0.0067 -0.1299 -0.2067 0.0818 -0.0251 0.0395 0.0444 0.0308 0.0681 0.0500 0.0702 0.0314
0.0231 -0.0410 0.1987
 0.0052 0.2071 0.0158 0.1355 -0.0327 -0.0386 0.0689 0.0158 0.0340 -0.1041 0.1257 0.1085
-0.0086 0.0461 0.0103 -0.1815 0.1876 0.0465 0.0098 0.1170 -0.0153 -0.0214 -0.0193 0.0446
-0.0017 -0.0160 -0.0912 0.4950
 -0.0814 0.2108 -0.1504 -0.0842 -0.0096 0.0274 -0.1114 -0.1098 0.0038 0.4012 0.1174 -0.0292
0.0248 -0.2367 -0.2939 -0.2348 -0.2930 0.1186 0.3308 0.3013 0.4561 0.1460 0.3022 0.2526
0.2571 -0.0385 0.0652 -0.0292 1.6995
 0.2032 1.0473 -0.0197 -0.0320 -0.0584 -0.0557 -0.0298 -0.1837 -0.0378 0.2767 0.7017 0.1568
0.3631 -0.1670 -0.2774 -0.2863 -0.2505 0.1958 0.1667 0.5060 0.2846 0.0787 0.1894 0.3642
0.1560 -0.0504 0.0635 0.1986 0.3664 1.6972
 -0.0312 1.2207 -0.1952 -0.1720 0.0575 0.0659 -0.0343 -0.2722 0.0488 0.9792 0.6348 0.4297
0.9013 -0.5180 -0.6853 -0.5565 -0.6222 0.3747 0.6541 0.6177 0.5248 0.2431 0.5270 0.4730
0.3121 -0.0867 0.1767 0.0039 0.8352 0.8948 3.8157
 0.3992 1.0578 -0.1046 0.0320 0.1265 0.3295 0.2859 -0.1225 -0.1418 0.1535 -0.0878 -0.4655
-0.2036 -0.1704 -0.1702 -0.1513 -0.1775 0.5920 0.2976 0.3759 0.2507 0.4558 0.3087 0.2853
0.1811 0.0470 0.0161 -0.0040 0.5517 0.1329 0.5916 3.8169
 LA
 ATMSCALE BTMSCALE  BBECS04 CBECS09 DBECDS09 APRCS02  BPRCS06 CPRCS06 DPRCS06
ADPPS01  BDPPS01 CDPPS01 DDPPS01 C1IN1000  C2IN1000 C3IN1000 C4IN1000 AINHSRCA
BINHSRCA CINHSRCA DINHSRCA AINHSRCR  BINHSRCR CINHSRCR DINHSRCR T2T1PCTD
T3T2PCTD T4T3PCTD WOWC4H10 WOWC3H10  WOWC2H10 WOWC1H10
 SE
 ATMSCALE BTMSCALE BBECS04 CBECS09 DBECDS09 /
 MO NY=5 NE=5 LY=FU,FI LX=FU,FI BE=FU,FI PS=SY,FI TE=SY,FI
 LE
 TEM1ETA1 TEM2ETA2 BEH2ETA3 BEH3ETA4 BEH4ETA5
 VA 1.0 LY(1,1)
 VA 1.0 LY(2,2)
 VA 1.0 LY(3,3)
 VA 1.0 LY(4,4)
 VA 1.0 LY(5,5)
 FR  BE(2,1)
 FR      BE(3,2)
 FR          BE(4,3)
 FR              BE(5,4)
 FR PS(1,1)
 FR     PS(2,2)
 FR         PS(3,3)
 FR             PS(4,4)
 FR                 PS(5,5)
  VA 10.6798 TE(1,1)
```

VA 10.3209 TE(2,2)
VA 2.2081 TE(3,3)
VA 0.9855 TE(4,4)
VA 0.8070 TE(5,5)
PD
OU ALL

Number of Input Variables 5
Number of Y - Variables 5
Number of X - Variables 0
Number of ETA - Variables 5
Number of KSI - Variables 0
Number of Observations 355

Covariance Matrix

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09
ATMSCALE	53.40				
BTMSCALE	21.96	51.60			
bbecs04	5.36	9.74	8.18		
cbecs09	0.38	4.28	2.48	4.48	
DBECdS09	0.71	3.31	1.33	2.09	3.67

Parameter Specifications

BETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	0	0	0	0	0
TEM2ETA2	1	0	0	0	0
BEH2ETA3	0	2	0	0	0
BEH3ETA4	0	0	3	0	0
BEH4ETA5	0	0	0	4	0

PSI

TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
5	6	7	8	9

Initial Estimates (TSLS)

LAMBDA-Y

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
ATMSCALE	1.00	- -	- -	- -	- -
BTMSCALE	- -	1.00	- -	- -	- -
bbecs04	- -	- -	1.00	- -	- -
cbecs09	- -	- -	- -	1.00	- -
DBECdS09	- -	- -	- -	- -	1.00

BETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	- -	- -	- -	- -	- -
TEM2ETA2	0.51	- -	- -	- -	- -
BEH2ETA3	- -	0.24	- -	- -	- -
BEH3ETA4	- -	- -	0.42	- -	- -
BEH4ETA5	- -	- -	- -	0.60	- -

Covariance Matrix of ETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	42.72				
TEM2ETA2	21.96	41.28			
BEH2ETA3	5.18	9.74	5.97		
BEH3ETA4	2.15	4.05	2.48	3.49	
BEH4ETA5	1.29	2.42	1.49	2.09	2.86

PSI

Note: This matrix is diagonal.

TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
42.72	29.99	3.67	2.46	1.61

Squared Multiple Correlations for Structural Equations

TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
- -	0.27	0.38	0.30	0.44

THETA-EPS

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09
10.68	10.32	2.21	0.99	0.81

Behavior under Minimization Iterations

ITER	TRY	ABSCISA	SLOPE	FUNCTION
1	0	0.00000000D+00	-0.58174105D-04	0.16638342D-01
	1	0.10000000D+01	0.72508440D-06	0.16609598D-01
2	0	0.00000000D+00	-0.18974678D-07	0.16609598D-01
	1	0.10000000D+01	-0.23051614D-09	0.16609589D-01
3	0	0.00000000D+00	-0.41907063D-11	0.16609589D-01
	1	0.10000000D+01	-0.76112791D-14	0.16609589D-01

Number of Iterations = 3

LISREL Estimates (Maximum Likelihood)

LAMBDA-Y

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
ATMSCALE	1.00	- -	- -	- -	- -
BTMSCALE	- -	1.00	- -	- -	- -
bbecs04	- -	- -	1.00	- -	- -
cbecs09	- -	- -	- -	1.00	- -
DBECdS09	- -	- -	- -	- -	1.00

BETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	- -	- -	- -	- -	- -
TEM2ETA2	0.51	- -	- -	- -	- -
	(0.06)				
	8.57				
BEH2ETA3	- -	0.24	- -	- -	- -
		(0.02)			
		10.22			
BEH3ETA4	- -	- -	0.41	- -	- -
			(0.05)		
			8.46		
BEH4ETA5	- -	- -	- -	0.60	- -
				(0.05)	
				11.07	

Covariance Matrix of ETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	42.72				
TEM2ETA2	21.85	41.31			
BEH2ETA3	5.19	9.81	5.96		
BEH3ETA4	2.15	4.06	2.46	3.49	
BEH4ETA5	1.28	2.42	1.47	2.08	2.86

PSI

Note: This matrix is diagonal.

TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
42.72	30.13	3.63	2.47	1.62
(4.01)	(3.22)	(0.47)	(0.28)	(0.21)
10.64	9.35	7.71	8.81	7.81

Squared Multiple Correlations for Structural Equations

TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
- -	0.27	0.39	0.29	0.43

THETA-EPS

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09
10.68	10.32	2.21	0.99	0.81

Squared Multiple Correlations for Y - Variables

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09
0.80	0.80	0.73	0.78	0.78

Goodness of Fit Statistics

Degrees of Freedom = 6
Minimum Fit Function Chi-Square = 11.76 (P = 0.068)
Normal Theory Weighted Least Squares Chi-Square = 11.63 (P = 0.071)
Estimated Non-centrality Parameter (NCP) = 5.63
90 Percent Confidence Interval for NCP = (0.0 ; 19.40)

Minimum Fit Function Value = 0.033
Population Discrepancy Function Value (F0) = 0.016
90 Percent Confidence Interval for F0 = (0.0 ; 0.055)
Root Mean Square Error of Approximation (RMSEA) = 0.052
90 Percent Confidence Interval for RMSEA = (0.0 ; 0.096)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.42

Expected Cross-Validation Index (ECVI) = 0.084
90 Percent Confidence Interval for ECVI = (0.068 ; 0.12)
ECVI for Saturated Model = 0.085
ECVI for Independence Model = 1.13

Chi-Square for Independence Model with 10 Degrees of Freedom = 388.78
Independence AIC = 398.78
Model AIC = 29.63
Saturated AIC = 30.00
Independence CAIC = 423.14
Model CAIC = 73.48
Saturated CAIC = 103.08

Normed Fit Index (NFI) = 0.97
Non-Normed Fit Index (NNFI) = 0.97
Parsimony Normed Fit Index (PNFI) = 0.58
Comparative Fit Index (CFI) = 0.98
Incremental Fit Index (IFI) = 0.98
Relative Fit Index (RFI) = 0.95

Critical N (CN) = 507.10

Root Mean Square Residual (RMR) = 0.54
Standardized RMR = 0.036
Goodness of Fit Index (GFI) = 0.99
Adjusted Goodness of Fit Index (AGFI) = 0.97
Parsimony Goodness of Fit Index (PGFI) = 0.39

Fitted Covariance Matrix

	ATMSCALE	**BTMSCALE**	**bbecs04**	**cbecs09**	**DBECdS09**
ATMSCALE	53.40				
BTMSCALE	21.85	51.63			
bbecs04	5.19	9.81	8.17		
cbecs09	2.15	4.06	2.46	4.48	
DBECdS09	1.28	2.42	1.47	2.08	3.67

Fitted Residuals

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09
ATMSCALE	0.00				
BTMSCALE	0.11	-0.03			
bbecs04	0.17	-0.07	0.01		
cbecs09	-1.77	0.22	0.02	0.00	
DBECdS09	-0.57	0.89	-0.14	0.01	0.00

Summary Statistics for Fitted Residuals

Smallest Fitted Residual = -1.77
Median Fitted Residual = 0.00
Largest Fitted Residual = 0.89

Stemleaf Plot

```
- 1|8
- 0|6110000000
  0|1229
```

Standardized Residuals

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09
ATMSCALE	- -				
BTMSCALE	0.34	-0.34			
bbecs04	0.22	-0.41	0.32		
cbecs09	-2.46	0.43	0.22	-0.28	
DBECdS09	-0.82	1.48	-0.74	0.28	- -

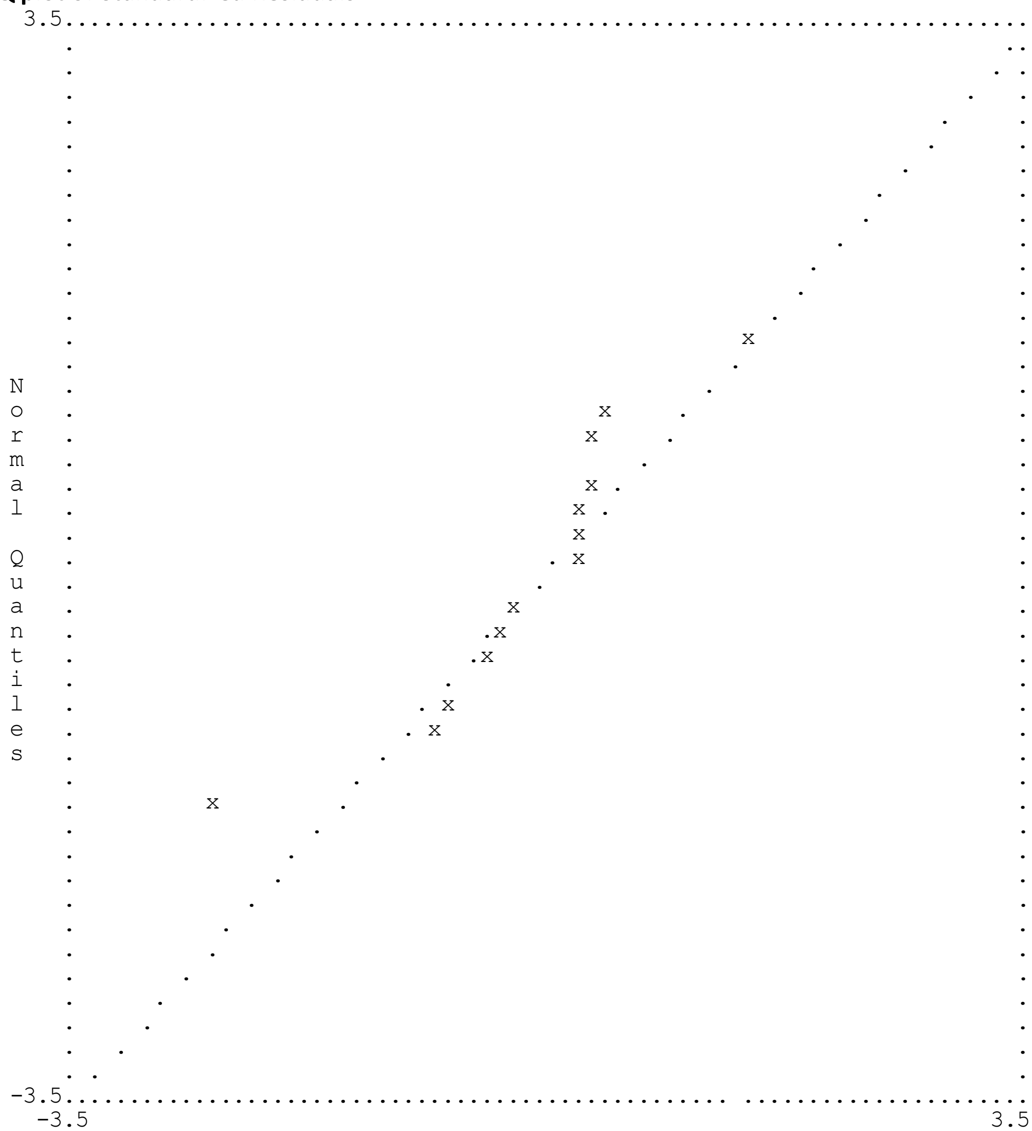
Summary Statistics for Standardized Residuals

Smallest Standardized Residual = -2.46
Median Standardized Residual = 0.00
Largest Standardized Residual = 1.48

Stemleaf Plot

```
- 2|5
- 1|
- 0|8743300
  0|223334
  1|5
```

Q plot of Standardized Residuals



Modification Indices and Expected Change

Modification Indices for LAMBDA-Y

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
ATMSCALE	- -	- -	0.12	6.34	2.87
BTMSCALE	0.12	- -	0.12	2.78	4.79
bbecs04	1.06	0.10	- -	0.10	1.69
cbecs09	5.49	0.38	0.08	- -	0.08
DBECdS09	0.19	1.37	0.08	- -	- -

Expected Change for LAMBDA-Y

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
ATMSCALE	- -	- -	-0.08	-0.58	-0.41
BTMSCALE	0.04	- -	0.16	0.40	0.50
bbecs04	0.03	-0.02	- -	-0.05	-0.15
cbecs09	-0.04	-0.01	0.03	- -	0.06
DBECdS09	0.01	0.02	-0.02	- -	- -

Standardized Expected Change for LAMBDA-Y

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
ATMSCALE	- -	- -	-0.20	-1.08	-0.69
BTMSCALE	0.27	- -	0.38	0.74	0.85
bbecs04	0.18	-0.13	- -	-0.10	-0.25
cbecs09	-0.25	-0.08	0.06	- -	0.10
DBECdS09	0.04	0.12	-0.04	- -	- -

Modification Indices for BETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	- -	- -	0.12	4.75	0.98
TEM2ETA2	- -	- -	0.12	4.51	4.06
BEH2ETA3	0.12	- -	- -	0.10	2.06
BEH3ETA4	5.48	0.10	- -	- -	0.08
BEH4ETA5	0.19	1.37	0.08	- -	- -

Expected Change for BETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	- -	- -	-0.11	-0.62	-0.28
TEM2ETA2	- -	- -	0.16	0.69	0.59
BEH2ETA3	-0.01	- -	- -	-0.05	-0.19
BEH3ETA4	-0.04	0.01	- -	- -	0.06
BEH4ETA5	0.01	0.02	-0.02	- -	- -

Standardized Expected Change for BETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	- -	- -	-0.01	-0.05	-0.03
TEM2ETA2	- -	- -	0.01	0.06	0.05
BEH2ETA3	0.00	- -	- -	-0.01	-0.05
BEH3ETA4	0.00	0.00	- -	- -	0.02
BEH4ETA5	0.00	0.00	0.00	- -	- -

Modification Indices for PSI

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	- -				
TEM2ETA2	- -	- -			
BEH2ETA3	0.12	0.12	- -		
BEH3ETA4	5.48	4.85	0.10	- -	
BEH4ETA5	0.19	1.29	2.49	0.08	- -

Expected Change for PSI

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	- -				
TEM2ETA2	- -	- -			
BEH2ETA3	-0.41	0.57	- -		
BEH3ETA4	-1.89	1.93	-0.13	- -	
BEH4ETA5	0.28	0.69	-0.41	0.09	- -

Standardized Expected Change for PSI

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	- -				
TEM2ETA2	- -	- -			
BEH2ETA3	-0.03	0.04	- -		
BEH3ETA4	-0.15	0.16	-0.03	- -	
BEH4ETA5	0.03	0.06	-0.10	0.03	- -

Modification Indices for THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09
ATMSCALE	- -				
BTMSCALE	0.12	0.12			
bbecs04	1.31	1.14	0.10		
cbecs09	5.91	0.16	0.73	0.08	
DBECdS09	0.03	2.88	1.82	0.08	- -

Expected Change for THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09
ATMSCALE	- -				
BTMSCALE	1.27	-2.40			
bbecs04	0.97	-1.25	0.31		
cbecs09	-1.47	0.22	0.24	-0.15	
DBECdS09	-0.09	0.87	-0.28	0.09	- -

Maximum Modification Index is 6.34 for Element (1, 4) of LAMBDA-Y

Covariance Matrix of Parameter Estimates

	BE 2_1	BE 3_2	BE 4_3	BE 5_4	PS 1_1	PS 2_2
BE 2_1	0.00					
BE 3_2	0.00	0.00				
BE 4_3	0.00	0.00	0.00			
BE 5_4	0.00	0.00	0.00	0.00		
PS 1_1	-0.04	0.00	0.00	0.00	16.11	
PS 2_2	-0.03	-0.01	0.00	0.00	0.17	10.39
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.01
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00

(Covariance Matrix of Parameter Estimates – continued)

	PS 3_3	PS 4_4	PS 5_5
PS 3_3	0.22		
PS 4_4	0.00	0.08	
PS 5_5	0.00	0.00	0.04

Correlation Matrix of Parameter Estimates

	BE 2_1	BE 3_2	BE 4_3	BE 5_4	PS 1_1	PS 2_2
BE 2_1	1.00					
BE 3_2	-0.08	1.00				
BE 4_3	0.00	-0.12	1.00			
BE 5_4	0.00	0.00	-0.10	1.00		
PS 1_1	-0.16	0.00	0.00	0.00	1.00	
PS 2_2	-0.15	-0.17	0.00	0.00	0.01	1.00
PS 3_3	0.01	-0.15	-0.18	0.00	0.00	0.01
PS 4_4	0.00	0.02	-0.18	-0.19	0.00	0.00
PS 5_5	0.00	0.00	0.02	-0.22	0.00	0.00

	PS 3_3	PS 4_4	PS 5_5
PS 3_3	1.00		
PS 4_4	0.00	1.00	
PS 5_5	0.00	0.01	1.00

Covariances

Y - ETA

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09
TEM1ETA1	42.72	21.85	5.19	2.15	1.28
TEM2ETA2	21.85	41.31	9.81	4.06	2.42
BEH2ETA3	5.19	9.81	5.96	2.46	1.47
BEH3ETA4	2.15	4.06	2.46	3.49	2.08
BEH4ETA5	1.28	2.42	1.47	2.08	2.86

First Order Derivatives

LAMBDA-Y

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
ATMSCALE	0.00	0.00	0.00	0.03	0.02
BTMSCALE	-0.01	0.00	0.00	-0.02	-0.03
bbecs04	-0.11	0.01	0.00	0.01	0.03
cbecs09	0.40	0.09	-0.01	0.00	0.00
DBECdS09	-0.08	-0.20	0.01	0.00	0.00

BETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	0.00	0.00	0.00	0.02	0.01
TEM2ETA2	0.00	0.00	0.00	-0.02	-0.02
BEH2ETA3	0.03	0.00	0.00	0.01	0.03
BEH3ETA4	0.35	-0.03	0.00	0.00	0.00
BEH4ETA5	-0.08	-0.20	0.01	0.00	0.00

PSI

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	0.00				
TEM2ETA2	0.00	0.00			
BEH2ETA3	0.00	0.00	0.00		
BEH3ETA4	0.01	-0.01	0.00	0.00	
BEH4ETA5	0.00	-0.01	0.02	0.00	0.00

THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09
ATMSCALE	0.00				
BTMSCALE	0.00	0.00			
bbecs04	0.00	0.00	0.00		
cbecs09	0.01	0.00	-0.01	0.00	
DBECdS09	0.00	-0.01	0.02	0.00	0.00

Factor Scores Regressions
ETA

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09
TEM1ETA1	0.76	0.09	0.04	0.01	0.00
TEM2ETA2	0.09	0.70	0.28	0.07	0.02
BEH2ETA3	0.01	0.06	0.60	0.14	0.04
BEH3ETA4	0.00	0.01	0.06	0.66	0.16
BEH4ETA5	0.00	0.00	0.01	0.13	0.70

Standardized Solution
LAMBDA-Y

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
ATMSCALE	6.54	- -	- -	- -	- -
BTMSCALE	- -	6.43	- -	- -	- -
bbecs04	- -	- -	2.44	- -	- -
cbecs09	- -	- -	- -	1.87	- -
DBECdS09	- -	- -	- -	- -	1.69

BETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	- -	- -	- -	- -	- -
TEM2ETA2	0.52	- -	- -	- -	- -
BEH2ETA3	- -	0.63	- -	- -	- -
BEH3ETA4	- -	- -	0.54	- -	- -
BEH4ETA5	- -	- -	- -	0.66	- -

Correlation Matrix of ETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	1.00				
TEM2ETA2	0.52	1.00			
BEH2ETA3	0.33	0.63	1.00		
BEH3ETA4	0.18	0.34	0.54	1.00	
BEH4ETA5	0.12	0.22	0.36	0.66	1.00

PSI Note: This matrix is diagonal.

TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
1.00	0.73	0.61	0.71	0.57

Total and Indirect Effects

Total Effects of ETA on ETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	- -	- -	- -	- -	- -
TEM2ETA2	0.51	- -	- -	- -	- -
	(0.06)				
	8.57				
BEH2ETA3	0.12	0.24	- -	- -	- -
	(0.02)	(0.02)			
	6.83	10.22			
BEH3ETA4	0.05	0.10	0.41	- -	- -
	(0.01)	(0.01)	(0.05)		
	5.54	6.95	8.46		
BEH4ETA5	0.03	0.06	0.25	0.60	- -
	(0.01)	(0.01)	(0.03)	(0.05)	
	5.09	6.11	7.06	11.07	

Largest Eigenvalue of B*B' (Stability Index) is 0.356

Indirect Effects of ETA on ETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	- -	- -	- -	- -	- -
TEM2ETA2	- -	- -	- -	- -	- -
BEH2ETA3	0.12	- -	- -	- -	- -
	(0.02)				
	6.83				
BEH3ETA4	0.05	0.10	- -	- -	- -
	(0.01)	(0.01)			
	5.54	6.95			
BEH4ETA5	0.03	0.06	0.25	- -	- -
	(0.01)	(0.01)	(0.03)		
	5.09	6.11	7.06		

Total Effects of ETA on Y

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
ATMSCALE	1.00	- -	- -	- -	- -
BTMSCALE	0.51	1.00	- -	- -	- -
	(0.06)				
	8.57				
bbecs04	0.12	0.24	1.00	- -	- -
	(0.02)	(0.02)			
	6.83	10.22			
cbecs09	0.05	0.10	0.41	1.00	- -
	(0.01)	(0.01)	(0.05)		
	5.54	6.95	8.46		
DBECdS09	0.03	0.06	0.25	0.60	1.00
	(0.01)	(0.01)	(0.03)	(0.05)	
	5.09	6.11	7.06	11.07	

Indirect Effects of ETA on Y

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
ATMSCALE	- -	- -	- -	- -	- -
BTMSCALE	0.51	- -	- -	- -	- -
	(0.06)				
	8.57				
bbecs04	0.12	0.24	- -	- -	- -
	(0.02)	(0.02)			
	6.83	10.22			
cbecs09	0.05	0.10	0.41	- -	- -
	(0.01)	(0.01)	(0.05)		
	5.54	6.95	8.46		
DBECdS09	0.03	0.06	0.25	0.60	- -
	(0.01)	(0.01)	(0.03)	(0.05)	
	5.09	6.11	7.06	11.07	

Standardized Total and Indirect Effects

Standardized Total Effects of ETA on ETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	- -	- -	- -	- -	- -
TEM2ETA2	0.52	- -	- -	- -	- -
BEH2ETA3	0.33	0.63	- -	- -	- -
BEH3ETA4	0.18	0.34	0.54	- -	- -
BEH4ETA5	0.12	0.22	0.36	0.66	- -

Standardized Indirect Effects of ETA on ETA

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
TEM1ETA1	- -	- -	- -	- -	- -
TEM2ETA2	- -	- -	- -	- -	- -
BEH2ETA3	0.33	- -	- -	- -	- -
BEH3ETA4	0.18	0.34	- -	- -	- -
BEH4ETA5	0.12	0.22	0.36	- -	- -

Standardized Total Effects of ETA on Y

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
ATMSCALE	6.54	- -	- -	- -	- -
BTMSCALE	3.34	6.43	- -	- -	- -
bbecs04	0.79	1.53	2.44	- -	- -
cbecs09	0.33	0.63	1.01	1.87	- -
DBECdS09	0.20	0.38	0.60	1.12	1.69

Standardized Indirect Effects of ETA on Y

	TEM1ETA1	TEM2ETA2	BEH2ETA3	BEH3ETA4	BEH4ETA5
ATMSCALE	- -	- -	- -	- -	- -
BTMSCALE	3.34	- -	- -	- -	- -
bbecs04	0.79	1.53	- -	- -	- -
cbecs09	0.33	0.63	1.01	- -	- -
DBECdS09	0.20	0.38	0.60	1.12	- -

Time used: 0.031 Seconds

E.2: MODEL 2 – DIFFICULT TEMPERAMENT, AGGRESSIVE BEHAVIOUR AND PUNITIVE PARENTING

```
DA NI=32 NO=355 MA=CM
 CM (SEE MODEL 1)
 LA
 ATMSCALE BTMSCALE  BBECS04 CBECS09 DBECDS09 APRCS02  BPRCS06 CPRCS06 DPRCS06
ADPPS01  BDPPS01 CDPPS01 DDPPS01 C1IN1000  C2IN1000 C3IN1000 C4IN1000 AINHSRCA
BINHSRCA CINHSRCA DINHSRCA AINHSRCR  BINHSRCR CINHSRCR DINHSRCR T2T1PCTD
T3T2PCTD T4T3PCTD WOWC4H10 WOWC3H10  WOWC2H10 WOWC1H10
 SE
 ATMSCALE BTMSCALE  bbecs04 cbecs09 DBECdS09 APRCS02  bprcs06 cprcs06 DPRCS06 /
 MO  NY=9  NE=9 LY=FU,FI BE=FU,FI PS=SY,FI TE=SY,FI
 LE
 TEM1ETA1 TEM2ETA2 AGG2ETA3  AGG3ETA4 AGG4ETA5 PAR1ETA6 PAR2ETA7 PAR3ETA8
PAR4ETA9
 VA 1.0 LY(1,1) LY(2,2) LY(3,3) LY(4,4) LY(5,5) LY(6,6) LY(7,7) LY(8,8) LY(9,9)
 FR BE(2,1)
 FR    BE(3,2)        BE(3,7)
 FR      BE(4,3)           BE(4,8)
 FR          BE(5,4)             BE(5,9)
 FR  BE(6,1)
 FR      BE(7,2)    BE(7,6)
 FR      BE(8,2)       BE(8,7)
 FR      BE(9,2)          BE(9,8)
 EQ BE(6,1) BE(7,2)
 EQ BE(8,2) BE(9,2)
 FR PS (1,1)
 FR  PS(2,2)
 FR      PS(3,3)
 FR         PS(4,4)
 FR           PS(5,5)
 FR              PS(6,6)
 FR                 PS(7,7)
 FR                    PS(8,8)
 FR                       PS(9,9)
 VA 10.6798 TE(1,1)
 VA 10.3209 TE(2,2)
 VA 2.2081 TE(3,3)
 VA 0.9855 TE(4,4)
 VA 0.8070 TE(5,5)
 VA 1.1417 TE(6,6)
 VA 2.1281 TE(7,7)
 VA 1.5910 TE(8,8)
 VA 1.7461 TE(9,9)
 PD
 OU ALL
                    Number of Input Variables 32
                    Number of Y - Variables    9
                    Number of X - Variables    0
                    Number of ETA - Variables  9
                    Number of KSI - Variables  0
                    Number of Observations   355
```

Covariance Matrix

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	53.40					
BTMSCALE	21.96	51.60				
bbecs04	5.36	9.74	8.18			
cbecs09	0.38	4.28	2.48	4.48		
DBECdS09	0.71	3.31	1.33	2.09	3.67	
APRCS02	2.14	1.39	0.44	0.17	0.24	1.68
bprcs06	0.84	2.84	1.51	0.99	0.21	0.52
cprcs06	1.95	2.93	0.99	1.14	0.63	0.38
DPRCS06	2.32	2.57	1.01	0.88	0.80	0.35

	bprcs06	cprcs06	DPRCS06
bprcs06	4.84		
cprcs06	1.94	3.79	
DPRCS06	1.52	1.88	3.80

Parameter Specifications

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	0	0	0	0	0	0
TEM2eta2	1	0	0	0	0	0
AGG2eta3	0	2	0	0	0	0
AGG3eta4	0	0	4	0	0	0
AGG4eta5	0	0	0	6	0	0
PAR1ETA6	8	0	0	0	0	0
PAR2ETA7	0	8	0	0	0	9
PAR3ETA8	0	10	0	0	0	0
PAR4ETA9	0	10	0	0	0	0

	PAR2ETA7	PAR3ETA8	PAR4ETA9
TEM1eta1	0	0	0
TEM2eta2	0	0	0
AGG2eta3	3	0	0
AGG3eta4	0	5	0
AGG4eta5	0	0	7
PAR1ETA6	0	0	0
PAR2ETA7	0	0	0
PAR3ETA8	11	0	0
PAR4ETA9	0	12	0

PSI

TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
13	14	15	16	17	18

PAR2ETA7	PAR3ETA8	PAR4ETA9
19	20	21

Initial Estimates (TSLS)

LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	1.00	- -	- -	- -	- -	- -
BTMSCALE	- -	1.00	- -	- -	- -	- -
bbecs04	- -	- -	1.00	- -	- -	- -
cbecs09	- -	- -	- -	1.00	- -	- -
DBECdS09	- -	- -	- -	- -	1.00	- -
APRCS02	- -	- -	- -	- -	- -	1.00
bprcs06	- -	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9
ATMSCALE	- -	- -	- -
BTMSCALE	- -	- -	- -
bbecs04	- -	- -	- -
cbecs09	- -	- -	- -
DBECdS09	- -	- -	- -
APRCS02	- -	- -	- -
bprcs06	1.00	- -	- -
cprcs06	- -	1.00	- -
DPRCS06	- -	- -	1.00

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.51	- -	- -	- -	- -	- -
AGG2eta3	- -	0.21	- -	- -	- -	- -
AGG3eta4	- -	- -	0.36	- -	- -	- -
AGG4eta5	- -	- -	- -	0.56	- -	- -
PAR1ETA6	0.04	- -	- -	- -	- -	- -
PAR2ETA7	- -	0.04	- -	- -	- -	0.86
PAR3ETA8	- -	0.01	- -	- -	- -	- -
PAR4ETA9	- -	0.01	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9
TEM1eta1	- -	- -	- -
TEM2eta2	- -	- -	- -
AGG2eta3	0.33	- -	- -
AGG3eta4	- -	0.36	- -
AGG4eta5	- -	- -	0.15
PAR1ETA6	- -	- -	- -
PAR2ETA7	- -	- -	- -
PAR3ETA8	0.69	- -	- -
PAR4ETA9	- -	0.85	- -

Covariance Matrix of ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	42.72					
TEM2eta2	21.96	41.28				
AGG2eta3	5.56	9.70	5.95			
AGG3eta4	2.73	4.31	2.53	3.52		
AGG4eta5	1.84	2.80	1.58	2.13	2.90	
PAR1ETA6	1.92	0.99	0.37	0.26	0.19	0.52
PAR2ETA7	2.64	2.71	1.48	1.20	0.92	0.49
PAR3ETA8	2.10	2.39	1.14	1.17	0.93	0.35
PAR4ETA9	2.07	2.56	1.10	1.05	0.90	0.31

	PAR2ETA7	PAR3ETA8	PAR4ETA9
PAR2ETA7	2.69		
PAR3ETA8	1.90	2.13	
PAR4ETA9	1.65	1.85	2.05

PSI

Note: This matrix is diagonal.

TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
42.72	29.99	3.39	2.20	1.57	0.43

PAR2ETA7	PAR3ETA8	PAR4ETA9
2.15	0.79	0.44

Squared Multiple Correlations for Structural Equations

TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
- -	0.27	0.43	0.37	0.46	0.17

PAR2ETA7	PAR3ETA8	PAR4ETA9
0.20	0.63	0.78

THETA-EPS

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
10.68	10.32	2.21	0.99	0.81	1.14

bprcs06	cprcs06	DPRCS06
2.13	1.59	1.75

Behavior under Minimization Iterations

ITER	TRY	ABSCISA	SLOPE	FUNCTION
1	0	0.00000000D+00	-0.14117045D-01	0.58781671D-01
	1	0.10000000D+01	0.19801628D-02	0.52709344D-01
	2	0.87698719D+00	-0.17645745D-05	0.52587659D-01
2	0	0.00000000D+00	-0.11543070D-03	0.52587659D-01
	1	0.87698719D+00	-0.19562023D-04	0.52528397D-01
	2	0.17539744D+01	0.77254986D-04	0.52553625D-01
	3	0.10541838D+01	-0.77116698D-07	0.52526656D-01
3	0	0.00000000D+00	-0.30356372D-05	0.52526656D-01
	1	0.10541838D+01	-0.16960054D-06	0.52524967D-01
4	0	0.00000000D+00	-0.45561451D-07	0.52524967D-01
	1	0.10541838D+01	0.74773446D-09	0.52524943D-01
5	0	0.00000000D+00	-0.31537454D-09	0.52524943D-01
	1	0.10541838D+01	-0.23777889D-10	0.52524943D-01
6	0	0.00000000D+00	-0.12505428D-10	0.52524943D-01
	1	0.10541838D+01	0.19137118D-11	0.52524943D-01
	2	0.91427225D+00	0.43110428D-17	0.52524943D-01
7	0	0.00000000D+00	-0.39145707D-12	0.52524943D-01
	1	0.91427225D+00	-0.27045684D-13	0.52524943D-01

Number of Iterations = 7

LISREL Estimates (Maximum Likelihood)

LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	1.00	- -	- -	- -	- -	- -
BTMSCALE	- -	1.00	- -	- -	- -	- -
bbecs04	- -	- -	1.00	- -	- -	- -
cbecs09	- -	- -	- -	1.00	- -	- -
DBECdS09	- -	- -	- -	- -	1.00	- -
APRCS02	- -	- -	- -	- -	- -	1.00
bprcs06	- -	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9
ATMSCALE	- -	- -	- -
BTMSCALE	- -	- -	- -
bbecs04	- -	- -	- -
cbecs09	- -	- -	- -
DBECdS09	- -	- -	- -
APRCS02	- -	- -	- -
bprcs06	1.00	- -	- -
cprcs06	- -	1.00	- -
DPRCS06	- -	- -	1.00

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.51 (0.06) 8.61	- -	- -	- -	- -	- -
AGG2eta3	- -	0.22 (0.02) 8.86	- -	- -	- -	- -
AGG3eta4	- -	- -	0.35 (0.05) 6.88	- -	- -	- -
AGG4eta5	- -	- -	- -	0.58 (0.06) 9.66	- -	- -
PAR1ETA6	0.05 (0.01) 4.98	- -	- -	- -	- -	- -
PAR2ETA7	- -	0.05 (0.01) 4.98	- -	- -	- -	0.66 (0.25) 2.68
PAR3ETA8	- -	0.02 (0.01) 1.70	- -	- -	- -	- -
PAR4ETA9	- -	0.02 (0.01) 1.70	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9
TEM1eta1	- -	- -	- -
TEM2eta2	- -	- -	- -
AGG2eta3	0.30 (0.10) 2.85	- -	- -
AGG3eta4	- -	0.29 (0.09) 3.37	- -
AGG4eta5	- -	- -	0.06 (0.08) 0.69
PAR1ETA6	- -	- -	- -
PAR2ETA7	- -	- -	- -
PAR3ETA8	0.68 (0.08) 8.20	- -	- -
PAR4ETA9	- -	0.81 (0.08) 9.62	- -

Covariance Matrix of ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	42.67					
TEM2eta2	21.92	41.35				
AGG2eta3	5.42	9.68	5.97			
AGG3eta4	2.50	4.15	2.43	3.50		
AGG4eta5	1.55	2.55	1.46	2.07	2.86	
PAR1ETA6	2.02	1.04	0.35	0.21	0.14	0.58
PAR2ETA7	2.36	2.63	1.37	1.04	0.69	0.43
PAR3ETA8	1.97	2.48	1.09	1.05	0.71	0.31
PAR4ETA9	1.95	2.69	1.04	0.91	0.64	0.27

	PAR2ETA7	PAR3ETA8	PAR4ETA9
PAR2ETA7	2.70		
PAR3ETA8	1.88	2.24	
PAR4ETA9	1.56	1.84	2.06

PSI

Note: This matrix is diagonal.

TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
42.67	30.09	3.47	2.33	1.63	0.48
(4.01)	(3.22)	(0.46)	(0.27)	(0.21)	(0.12)
10.65	9.34	7.50	8.64	7.88	4.01

PAR2ETA7	PAR3ETA8	PAR4ETA9
2.29	0.92	0.53
(0.35)	(0.23)	(0.23)
6.55	4.04	2.33

Squared Multiple Correlations for Structural Equations

TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
- -	0.27	0.42	0.33	0.43	0.17

PAR2ETA7	PAR3ETA8	PAR4ETA9
0.15	0.59	0.74

THETA-EPS

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
10.68	10.32	2.21	0.99	0.81	1.14

bprcs06	cprcs06	DPRCS06
2.13	1.59	1.75

Squared Multiple Correlations for Y - Variables

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
0.80	0.80	0.73	0.78	0.78	0.34

bprcs06	cprcs06	DPRCS06
0.56	0.58	0.54

Goodness of Fit Statistics

Degrees of Freedom = 24
Minimum Fit Function Chi-Square = 37.19 (P = 0.042)
Normal Theory Weighted Least Squares Chi-Square = 35.54 (P = 0.061)
Estimated Non-centrality Parameter (NCP) = 11.54
90 Percent Confidence Interval for NCP = (0.0 ; 31.60)

Minimum Fit Function Value = 0.11
Population Discrepancy Function Value (F0) = 0.033
90 Percent Confidence Interval for F0 = (0.0 ; 0.089)
Root Mean Square Error of Approximation (RMSEA) = 0.037
90 Percent Confidence Interval for RMSEA = (0.0 ; 0.061)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.79

Expected Cross-Validation Index (ECVI) = 0.22
90 Percent Confidence Interval for ECVI = (0.19 ; 0.28)
ECVI for Saturated Model = 0.25
ECVI for Independence Model = 2.43

Chi-Square for Independence Model with 36 Degrees of Freedom = 840.49
Independence AIC = 858.49
Model AIC = 77.54
Saturated AIC = 90.00
Independence CAIC = 902.34
Model CAIC = 179.85
Saturated CAIC = 309.25

Normed Fit Index (NFI) = 0.96
Non-Normed Fit Index (NNFI) = 0.98
Parsimony Normed Fit Index (PNFI) = 0.64
Comparative Fit Index (CFI) = 0.98
Incremental Fit Index (IFI) = 0.98
Relative Fit Index (RFI) = 0.93

Critical N (CN) = 410.14

Root Mean Square Residual (RMR) = 0.45
Standardized RMR = 0.037
Goodness of Fit Index (GFI) = 0.98
Adjusted Goodness of Fit Index (AGFI) = 0.96
Parsimony Goodness of Fit Index (PGFI) = 0.52

Fitted Covariance Matrix

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	53.35					
BTMSCALE	21.92	51.67				
bbecs04	5.42	9.68	8.18			
cbecs09	2.50	4.15	2.43	4.49		
DBECdS09	1.55	2.55	1.46	2.07	3.67	
APRCS02	2.02	1.04	0.35	0.21	0.14	1.72
bprcs06	2.36	2.63	1.37	1.04	0.69	0.43
cprcs06	1.97	2.48	1.09	1.05	0.71	0.31
DPRCS06	1.95	2.69	1.04	0.91	0.64	0.27

	bprcs06	cprcs06	DPRCS06
bprcs06	4.83		
cprcs06	1.88	3.83	
DPRCS06	1.56	1.84	3.81

Fitted Residuals

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	0.05					
BTMSCALE	0.04	-0.07				
bbecs04	-0.06	0.06	0.00			
cbecs09	-2.12	0.13	0.05	-0.01		
DBECdS09	-0.84	0.76	-0.13	0.02	0.00	
APRCS02	0.12	0.35	0.09	-0.04	0.10	-0.04
bprcs06	-1.52	0.21	0.14	-0.05	-0.48	0.09
cprcs06	-0.02	0.45	-0.10	0.09	-0.08	0.07
DPRCS06	0.37	-0.12	-0.03	-0.03	0.16	0.08

	bprcs06	cprcs06	DPRCS06
bprcs06	0.01		
cprcs06	0.06	-0.04	
DPRCS06	-0.04	0.04	-0.01

Summary Statistics for Fitted Residuals

Smallest Fitted Residual = -2.12
Median Fitted Residual = 0.01
Largest Fitted Residual = 0.76

Stemleaf Plot

```
- 2|1
- 1|5
- 1|
- 0|85
- 0|1111110000000000000000
  0|11111111111122444
  0|8
```

Standardized Residuals

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	0.35					
BTMSCALE	0.13	-0.41				
bbecs04	-0.08	0.34	0.09			
cbecs09	-3.02	0.24	0.64	-0.35		
DBECdS09	-1.24	1.27	-0.70	0.82	0.07	
APRCS02	0.44	0.81	0.49	-0.32	0.79	-1.76
bprcs06	-2.47	0.32	0.87	-0.29	-2.86	1.18
cprcs06	-0.03	0.81	-0.53	0.96	-0.71	0.71
DPRCS06	0.61	-0.45	-0.17	-0.24	1.60	0.75

	bprcs06	cprcs06	DPRCS06
bprcs06	0.25		
cprcs06	0.87	-0.70	
DPRCS06	-0.34	0.72	-0.56

Summary Statistics for Standardized Residuals

Smallest Standardized Residual = -3.02
Median Standardized Residual = 0.13
Largest Standardized Residual = 1.60

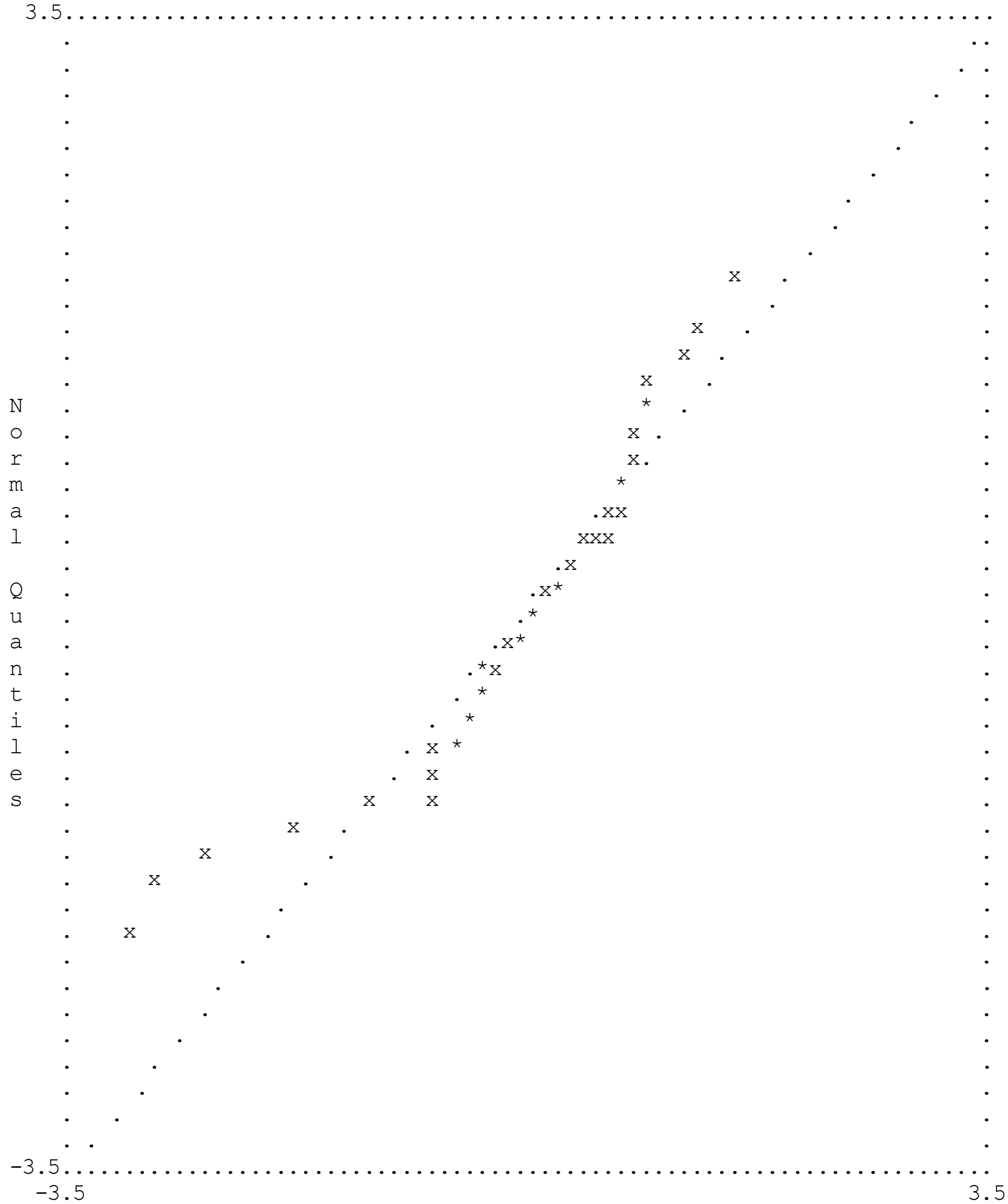
Stemleaf Plot

```
- 3|0
- 2|95
- 2|
- 1|8
- 1|2
- 0|777655
- 0|433332210
  0|111233334
  0|566777888899
  1|023
  1|6
```

Largest Negative Standardized Residuals

Residual for	**cbecs09**	and	**ATMSCALE**	**-3.02**
Residual for	**bprcs06**	and	**DBECdS09**	**-2.86**

Qplot of Standardized Residuals



Modification Indices and Expected Change

Modification Indices for LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.02	0.89	0.92	9.39	4.62	0.71
BTMSCALE	0.27	0.02	0.89	2.63	4.14	0.79
bbecs04	1.14	0.01	- -	0.03	0.77	0.39
cbecs09	7.09	0.63	0.24	- -	0.86	3.01
DBECdS09	0.05	1.06	0.24	- -	- -	0.13
APRCS02	0.57	0.64	0.41	0.24	1.35	0.02
bprcs06	4.98	0.05	0.22	0.47	5.87	0.36
cprcs06	0.53	0.40	0.05	0.45	0.00	0.24
DPRCS06	1.31	0.50	0.03	0.00	2.26	0.48

	PAR2ETA7	PAR3ETA8	PAR4ETA9
ATMSCALE	4.28	1.09	0.24
BTMSCALE	1.61	1.32	0.44
bbecs04	1.80	0.64	0.27
cbecs09	1.24	6.57	0.01
DBECdS09	10.03	6.57	- -
APRCS02	2.86	1.45	1.20
bprcs06	0.02	0.01	0.26
cprcs06	0.83	0.37	0.44
DPRCS06	0.03	6.57	0.37

Expected Change for LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.06	-0.29	-0.22	-0.69	-0.51	-1.17
BTMSCALE	0.07	-0.06	0.43	0.39	0.47	0.71
bbecs04	0.03	0.01	- -	0.03	-0.10	0.19
cbecs09	-0.04	-0.02	0.05	- -	0.20	-0.36
DBECdS09	0.00	0.02	-0.03	- -	- -	0.07
APRCS02	0.01	0.01	0.02	0.02	0.05	-0.06
bprcs06	-0.05	-0.01	0.03	-0.05	-0.18	-0.19
cprcs06	0.01	0.01	-0.01	0.04	0.00	0.10
DPRCS06	0.02	-0.02	-0.01	0.00	0.11	0.14

	PAR2ETA7	PAR3ETA8	PAR4ETA9
ATMSCALE	-0.64	-0.33	-0.16
BTMSCALE	0.41	0.42	0.29
bbecs04	0.68	-0.20	-0.11
cbecs09	0.17	1.17	0.03
DBECdS09	-0.39	-0.68	- -
APRCS02	0.15	0.10	0.08
bprcs06	0.06	-0.03	-0.13
cprcs06	0.20	1.06	0.22
DPRCS06	-0.03	11.85	-1.06

Standardized Expected Change for LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.42	-1.85	-0.54	-1.30	-0.87	-0.89
BTMSCALE	0.43	-0.42	1.06	0.72	0.80	0.54
bbecs04	0.19	0.04	- -	0.06	-0.17	0.15
cbecs09	-0.29	-0.10	0.11	- -	0.34	-0.27
DBECdS09	0.02	0.11	-0.07	- -	- -	0.05
APRCS02	0.09	0.07	0.05	0.04	0.09	-0.05
bprcs06	-0.31	-0.03	0.08	-0.09	-0.30	-0.15
cprcs06	0.07	0.07	-0.02	0.08	0.00	0.08
DPRCS06	0.13	-0.13	-0.02	0.00	0.18	0.11

	PAR2ETA7	PAR3ETA8	PAR4ETA9
ATMSCALE	-1.05	-0.49	-0.23
BTMSCALE	0.68	0.63	0.42
bbecs04	1.12	-0.30	-0.16
cbecs09	0.27	1.76	0.04
DBECdS09	-0.64	-1.01	- -
APRCS02	0.25	0.14	0.12
bprcs06	0.11	-0.04	-0.18
cprcs06	0.33	1.59	0.32
DPRCS06	-0.05	17.72	-1.52

Modification Indices for BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	0.56	7.80	2.10	0.02
TEM2eta2	- -	- -	0.69	4.86	4.11	0.97
AGG2eta3	0.14	- -	- -	0.03	0.64	0.03
AGG3eta4	7.91	0.01	- -	- -	0.86	2.80
AGG4eta5	0.05	1.06	0.24	- -	- -	0.13
PAR1ETA6	0.02	0.89	0.56	0.22	0.26	0.02
PAR2ETA7	3.38	0.02	0.03	0.08	8.05	- -
PAR3ETA8	0.95	0.37	0.20	0.72	2.52	0.44
PAR4ETA9	1.34	0.37	0.04	0.00	2.26	0.51

	PAR2ETA7	PAR3ETA8	PAR4ETA9
TEM1eta1	3.76	0.47	0.03
TEM2eta2	1.51	0.81	0.20
AGG2eta3	- -	0.64	0.25
AGG3eta4	1.80	- -	0.01
AGG4eta5	10.03	6.57	- -
PAR1ETA6	3.28	1.55	1.22
PAR2ETA7	0.02	0.15	0.27
PAR3ETA8	- -	0.37	0.46
PAR4ETA9	0.20	- -	0.37

Expected Change for BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	-0.25	-0.83	-0.43	-0.27
TEM2eta2	- -	- -	0.36	0.68	0.59	0.89
AGG2eta3	-0.01	- -	- -	0.03	-0.10	-0.06
AGG3eta4	-0.05	0.00	- -	- -	0.20	-0.38
AGG4eta5	0.00	0.02	-0.03	- -	- -	0.07
PAR1ETA6	0.00	0.01	0.03	0.02	0.02	-0.06
PAR2ETA7	-0.05	0.00	0.02	-0.04	-0.36	- -
PAR3ETA8	0.02	0.01	-0.03	0.07	0.14	0.15
PAR4ETA9	0.02	-0.01	-0.01	0.00	0.11	0.15

	PAR2ETA7	PAR3ETA8	PAR4ETA9
TEM1eta1	-0.98	-0.33	-0.09
TEM2eta2	0.39	0.34	0.21
AGG2eta3	- -	-0.20	-0.11
AGG3eta4	-0.24	- -	0.03
AGG4eta5	-0.39	-0.68	- -
PAR1ETA6	0.17	0.11	0.09
PAR2ETA7	0.06	-0.16	-0.18
PAR3ETA8	- -	1.06	0.26
PAR4ETA9	-0.08	- -	-1.06

Standardized Expected Change for BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	-0.02	-0.07	-0.04	-0.05
TEM2eta2	- -	- -	0.02	0.06	0.05	0.18
AGG2eta3	0.00	- -	- -	0.01	-0.02	-0.03
AGG3eta4	0.00	0.00	- -	- -	0.06	-0.27
AGG4eta5	0.00	0.00	-0.01	- -	- -	0.05
PAR1ETA6	0.00	0.00	0.01	0.01	0.02	-0.11
PAR2ETA7	0.00	0.00	0.00	-0.01	-0.13	- -
PAR3ETA8	0.00	0.00	-0.01	0.02	0.05	0.13
PAR4ETA9	0.00	0.00	0.00	0.00	0.04	0.14

	PAR2ETA7	PAR3ETA8	PAR4ETA9
TEM1eta1	-0.09	-0.03	-0.01
TEM2eta2	0.04	0.03	0.02
AGG2eta3	- -	-0.05	-0.03
AGG3eta4	-0.08	- -	0.01
AGG4eta5	-0.14	-0.27	- -
PAR1ETA6	0.14	0.09	0.08
PAR2ETA7	0.02	-0.07	-0.07
PAR3ETA8	- -	0.48	0.12
PAR4ETA9	-0.03	- -	-0.52

Modification Indices for PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -					
TEM2eta2	- -	- -				
AGG2eta3	0.14	0.14	- -			
AGG3eta4	7.91	4.19	0.12	- -		
AGG4eta5	0.05	1.17	1.06	0.86	- -	
PAR1ETA6	0.02	0.97	0.00	0.00	0.07	- -
PAR2ETA7	3.38	1.17	0.03	0.16	12.41	3.38
PAR3ETA8	0.95	0.04	0.64	1.84	2.22	0.01
PAR4ETA9	1.34	2.32	0.01	0.01	5.04	0.01

	PAR2ETA7	PAR3ETA8	PAR4ETA9
PAR2ETA7	- -		
PAR3ETA8	0.70	- -	
PAR4ETA9	0.41	0.28	- -

Expected Change for PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -					
TEM2eta2	- -	- -				
AGG2eta3	-0.45	0.62	- -			
AGG3eta4	-2.25	1.71	0.14	- -		
AGG4eta5	0.15	0.66	-0.26	0.33	- -	
PAR1ETA6	-0.13	0.43	0.01	-0.01	0.03	- -
PAR2ETA7	-2.04	0.85	0.19	-0.15	-0.96	0.49
PAR3ETA8	0.73	-0.16	-0.18	0.33	0.30	0.01
PAR4ETA9	0.88	-1.28	0.02	0.02	0.39	0.01

	PAR2ETA7	PAR3ETA8	PAR4ETA9
PAR2ETA7	- -		
PAR3ETA8	-0.55	- -	
PAR4ETA9	-0.25	0.13	- -

Standardized Expected Change for PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -					
TEM2eta2	- -	- -				
AGG2eta3	-0.03	0.04	- -			
AGG3eta4	-0.18	0.14	0.03	- -		
AGG4eta5	0.01	0.06	-0.06	0.10	- -	
PAR1ETA6	-0.03	0.09	0.00	-0.01	0.02	- -
PAR2ETA7	-0.19	0.08	0.05	-0.05	-0.34	0.39
PAR3ETA8	0.07	-0.02	-0.05	0.12	0.12	0.01
PAR4ETA9	0.09	-0.14	0.01	0.01	0.16	0.01

(Standardized Expected Change for PSI – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9
PAR2ETA7	- -		
PAR3ETA8	-0.22	- -	
PAR4ETA9	-0.11	0.06	- -

Modification Indices for THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	0.63					
BTMSCALE	0.03	0.38				
bbecs04	1.08	0.42	0.12			
cbecs09	6.58	0.08	1.17	0.86		
DBECdS09	0.15	2.27	1.12	0.86	- -	
APRCS02	0.08	0.15	0.00	0.49	1.45	3.38
bprcs06	5.82	0.43	1.78	0.66	7.97	0.83
cprcs06	0.21	0.53	1.62	1.46	0.30	0.00
DPRCS06	2.04	1.91	0.01	1.30	5.04	0.02

	bprcs06	cprcs06	DPRCS06
bprcs06	0.01		
cprcs06	0.78	0.87	
DPRCS06	0.21	0.26	5.04

Expected Change for THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	10.33					
BTMSCALE	0.62	-4.27				
bbecs04	0.86	-0.81	-0.40			
cbecs09	-1.51	0.15	0.31	-0.57		
DBECdS09	-0.22	0.78	-0.22	0.33	- -	
APRCS02	0.17	0.16	0.00	-0.08	0.13	-0.74
bprcs06	-1.66	0.46	0.41	0.14	-0.47	0.14
cprcs06	0.26	0.38	-0.27	0.20	-0.08	0.00
DPRCS06	0.82	-0.93	0.02	-0.19	0.39	0.01

	bprcs06	cprcs06	DPRCS06
bprcs06	0.06		
cprcs06	0.20	-0.27	
DPRCS06	-0.09	0.12	-6.87

Maximum Modification Index is 12.41 for Element (7, 5) of PSI

Covariance Matrix of Parameter Estimates

	BE 2_1	BE 3_2	BE 3_7	BE 4_3	BE 4_8	BE 5_4
BE 2_1	0.00					
BE 3_2	0.00	0.00				
BE 3_7	0.00	0.00	0.01			
BE 4_3	0.00	0.00	0.00	0.00		
BE 4_8	0.00	0.00	0.00	0.00	0.01	
BE 5_4	0.00	0.00	0.00	0.00	0.00	0.00
BE 5_9	0.00	0.00	0.00	0.00	0.00	0.00
BE 6_1	0.00	0.00	0.00	0.00	0.00	0.00
BE 7_6	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_2	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_7	0.00	0.00	0.00	0.00	0.00	0.00
BE 9_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	-0.04	0.00	0.00	0.00	0.00	0.00
PS 2_2	-0.03	-0.01	0.01	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00

	BE 5_9	BE 6_1	BE 7_6	BE 8_2	BE 8_7	BE 9_8
BE 5_9	0.01					
BE 6_1	0.00	0.00				
BE 7_6	0.00	0.00	0.06			
BE 8_2	0.00	0.00	0.00	0.00		
BE 8_7	0.00	0.00	0.00	0.00	0.01	
BE 9_8	0.00	0.00	0.00	0.00	0.00	0.01
PS 1_1	0.00	0.00	0.01	0.00	0.00	0.00
PS 2_2	0.00	0.00	0.01	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	-0.01	0.00	0.00	0.00
PS 7_7	0.00	0.00	-0.02	0.00	-0.01	0.00
PS 8_8	0.00	0.00	0.00	0.00	-0.01	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	-0.01

	PS 1_1	PS 2_2	PS 3_3	PS 4_4	PS 5_5	PS 6_6
PS 1_1	16.05					
PS 2_2	0.18	10.37				
PS 3_3	0.00	0.01	0.21			
PS 4_4	0.00	0.00	0.00	0.07		
PS 5_5	0.00	0.00	0.00	0.00	0.04	
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.01
PS 7_7	0.00	-0.01	0.00	0.00	0.00	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00

(Covariance Matrix of Parameter Estimates – continued)

	PS 7_7	PS 8_8	PS 9_9
PS 7_7	0.12		
PS 8_8	0.01	0.05	
PS 9_9	0.00	0.00	0.05

Correlation Matrix of Parameter Estimates

	BE 2_1	BE 3_2	BE 3_7	BE 4_3	BE 4_8	BE 5_4
BE 2_1	1.00					
BE 3_2	-0.06	1.00				
BE 3_7	-0.01	-0.32	1.00			
BE 4_3	0.00	-0.09	0.00	1.00		
BE 4_8	0.00	0.03	-0.13	-0.38	1.00	
BE 5_4	0.00	0.00	0.00	-0.08	0.03	1.00
BE 5_9	0.00	0.00	0.00	0.03	-0.15	-0.44
BE 6_1	0.01	-0.03	-0.05	-0.01	0.00	0.00
BE 7_6	-0.03	-0.01	-0.01	0.00	0.00	0.00
BE 8_2	-0.02	0.09	-0.05	-0.01	-0.01	-0.01
BE 8_7	0.00	-0.02	0.08	-0.02	-0.08	0.00
BE 9_8	0.00	-0.02	0.02	0.01	0.09	0.00
PS 1_1	-0.16	0.00	0.00	0.00	0.00	0.00
PS 2_2	-0.15	-0.15	0.02	0.00	0.00	0.00
PS 3_3	0.01	-0.11	-0.08	-0.16	0.07	0.00
PS 4_4	0.00	0.01	0.01	-0.12	-0.06	-0.21
PS 5_5	0.00	0.00	0.00	0.02	0.00	-0.21
PS 6_6	0.01	0.01	0.00	0.00	0.00	0.00
PS 7_7	0.01	0.04	-0.12	0.01	0.00	0.00
PS 8_8	0.00	0.00	0.01	0.04	-0.08	0.00
PS 9_9	0.00	0.01	-0.01	-0.02	0.01	0.01

	BE 5_9	BE 6_1	BE 7_6	BE 8_2	BE 8_7	BE 9_8
BE 5_9	1.00					
BE 6_1	0.00	1.00				
BE 7_6	0.00	-0.31	1.00			
BE 8_2	0.00	-0.17	-0.03	1.00		
BE 8_7	0.00	-0.01	-0.10	-0.25	1.00	
BE 9_8	-0.03	0.03	0.01	-0.23	-0.21	1.00
PS 1_1	0.00	-0.07	0.01	0.01	0.00	0.00
PS 2_2	0.00	-0.02	0.01	-0.04	0.00	0.00
PS 3_3	0.00	0.01	0.00	0.00	0.01	0.00
PS 4_4	0.10	0.00	0.00	0.00	0.01	0.00
PS 5_5	0.06	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.04	-0.31	0.03	0.00	-0.01
PS 7_7	0.00	0.07	-0.24	0.15	-0.43	-0.03
PS 8_8	0.00	0.00	0.05	0.17	-0.40	-0.23
PS 9_9	-0.01	-0.01	0.00	0.07	0.08	-0.37

(Correlation Matrix of Parameter Estimates – continued)

	PS 1_1	PS 2_2	PS 3_3	PS 4_4	PS 5_5	PS 6_6
PS 1_1	1.00					
PS 2_2	0.01	1.00				
PS 3_3	0.00	0.01	1.00			
PS 4_4	0.00	0.00	0.00	1.00		
PS 5_5	0.00	0.00	0.00	0.01	1.00	
PS 6_6	0.00	0.00	0.00	0.00	0.00	1.00
PS 7_7	0.00	-0.01	0.00	0.00	0.00	0.03
PS 8_8	0.00	0.00	-0.01	-0.01	0.00	0.00
PS 9_9	0.00	0.00	0.00	-0.01	0.00	0.00

	PS 7_7	PS 8_8	PS 9_9
PS 7_7	1.00		
PS 8_8	0.11	1.00	
PS 9_9	0.01	-0.04	1.00

Covariances

Y - ETA

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
TEM1eta1	42.67	21.92	5.42	2.50	1.55	2.02
TEM2eta2	21.92	41.35	9.68	4.15	2.55	1.04
AGG2eta3	5.42	9.68	5.97	2.43	1.46	0.35
AGG3eta4	2.50	4.15	2.43	3.50	2.07	0.21
AGG4eta5	1.55	2.55	1.46	2.07	2.86	0.14
PAR1ETA6	2.02	1.04	0.35	0.21	0.14	0.58
PAR2ETA7	2.36	2.63	1.37	1.04	0.69	0.43
PAR3ETA8	1.97	2.48	1.09	1.05	0.71	0.31
PAR4ETA9	1.95	2.69	1.04	0.91	0.64	0.27

	bprcs06	cprcs06	DPRCS06
TEM1eta1	2.36	1.97	1.95
TEM2eta2	2.63	2.48	2.69
AGG2eta3	1.37	1.09	1.04
AGG3eta4	1.04	1.05	0.91
AGG4eta5	0.69	0.71	0.64
PAR1ETA6	0.43	0.31	0.27
PAR2ETA7	2.70	1.88	1.56
PAR3ETA8	1.88	2.24	1.84
PAR4ETA9	1.56	1.84	2.06

First Order Derivatives

LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.00	0.01	0.01	0.04	0.03	0.00
BTMSCALE	-0.01	0.00	-0.01	-0.02	-0.02	0.00
bbecs04	-0.11	0.00	0.00	0.00	0.02	-0.01
cbecs09	0.45	0.11	-0.01	0.00	-0.01	0.02
DBECdS09	-0.04	-0.17	0.03	0.00	0.00	-0.01
APRCS02	-0.12	-0.18	-0.05	-0.03	-0.07	0.00
bprcs06	0.30	0.03	-0.02	0.03	0.09	0.01
cprcs06	-0.13	-0.11	0.01	-0.03	0.00	-0.01
DPRCS06	-0.18	0.07	0.01	0.00	-0.06	-0.01

	PAR2ETA7	PAR3ETA8	PAR4ETA9
ATMSCALE	0.02	0.01	0.00
BTMSCALE	-0.01	-0.01	0.00
bbecs04	-0.01	0.01	0.01
cbecs09	-0.02	-0.02	0.00
DBECdS09	0.07	0.03	0.00
APRCS02	-0.05	-0.04	-0.04
bprcs06	0.00	0.00	0.01
cprcs06	-0.01	0.00	-0.01
DPRCS06	0.00	0.00	0.00

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	0.00	0.00	0.01	0.03	0.01	0.00
TEM2eta2	0.00	0.00	-0.01	-0.02	-0.02	0.00
AGG2eta3	0.04	0.00	0.00	0.00	0.02	0.00
AGG3eta4	0.42	0.01	0.00	0.00	-0.01	0.02
AGG4eta5	-0.04	-0.17	0.03	0.00	0.00	-0.01
PAR1ETA6	0.01	-0.19	-0.06	-0.03	-0.03	0.00
PAR2ETA7	0.20	-0.01	0.00	0.01	0.06	0.00
PAR3ETA8	-0.16	-0.06	0.02	-0.03	-0.05	-0.01
PAR4ETA9	-0.18	0.06	0.01	0.00	-0.06	-0.01

	PAR2ETA7	PAR3ETA8	PAR4ETA9
TEM1eta1	0.01	0.00	0.00
TEM2eta2	-0.01	-0.01	0.00
AGG2eta3	0.00	0.01	0.01
AGG3eta4	0.02	0.00	0.00
AGG4eta5	0.07	0.03	0.00
PAR1ETA6	-0.05	-0.04	-0.04
PAR2ETA7	0.00	0.00	0.00
PAR3ETA8	0.00	0.00	-0.01
PAR4ETA9	0.01	0.00	0.00

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	0.00					
TEM2eta2	0.00	0.00				
AGG2eta3	0.00	0.00	0.00			
AGG3eta4	0.01	-0.01	0.00	0.00		
AGG4eta5	0.00	0.00	0.01	-0.01	0.00	
PAR1ETA6	0.00	-0.01	0.00	0.00	-0.01	0.00
PAR2ETA7	0.00	0.00	0.00	0.00	0.04	-0.02
PAR3ETA8	0.00	0.00	0.01	-0.02	-0.02	0.00
PAR4ETA9	0.00	0.01	0.00	0.00	-0.04	0.00

	PAR2ETA7	PAR3ETA8	PAR4ETA9
PAR2ETA7	0.00		
PAR3ETA8	0.00	0.00	
PAR4ETA9	0.00	-0.01	0.00

THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	0.00					
BTMSCALE	0.00	0.00				
bbecs04	0.00	0.00	0.00			
cbecs09	0.01	0.00	-0.01	0.00		
DBECdS09	0.00	-0.01	0.01	-0.01	0.00	
APRCS02	0.00	0.00	0.00	0.02	-0.03	0.01
bprcs06	0.01	0.00	-0.01	-0.01	0.05	-0.02
cprcs06	0.00	0.00	0.02	-0.02	0.01	0.00
DPRCS06	-0.01	0.01	0.00	0.02	-0.04	0.00

THETA-EPS (continued)

	bprcs06	cprcs06	DPRCS06
bprcs06	0.00		
cprcs06	-0.01	0.01	
DPRCS06	0.01	-0.01	0.00

Factor Scores Regressions

ETA

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
TEM1eta1	0.75	0.09	0.04	0.01	0.00	0.22
TEM2eta2	0.09	0.70	0.26	0.06	0.02	0.00
AGG2eta3	0.01	0.06	0.61	0.13	0.03	0.01
AGG3eta4	0.00	0.01	0.06	0.66	0.15	0.00
AGG4eta5	0.00	0.00	0.01	0.13	0.70	0.00
PAR1ETA6	0.02	0.00	0.00	0.00	0.00	0.29
PAR2ETA7	0.01	0.00	0.04	0.03	0.01	0.07
PAR3ETA8	0.00	0.00	0.01	0.05	0.02	0.03
PAR4ETA9	0.00	0.01	0.01	0.03	0.02	0.02

(Eta – continued)

	bprcs06	cprcs06	DPRCS06
TEM1eta1	0.03	0.02	0.02
TEM2eta2	0.00	0.02	0.07
AGG2eta3	0.04	0.01	0.01
AGG3eta4	0.02	0.03	0.01
AGG4eta5	0.00	0.01	0.01
PAR1ETA6	0.04	0.02	0.01
PAR2ETA7	0.41	0.20	0.11
PAR3ETA8	0.15	0.38	0.22
PAR4ETA9	0.09	0.24	0.37

Standardized Solution

LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	6.53	- -	- -	- -	- -	- -
BTMSCALE	- -	6.43	- -	- -	- -	- -
bbecs04	- -	- -	2.44	- -	- -	- -
cbecs09	- -	- -	- -	1.87	- -	- -
DBECdS09	- -	- -	- -	- -	1.69	- -
APRCS02	- -	- -	- -	- -	- -	0.76
bprcs06	- -	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9
ATMSCALE	- -	- -	- -
BTMSCALE	- -	- -	- -
bbecs04	- -	- -	- -
cbecs09	- -	- -	- -
DBECdS09	- -	- -	- -
APRCS02	- -	- -	- -
bprcs06	1.64	- -	- -
cprcs06	- -	1.50	- -
DPRCS06	- -	- -	1.43

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.52	- -	- -	- -	- -	- -
AGG2eta3	- -	0.57	- -	- -	- -	- -
AGG3eta4	- -	- -	0.46	- -	- -	- -
AGG4eta5	- -	- -	- -	0.64	- -	- -
PAR1ETA6	0.41	- -	- -	- -	- -	- -
PAR2ETA7	- -	0.18	- -	- -	- -	0.30
PAR3ETA8	- -	0.07	- -	- -	- -	- -
PAR4ETA9	- -	0.07	- -	- -	- -	- -

(Beta – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9
TEM1eta1	- -	- -	- -
TEM2eta2	- -	- -	- -
AGG2eta3	0.20	- -	- -
AGG3eta4	- -	0.24	- -
AGG4eta5	- -	- -	0.05
PAR1ETA6	- -	- -	- -
PAR2ETA7	- -	- -	- -
PAR3ETA8	0.75	- -	- -
PAR4ETA9	- -	0.84	- -

Correlation Matrix of ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	1.00					
TEM2eta2	0.52	1.00				
AGG2eta3	0.34	0.62	1.00			
AGG3eta4	0.20	0.35	0.53	1.00		
AGG4eta5	0.14	0.23	0.35	0.66	1.00	
PAR1ETA6	0.41	0.21	0.19	0.15	0.11	1.00
PAR2ETA7	0.22	0.25	0.34	0.34	0.25	0.34
PAR3ETA8	0.20	0.26	0.30	0.37	0.28	0.27
PAR4ETA9	0.21	0.29	0.30	0.34	0.27	0.24

	PAR2ETA7	PAR3ETA8	PAR4ETA9
PAR2ETA7	1.00		
PAR3ETA8	0.77	1.00	
PAR4ETA9	0.66	0.86	1.00

PSI

Note: This matrix is diagonal.

TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
1.00	0.73	0.58	0.67	0.57	0.83

PAR2ETA7	PAR3ETA8	PAR4ETA9
0.85	0.41	0.26

Total and Indirect Effects

Total Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.51	- -	- -	- -	- -	- -
	(0.06)					
	8.61					
AGG2eta3	0.13	0.23	- -	- -	- -	0.20
	(0.02)	(0.02)				(0.10)
	7.16	9.86				1.96
AGG3eta4	0.06	0.10	0.35	- -	- -	0.20
	(0.01)	(0.01)	(0.05)			(0.09)
	6.08	7.09	6.88			2.36
AGG4eta5	0.04	0.06	0.20	0.58	- -	0.14
	(0.01)	(0.01)	(0.04)	(0.06)		(0.06)
	5.39	6.20	5.82	9.66		2.25
PAR1ETA6	0.05	- -	- -	- -	- -	- -
	(0.01)					
	4.98					
PAR2ETA7	0.06	0.05	- -	- -	- -	0.66
	(0.01)	(0.01)				(0.25)
	4.06	4.98				2.68
PAR3ETA8	0.05	0.05	- -	- -	- -	0.45
	(0.01)	(0.01)				(0.17)
	4.57	4.60				2.62
PAR4ETA9	0.05	0.06	- -	- -	- -	0.36
	(0.01)	(0.02)				(0.14)
	4.35	3.40				2.57

	PAR2ETA7	PAR3ETA8	PAR4ETA9
TEM1eta1	- -	- -	- -
TEM2eta2	- -	- -	- -
AGG2eta3	0.30	- -	- -
	(0.10)		
	2.85		
AGG3eta4	0.31	0.29	- -
	(0.07)	(0.09)	
	4.61	3.37	
AGG4eta5	0.21	0.22	0.06
	(0.05)	(0.07)	(0.08)
	3.93	2.96	0.69
PAR1ETA6	- -	- -	- -
PAR2ETA7	- -	- -	- -
PAR3ETA8	0.68	- -	- -
	(0.08)		
	8.20		
PAR4ETA9	0.55	0.81	- -
	(0.08)	(0.08)	
	7.00	9.62	

Largest Eigenvalue of B*B' (Stability Index) is 0.753

Indirect Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.13	0.01	- -	- -	- -	0.20
	(0.02)	(0.01)				(0.10)
	7.16	2.53				1.96
AGG3eta4	0.06	0.10	- -	- -	- -	0.20
	(0.01)	(0.01)				(0.09)
	6.08	7.09				2.36
AGG4eta5	0.04	0.06	0.20	- -	- -	0.14
	(0.01)	(0.01)	(0.04)			(0.06)
	5.39	6.20	5.82			2.25
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	0.06	- -	- -	- -	- -	- -
	(0.01)					
	4.06					
PAR3ETA8	0.05	0.03	- -	- -	- -	0.45
	(0.01)	(0.01)				(0.17)
	4.57	4.28				2.62
PAR4ETA9	0.05	0.04	- -	- -	- -	0.36
	(0.01)	(0.01)				(0.14)
	4.35	4.67				2.57

	PAR2ETA7	PAR3ETA8	PAR4ETA9
TEM1eta1	- -	- -	- -
TEM2eta2	- -	- -	- -
AGG2eta3	- -	- -	- -
AGG3eta4	0.31	- -	- -
	(0.07)		
	4.61		
AGG4eta5	0.21	0.22	- -
	(0.05)	(0.07)	
	3.93	2.96	
PAR1ETA6	- -	- -	- -
PAR2ETA7	- -	- -	- -
PAR3ETA8	- -	- -	- -
PAR4ETA9	0.55	- -	- -
	(0.08)		
	7.00		

Total Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	1.00	- -	- -	- -	- -	- -
BTMSCALE	0.51	1.00	- -	- -	- -	- -
	(0.06)					
	8.61					
bbecs04	0.13	0.23	1.00	- -	- -	0.20
	(0.02)	(0.02)				(0.10)
	7.16	9.86				1.96
cbecs09	0.06	0.10	0.35	1.00	- -	0.20
	(0.01)	(0.01)	(0.05)			(0.09)
	6.08	7.09	6.88			2.36
DBECdS09	0.04	0.06	0.20	0.58	1.00	0.14
	(0.01)	(0.01)	(0.04)	(0.06)		(0.06)
	5.39	6.20	5.82	9.66		2.25
APRCS02	0.05	- -	- -	- -	- -	1.00
	(0.01)					
	4.98					
bprcs06	0.06	0.05	- -	- -	- -	0.66
	(0.01)	(0.01)				(0.25)
	4.06	4.98				2.68
cprcs06	0.05	0.05	- -	- -	- -	0.45
	(0.01)	(0.01)				(0.17)
	4.57	4.60				2.62
DPRCS06	0.05	0.06	- -	- -	- -	0.36
	(0.01)	(0.02)				(0.14)
	4.35	3.40				2.57

	PAR2ETA7	PAR3ETA8	PAR4ETA9
ATMSCALE	- -	- -	- -
BTMSCALE	- -	- -	- -
bbecs04	0.30	- -	- -
	(0.10)		
	2.85		
cbecs09	0.31	0.29	- -
	(0.07)	(0.09)	
	4.61	3.37	
DBECdS09	0.21	0.22	0.06
	(0.05)	(0.07)	(0.08)
	3.93	2.96	0.69
APRCS02	- -	- -	- -
bprcs06	1.00	- -	- -
cprcs06	0.68	1.00	- -
	(0.08)		
	8.20		
DPRCS06	0.55	0.81	1.00
	(0.08)	(0.08)	
	7.00	9.62	

Indirect Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	0.51 (0.06) 8.61	- -	- -	- -	- -	- -
bbecs04	0.13 (0.02) 7.16	0.23 (0.02) 9.86	- -	- -	- -	0.20 (0.10) 1.96
cbecs09	0.06 (0.01) 6.08	0.10 (0.01) 7.09	0.35 (0.05) 6.88	- -	- -	0.20 (0.09) 2.36
DBECdS09	0.04 (0.01) 5.39	0.06 (0.01) 6.20	0.20 (0.04) 5.82	0.58 (0.06) 9.66	- -	0.14 (0.06) 2.25
APRCS02	0.05 (0.01) 4.98	- -	- -	- -	- -	- -
bprcs06	0.06 (0.01) 4.06	0.05 (0.01) 4.98	- -	- -	- -	0.66 (0.25) 2.68
cprcs06	0.05 (0.01) 4.57	0.05 (0.01) 4.60	- -	- -	- -	0.45 (0.17) 2.62
DPRCS06	0.05 (0.01) 4.35	0.06 (0.02) 3.40	- -	- -	- -	0.36 (0.14) 2.57

	PAR2ETA7	PAR3ETA8	PAR4ETA9
ATMSCALE	- -	- -	- -
BTMSCALE	- -	- -	- -
bbecs04	0.30 (0.10) 2.85	- -	- -
cbecs09	0.31 (0.07) 4.61	0.29 (0.09) 3.37	- -
DBECdS09	0.21 (0.05) 3.93	0.22 (0.07) 2.96	0.06 (0.08) 0.69
APRCS02	- -	- -	- -
bprcs06	- -	- -	- -
cprcs06	0.68 (0.08) 8.20	- -	- -
DPRCS06	0.55 (0.08) 7.00	0.81 (0.08) 9.62	- -

Standardized Total and Indirect Effects

Standardized Total Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.52	- -	- -	- -	- -	- -
AGG2eta3	0.34	0.60	- -	- -	- -	0.06
AGG3eta4	0.20	0.33	0.46	- -	- -	0.08
AGG4eta5	0.14	0.22	0.30	0.64	- -	0.06
PAR1ETA6	0.41	- -	- -	- -	- -	- -
PAR2ETA7	0.22	0.18	- -	- -	- -	0.30
PAR3ETA8	0.20	0.21	- -	- -	- -	0.23
PAR4ETA9	0.21	0.25	- -	- -	- -	0.19

	PAR2ETA7	PAR3ETA8	PAR4ETA9
TEM1eta1	- -	- -	- -
TEM2eta2	- -	- -	- -
AGG2eta3	0.20	- -	- -
AGG3eta4	0.27	0.24	- -
AGG4eta5	0.20	0.19	0.05
PAR1ETA6	- -	- -	- -
PAR2ETA7	- -	- -	- -
PAR3ETA8	0.75	- -	- -
PAR4ETA9	0.63	0.84	- -

Standardized Indirect Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.34	0.04	- -	- -	- -	0.06
AGG3eta4	0.20	0.33	- -	- -	- -	0.08
AGG4eta5	0.14	0.22	0.30	- -	- -	0.06
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	0.22	- -	- -	- -	- -	- -
PAR3ETA8	0.20	0.14	- -	- -	- -	0.23
PAR4ETA9	0.21	0.18	- -	- -	- -	0.19

	PAR2ETA7	PAR3ETA8	PAR4ETA9
TEM1eta1	- -	- -	- -
TEM2eta2	- -	- -	- -
AGG2eta3	- -	- -	- -
AGG3eta4	0.27	- -	- -
AGG4eta5	0.20	0.19	- -
PAR1ETA6	- -	- -	- -
PAR2ETA7	- -	- -	- -
PAR3ETA8	- -	- -	- -
PAR4ETA9	0.63	- -	- -

Standardized Total Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	6.53	- -	- -	- -	- -	- -
BTMSCALE	3.36	6.43	- -	- -	- -	- -
bbecs04	0.83	1.47	2.44	- -	- -	0.15
cbecs09	0.38	0.61	0.86	1.87	- -	0.15
DBECdS09	0.24	0.37	0.50	1.08	1.69	0.10
APRCS02	0.31	- -	- -	- -	- -	0.76
bprcs06	0.36	0.30	- -	- -	- -	0.50
cprcs06	0.30	0.31	- -	- -	- -	0.34
DPRCS06	0.30	0.36	- -	- -	- -	0.27

	PAR2ETA7	PAR3ETA8	PAR4ETA9
ATMSCALE	- -	- -	- -
BTMSCALE	- -	- -	- -
bbecs04	0.49	- -	- -
cbecs09	0.50	0.44	- -
DBECdS09	0.34	0.32	0.08
APRCS02	- -	- -	- -
bprcs06	1.64	- -	- -
cprcs06	1.12	1.50	- -
DPRCS06	0.90	1.20	1.43

Standardized Indirect Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	3.36	- -	- -	- -	- -	- -
bbecs04	0.83	1.47	- -	- -	- -	0.15
cbecs09	0.38	0.61	0.86	- -	- -	0.15
DBECdS09	0.24	0.37	0.50	1.08	- -	0.10
APRCS02	0.31	- -	- -	- -	- -	- -
bprcs06	0.36	0.30	- -	- -	- -	0.50
cprcs06	0.30	0.31	- -	- -	- -	0.34
DPRCS06	0.30	0.36	- -	- -	- -	0.27

	PAR2ETA7	PAR3ETA8	PAR4ETA9
ATMSCALE	- -	- -	- -
BTMSCALE	- -	- -	- -
bbecs04	0.49	- -	- -
cbecs09	0.50	0.44	- -
DBECdS09	0.34	0.32	0.08
APRCS02	- -	- -	- -
bprcs06	- -	- -	- -
cprcs06	1.12	- -	- -
DPRCS06	0.90	1.20	- -

Time used: 0.078 Seconds

E.3: MODEL 3 – DIFFICULT TEMPERAMENT, AGGRESSIVE BEHAVIOUR, PUNITIVE PARENTING, AND MATERNAL DEPRESSION

```
 DA NI=32 NO=355 MA=CM
 CM (SEE MODEL 1)
 LA
 ATMSCALE BTMSCALE  BBECS04 CBECS09 DBECDS09 APRCS02  BPRCS06 CPRCS06 DPRCS06
ADPPS01  BDPPS01 CDPPS01 DDPPS01 C1IN1000  C2IN1000 C3IN1000 C4IN1000 AINHSRCA
BINHSRCA CINHSRCA DINHSRCA AINHSRCR  BINHSRCR CINHSRCR DINHSRCR T2T1PCTD
T3T2PCTD T4T3PCTD WOWC4H10 WOWC3H10  WOWC2H10 WOWC1H10
 SE
 ATMSCALE BTMSCALE  BBECS04 CBECS09 DBECDS09 APRCS02  BPRCS06 CPRCS06 DPRCS06
ADPPS01 BDPPS01  CDPPS01 DDPPS01 /
 MO  NY=13  NE=13 LY=FU,FI BE=FU,FI PS=SY,FI TE=SY,FI
 LE
 TEM1ETA1 TEM2ETA2 AGG2ETA3  AGG3ETA4 AGG4ETA5 PAR1ETA6 PAR2ETA7 PAR3ETA8
PAR4ETA9  DP1ETA10 DP2ETA11 DP3ETA12 DP4ETA13
 VA 1.0 LY(1,1) LY(2,2) LY(3,3) LY(4,4) LY(5,5) LY(6,6) LY(7,7) LY(8,8) LY(9,9)
 VA 1.0 LY(10,10) LY(11,11) LY(12,12) LY(13,13)
 FR BE(2,1)
 FR    BE(3,2)          BE(3,7)       BE(3,11)
 FR      BE(4,3)          BE(4,8)       BE(4,12)
 FR         BE(5,4)         BE(5,9)        BE(5,13)
 FR BE(6,1)                       BE(6,10)
 FR     BE(7,2)      BE(7,6)         BE(7,11)
 FR     BE(8,2)          BE(8,7)         BE(8,12)
 FR     BE(9,2)             BE(9,8)         BE(9,13)
 FR    BE(11,10)
 FR       BE(12,11)
 FR           BE(13,12)
 EQ BE(6,1) BE(7,2)
 EQ BE(8,2) BE(9,2)
 FR PS (1,1)
 FR    PS(2,2)
 FR      PS(3,3)
 FR        PS(4,4)
 FR          PS(5,5)
 FR            PS(6,6)
 FR              PS(7,7)
 FR                PS(8,8)
 FR                  PS(9,9)
 FR PS(10,1)                 PS(10,10)
 FR                        PS(11,11)
 FR                           PS(12,12)
 FR                             PS(13,13)
 VA 10.6798 TE(1,1)
 VA 10.3209 TE(2,2)
 VA 2.2081 TE(3,3)
 VA 0.9855 TE(4,4)
 VA 0.8070 TE(5,5)
 VA 1.1417 TE(6,6)
 VA 2.1281 TE(7,7)
```

VA 1.5910 TE(8,8)
VA 1.7461 TE(9,9)
VA 5.1192 TE(10,10)
VA 4.3210 TE(11,11)
VA 4.0873 TE(12,12)
VA 3.3677 TE(13,13)
PD
OU ALL

Number of Input Variables 32
Number of Y - Variables 13
Number of X - Variables 0
Number of ETA - Variables 13
Number of KSI - Variables 0
Number of Observations 355

Covariance Matrix

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	53.40					
BTMSCALE	21.96	51.60				
bbecs04	5.36	9.74	8.18			
cbecs09	0.38	4.28	2.48	4.48		
DBECdS09	0.71	3.31	1.33	2.09	3.67	
APRCS02	2.14	1.39	0.44	0.17	0.24	1.68
bprcs06	0.84	2.84	1.51	0.99	0.21	0.52
cprcs06	1.95	2.93	0.99	1.14	0.63	0.38
DPRCS06	2.32	2.57	1.01	0.88	0.80	0.35
ADPPS01	3.95	4.59	1.74	1.20	1.43	0.98
bdpps01	-0.38	2.37	2.00	1.11	0.80	0.60
cdpps01	-2.29	2.41	1.92	2.01	1.96	0.69
DDPPS01	-0.79	1.74	1.46	1.41	1.27	0.24

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	4.84					
cprcs06	1.94	3.79				
DPRCS06	1.52	1.88	3.80			
ADPPS01	1.37	1.39	2.08	18.28		
bdpps01	1.17	0.31	0.80	8.50	17.28	
cdpps01	1.08	1.84	1.80	7.55	6.19	19.46
DDPPS01	1.79	1.49	1.45	6.82	4.07	6.84

	DDPPS01
DDPPS01	14.64

Parameter Specifications

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	0	0	0	0	0	0
TEM2eta2	1	0	0	0	0	0
AGG2eta3	0	2	0	0	0	0
AGG3eta4	0	0	5	0	0	0
AGG4eta5	0	0	0	8	0	0
PAR1ETA6	11	0	0	0	0	0
PAR2ETA7	0	11	0	0	0	13
PAR3ETA8	0	15	0	0	0	0
PAR4ETA9	0	15	0	0	0	0
DP1ETA10	0	0	0	0	0	0
DP2ETA11	0	0	0	0	0	0
DP3ETA12	0	0	0	0	0	0
DP4ETA13	0	0	0	0	0	0

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	0	0	0	0	0	0
TEM2eta2	0	0	0	0	0	0
AGG2eta3	3	0	0	0	4	0
AGG3eta4	0	6	0	0	0	7
AGG4eta5	0	0	9	0	0	0
PAR1ETA6	0	0	0	12	0	0
PAR2ETA7	0	0	0	0	14	0
PAR3ETA8	16	0	0	0	0	17
PAR4ETA9	0	18	0	0	0	0
DP1ETA10	0	0	0	0	0	0
DP2ETA11	0	0	0	20	0	0
DP3ETA12	0	0	0	0	21	0
DP4ETA13	0	0	0	0	0	22

	DP4ETA13
TEM1eta1	0
TEM2eta2	0
AGG2eta3	0
AGG3eta4	0
AGG4eta5	10
PAR1ETA6	0
PAR2ETA7	0
PAR3ETA8	0
PAR4ETA9	19
DP1ETA10	0
DP2ETA11	0
DP3ETA12	0
DP4ETA13	0

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	23					
TEM2eta2	0	24				
AGG2eta3	0	0	25			
AGG3eta4	0	0	0	26		
AGG4eta5	0	0	0	0	27	
PAR1ETA6	0	0	0	0	0	28
PAR2ETA7	0	0	0	0	0	0
PAR3ETA8	0	0	0	0	0	0
PAR4ETA9	0	0	0	0	0	0
DP1ETA10	32	0	0	0	0	0
DP2ETA11	0	0	0	0	0	0
DP3ETA12	0	0	0	0	0	0
DP4ETA13	0	0	0	0	0	0

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	29					
PAR3ETA8	0	30				
PAR4ETA9	0	0	31			
DP1ETA10	0	0	0	33		
DP2ETA11	0	0	0	0	34	
DP3ETA12	0	0	0	0	0	35
DP4ETA13	0	0	0	0	0	0

	DP4ETA13
DP4ETA13	36

Initial Estimates (TSLS)

LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	1.00	- -	- -	- -	- -	- -
BTMSCALE	- -	1.00	- -	- -	- -	- -
bbecs04	- -	- -	1.00	- -	- -	- -
cbecs09	- -	- -	- -	1.00	- -	- -
DBECdS09	- -	- -	- -	- -	1.00	- -
APRCS02	- -	- -	- -	- -	- -	1.00
bprcs06	- -	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -

(LAMBDA-Y continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -	- -	- -
bprcs06	1.00	- -	- -	- -	- -	- -
cprcs06	- -	1.00	- -	- -	- -	- -
DPRCS06	- -	- -	1.00	- -	- -	- -
ADPPS01	- -	- -	- -	1.00	- -	- -
bdpps01	- -	- -	- -	- -	1.00	- -
cdpps01	- -	- -	- -	- -	- -	1.00
DDPPS01	- -	- -	- -	- -	- -	- -

	DP4ETA13
ATMSCALE	- -
BTMSCALE	- -
bbecs04	- -
cbecs09	- -
DBECdS09	- -
APRCS02	- -
bprcs06	- -
cprcs06	- -
DPRCS06	- -
ADPPS01	- -
bdpps01	- -
cdpps01	- -
DDPPS01	1.00

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.51	- -	- -	- -	- -	- -
AGG2eta3	- -	0.21	- -	- -	- -	- -
AGG3eta4	- -	- -	0.35	- -	- -	- -
AGG4eta5	- -	- -	- -	0.55	- -	- -
PAR1ETA6	0.04	- -	- -	- -	- -	- -
PAR2ETA7	- -	0.04	- -	- -	- -	0.81
PAR3ETA8	- -	0.01	- -	- -	- -	- -
PAR4ETA9	- -	0.01	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -

(Beta continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.30	- -	- -	- -	0.09	- -
AGG3eta4	- -	0.32	- -	- -	- -	0.05
AGG4eta5	- -	- -	0.13	- -	- -	- -
PAR1ETA6	- -	- -	- -	0.06	- -	- -
PAR2ETA7	- -	- -	- -	- -	0.05	- -
PAR3ETA8	0.67	- -	- -	- -	- -	0.07
PAR4ETA9	- -	0.84	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.65	- -	- -
DP3ETA12	- -	- -	- -	- -	0.48	- -
DP4ETA13	- -	- -	- -	- -	- -	0.45

	DP4ETA13
TEM1eta1	- -
TEM2eta2	- -
AGG2eta3	- -
AGG3eta4	- -
AGG4eta5	0.03
PAR1ETA6	- -
PAR2ETA7	- -
PAR3ETA8	- -
PAR4ETA9	0.02
DP1ETA10	- -
DP2ETA11	- -
DP3ETA12	- -
DP4ETA13	- -

Covariance Matrix of ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	42.72					
TEM2eta2	21.96	41.28				
AGG2eta3	5.64	9.58	5.90			
AGG3eta4	2.69	4.08	2.45	3.45		
AGG4eta5	1.78	2.59	1.51	2.07	2.84	
PAR1ETA6	2.02	1.04	0.42	0.28	0.20	0.53
PAR2ETA7	2.67	2.62	1.46	1.13	0.85	0.50
PAR3ETA8	2.12	2.26	1.14	1.14	0.89	0.37
PAR4ETA9	2.04	2.38	1.07	1.01	0.85	0.32
DP1ETA10	3.95	2.03	1.56	1.11	0.80	0.97
DP2ETA11	2.55	1.31	1.77	1.31	0.94	0.63
DP3ETA12	1.22	0.63	0.85	1.51	1.20	0.30
DP4ETA13	0.54	0.28	0.38	0.67	0.77	0.13

(Covariance Matrix of ETA – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	2.69					
PAR3ETA8	1.86	2.08				
PAR4ETA9	1.60	1.79	1.98			
DP1ETA10	1.26	1.14	1.02	13.16		
DP2ETA11	1.15	1.21	1.08	8.50	12.96	
DP3ETA12	0.55	1.44	1.34	4.06	6.19	15.37
DP4ETA13	0.25	0.64	0.74	1.81	2.75	6.84

	DP4ETA13
DP4ETA13	11.27

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	42.72					
TEM2eta2	- -	29.99				
AGG2eta3	- -	- -	3.29			
AGG3eta4	- -	- -	- -	2.17		
AGG4eta5	- -	- -	- -	- -	1.56	
PAR1ETA6	- -	- -	- -	- -	- -	0.38
PAR2ETA7	- -	- -	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -	- -	- -
PAR4ETA9	- -	- -	- -	- -	- -	- -
DP1ETA10	3.95	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	2.12					
PAR3ETA8	- -	0.72				
PAR4ETA9	- -	- -	0.44			
DP1ETA10	- -	- -	- -	13.16		
DP2ETA11	- -	- -	- -	- -	7.47	
DP3ETA12	- -	- -	- -	- -	- -	12.41
DP4ETA13	- -	- -	- -	- -	- -	- -

	DP4ETA13
DP4ETA13	8.23

Squared Multiple Correlations for Structural Equations

TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
- -	0.27	0.44	0.37	0.45	0.27

PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
0.21	0.66	0.78	- -	0.42	0.19

DP4ETA13
0.27

THETA-EPS

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
10.68	10.32	2.21	0.99	0.81	1.14

bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
2.13	1.59	1.75	5.12	4.32	4.09

DDPPS01
3.37

Behavior under Minimization Iterations

ITER	TRY	ABSCISA	SLOPE	FUNCTION
1	0	0.00000000D+00	-0.21310205D-01	0.19615438D+00
	1	0.10000000D+01	0.41492159D-03	0.18572150D+00
2	0	0.00000000D+00	-0.66877223D-03	0.18572150D+00
	1	0.10000000D+01	-0.44049655D-04	0.18536396D+00
3	0	0.00000000D+00	-0.18133454D-04	0.18536396D+00
	1	0.10000000D+01	-0.26233374D-06	0.18535477D+00
4	0	0.00000000D+00	-0.53050120D-06	0.18535477D+00
	1	0.10000000D+01	-0.54309426D-07	0.18535447D+00
	2	0.20000000D+01	0.42211282D-06	0.18535466D+00
	3	0.11139943D+01	-0.11649724D-10	0.18535447D+00
5	0	0.00000000D+00	-0.15081701D-07	0.18535447D+00
	1	0.11139943D+01	0.14929437D-08	0.18535446D+00
6	0	0.00000000D+00	-0.37573926D-09	0.18535446D+00
	1	0.11139943D+01	0.41692421D-10	0.18535446D+00
	2	0.10027303D+01	0.13073727D-15	0.18535446D+00
7	0	0.00000000D+00	-0.42707727D-11	0.18535446D+00
	1	0.10027303D+01	-0.31333396D-12	0.18535446D+00

Number of Iterations = 7

LISREL Estimates (Maximum Likelihood)

LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	1.00	- -	- -	- -	- -	- -
BTMSCALE	- -	1.00	- -	- -	- -	- -
bbecs04	- -	- -	1.00	- -	- -	- -
cbecs09	- -	- -	- -	1.00	- -	- -
DBECdS09	- -	- -	- -	- -	1.00	- -
APRCS02	- -	- -	- -	- -	- -	1.00
bprcs06	- -	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -

(LAMBDA-Y – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -	- -	- -
bprcs06	1.00	- -	- -	- -	- -	- -
cprcs06	- -	1.00	- -	- -	- -	- -
DPRCS06	- -	- -	1.00	- -	- -	- -
ADPPS01	- -	- -	- -	1.00	- -	- -
bdpps01	- -	- -	- -	- -	1.00	- -
cdpps01	- -	- -	- -	- -	- -	1.00
DDPPS01	- -	- -	- -	- -	- -	- -

	DP4ETA13
ATMSCALE	- -
BTMSCALE	- -
bbecs04	- -
cbecs09	- -
DBECdS09	- -
APRCS02	- -
bprcs06	- -
cprcs06	- -
DPRCS06	- -
ADPPS01	- -
bdpps01	- -
cdpps01	- -
DDPPS01	1.00

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.52	- -	- -	- -	- -	- -
	(0.06)					
	8.70					
AGG2eta3	- -	0.21	- -	- -	- -	- -
		(0.02)				
		8.89				
AGG3eta4	- -	- -	0.34	- -	- -	- -
			(0.05)			
			6.70			
AGG4eta5	- -	- -	- -	0.57	- -	- -
				(0.06)		
				9.49		
PAR1ETA6	0.04	- -	- -	- -	- -	- -
	(0.01)					
	4.55					

(BETA – continued)

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
PAR2ETA7	- -	0.04 (0.01) 4.55	- -	- -	- -	0.67 (0.26) 2.59
PAR3ETA8	- -	0.02 (0.01) 1.66	- -	- -	- -	- -
PAR4ETA9	- -	0.02 (0.01) 1.66	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.25 (0.11) 2.35	- -	- -	- -	0.11 (0.04) 2.53	- -
AGG3eta4	- -	0.25 (0.09) 2.69	- -	- -	- -	0.07 (0.03) 2.33
AGG4eta5	- -	- -	0.03 (0.09) 0.40	- -	- -	- -
PAR1ETA6	- -	- -	- -	0.07 (0.02) 3.11	- -	- -
PAR2ETA7	- -	- -	- -	- -	0.04 (0.04) 0.93	- -
PAR3ETA8	0.64 (0.08) 7.95	- -	- -	- -	- -	0.08 (0.03) 3.15
PAR4ETA9	- -	0.80 (0.09) 9.34	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.67 (0.06) 10.59	- -	- -
DP3ETA12	- -	- -	- -	- -	0.56 (0.07) 8.08	- -
DP4ETA13	- -	- -	- -	- -	- -	0.47 (0.05) 8.75

(BETA – continued)

	DP4ETA13
TEM1eta1	- -
TEM2eta2	- -
AGG2eta3	- -
AGG3eta4	- -
AGG4eta5	0.04
	(0.03)
	1.48
PAR1ETA6	- -
PAR2ETA7	- -
PAR3ETA8	- -
PAR4ETA9	0.03
	(0.03)
	0.95
DP1ETA10	- -
DP2ETA11	- -
DP3ETA12	- -
DP4ETA13	- -

Covariance Matrix of ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	42.64					
TEM2eta2	22.10	41.33				
AGG2eta3	5.54	9.55	5.92			
AGG3eta4	2.47	3.87	2.35	3.44		
AGG4eta5	1.50	2.31	1.40	2.03	2.82	
PAR1ETA6	2.05	1.06	0.41	0.25	0.16	0.56
PAR2ETA7	2.40	2.52	1.31	0.93	0.59	0.45
PAR3ETA8	1.99	2.32	1.07	1.01	0.67	0.33
PAR4ETA9	1.95	2.51	1.02	0.89	0.62	0.29
DP1ETA10	3.40	1.76	1.59	1.16	0.80	1.01
DP2ETA11	2.30	1.19	1.84	1.42	0.99	0.68
DP3ETA12	1.28	0.67	1.03	1.80	1.40	0.38
DP4ETA13	0.60	0.31	0.48	0.84	1.02	0.18

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	2.71					
PAR3ETA8	1.82	2.18				
PAR4ETA9	1.49	1.80	2.00			
DP1ETA10	1.07	1.11	0.98	13.20		
DP2ETA11	0.96	1.20	1.07	8.91	12.70	
DP3ETA12	0.54	1.58	1.48	4.98	7.11	15.31
DP4ETA13	0.25	0.73	0.92	2.32	3.31	7.14

	DP4ETA13
DP4ETA13	11.26

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	42.64 (4.01) 10.65					
TEM2eta2	- -	29.88 (3.21) 9.31				
AGG2eta3	- -	- -	3.37 (0.45) 7.41			
AGG3eta4	- -	- -	- -	2.27 (0.26) 8.62		
AGG4eta5	- -	- -	- -	- -	1.59 (0.20) 7.83	
PAR1ETA6	- -	- -	- -	- -	- -	0.41 (0.11) 3.57
PAR2ETA7	- -	- -	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -	- -	- -
PAR4ETA9	- -	- -	- -	- -	- -	- -
DP1ETA10	3.40 (1.62) 2.10	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	2.27 (0.35) 6.54					
PAR3ETA8	- -	0.86 (0.22) 3.98				
PAR4ETA9	- -	- -	0.50 (0.22) 2.26			
DP1ETA10	- -	- -	- -	13.20 (1.38) 9.59		
DP2ETA11	- -	- -	- -	- -	6.69 (0.98) 6.83	
DP3ETA12	- -	- -	- -	- -	- -	11.33 (1.24) 9.17
DP4ETA13	- -	- -	- -	- -	- -	- -

PSI (continued)

	DP4ETA13
DP4ETA13	7.93
	(0.91)
	8.71

Squared Multiple Correlations for Structural Equations

TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
- -	0.28	0.43	0.34	0.43	0.27

PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
0.16	0.61	0.75	- -	0.47	0.26

DP4ETA13
0.30

THETA-EPS

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
10.68	10.32	2.21	0.99	0.81	1.14

bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
2.13	1.59	1.75	5.12	4.32	4.09

DDPPS01
3.37

Squared Multiple Correlations for Y - Variables

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
0.80	0.80	0.73	0.78	0.78	0.33

bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
0.56	0.58	0.53	0.72	0.75	0.79

DDPPS01
0.77

Goodness of Fit Statistics

Degrees of Freedom = 55
Minimum Fit Function Chi-Square = 131.23 (P = 0.00)
Normal Theory Weighted Least Squares Chi-Square = 125.29 (P = 0.00)
Estimated Non-centrality Parameter (NCP) = 70.29
90 Percent Confidence Interval for NCP = (41.55 ; 106.76)

Minimum Fit Function Value = 0.37
Population Discrepancy Function Value (F0) = 0.20
90 Percent Confidence Interval for F0 = (0.12 ; 0.30)
Root Mean Square Error of Approximation (RMSEA) = 0.060
90 Percent Confidence Interval for RMSEA = (0.046 ; 0.074)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.11

Expected Cross-Validation Index (ECVI) = 0.56
90 Percent Confidence Interval for ECVI = (0.48 ; 0.66)
ECVI for Saturated Model = 0.51
ECVI for Independence Model = 4.16

Chi-Square for Independence Model with 78 Degrees of Freedom = 1447.79
Independence AIC = 1473.79
Model AIC = 197.29
Saturated AIC = 182.00
Independence CAIC = 1537.12
Model CAIC = 372.69
Saturated CAIC = 625.36

Normed Fit Index (NFI) = 0.91
Non-Normed Fit Index (NNFI) = 0.92
Parsimony Normed Fit Index (PNFI) = 0.64
Comparative Fit Index (CFI) = 0.94
Incremental Fit Index (IFI) = 0.95
Relative Fit Index (RFI) = 0.87

Critical N (CN) = 222.99

Root Mean Square Residual (RMR) = 0.96
Standardized RMR = 0.060
Goodness of Fit Index (GFI) = 0.95
Adjusted Goodness of Fit Index (AGFI) = 0.91
Parsimony Goodness of Fit Index (PGFI) = 0.57

Fitted Covariance Matrix

	ATMSCALE	**BTMSCALE**	**bbecs04**	**cbecs09**	**DBECdS09**	**APRCS02**
ATMSCALE	53.32					
BTMSCALE	22.10	51.65				
bbecs04	5.54	9.55	8.13			
cbecs09	2.47	3.87	2.35	4.43		
DBECdS09	1.50	2.31	1.40	2.03	3.63	
APRCS02	2.05	1.06	0.41	0.25	0.16	1.70
bprcs06	2.40	2.52	1.31	0.93	0.59	0.45
cprcs06	1.99	2.32	1.07	1.01	0.67	0.33
DPRCS06	1.95	2.51	1.02	0.89	0.62	0.29
ADPPS01	3.40	1.76	1.59	1.16	0.80	1.01
bdpps01	2.30	1.19	1.84	1.42	0.99	0.68
cdpps01	1.28	0.67	1.03	1.80	1.40	0.38
DDPPS01	0.60	0.31	0.48	0.84	1.02	0.18

(Fitted Covariance Matrix – continued)

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	4.84					
cprcs06	1.82	3.77				
DPRCS06	1.49	1.80	3.75			
ADPPS01	1.07	1.11	0.98	18.32		
bdpps01	0.96	1.20	1.07	8.91	17.02	
cdpps01	0.54	1.58	1.48	4.98	7.11	19.40
DDPPS01	0.25	0.73	0.92	2.32	3.31	7.14

	DDPPS01
DDPPS01	14.63

Fitted Residuals

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	0.08					
BTMSCALE	-0.14	-0.05				
bbecs04	-0.18	0.19	0.05			
cbecs09	-2.09	0.41	0.13	0.05		
DBECdS09	-0.79	1.00	-0.07	0.06	0.04	
APRCS02	0.09	0.33	0.03	-0.08	0.08	-0.02
bprcs06	-1.56	0.32	0.20	0.06	-0.38	0.07
cprcs06	-0.04	0.61	-0.08	0.13	-0.04	0.05
DPRCS06	0.37	0.06	-0.01	-0.01	0.18	0.06
ADPPS01	0.55	2.83	0.15	0.04	0.63	-0.03
bdpps01	-2.68	1.18	0.16	-0.31	-0.19	-0.08
cdpps01	-3.57	1.74	0.89	0.21	0.56	0.31
DDPPS01	-1.39	1.43	0.98	0.57	0.25	0.06

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	0.00					
cprcs06	0.12	0.02				
DPRCS06	0.03	0.08	0.05			
ADPPS01	0.30	0.28	1.10	-0.04		
bdpps01	0.21	-0.89	-0.27	-0.41	0.26	
cdpps01	0.54	0.26	0.32	2.57	-0.92	0.06
DDPPS01	1.54	0.76	0.53	4.50	0.76	-0.30

	DDPPS01
DDPPS01	0.01

Summary Statistics for Fitted Residuals

Smallest Fitted Residual = -3.57
Median Fitted Residual = 0.07
Largest Fitted Residual = 4.50

Stemleaf Plot

```
 - 3|6
 - 2|71
 - 1|64
 - 0|998443332211111000000000000000000
   0|11111111111111112222222333333333445556666889
   1|0012457
   2|68
   3|
   4|5
```

Standardized Residuals

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	0.55					
BTMSCALE	-0.42	-0.31				
bbecs04	-0.24	0.87	0.82			
cbecs09	-2.99	0.74	1.44	1.46		
DBECdS09	-1.16	1.65	-0.35	1.85	2.26	
APRCS02	0.33	0.76	0.17	-0.57	0.64	-1.04
bprcs06	-2.57	0.49	1.27	0.36	-2.26	0.89
cprcs06	-0.06	1.08	-0.41	1.30	-0.36	0.45
DPRCS06	0.62	0.19	-0.05	-0.08	1.87	0.55
ADPPS01	1.33	2.03	0.31	0.09	1.58	-0.38
bdpps01	-2.30	0.81	0.53	-0.88	-0.54	-0.40
cdpps01	-2.25	1.06	1.53	1.04	1.85	1.10
DDPPS01	-0.96	0.98	1.76	1.57	1.46	0.24

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	-0.04					
cprcs06	1.64	0.31				
DPRCS06	0.24	1.51	2.12			
ADPPS01	0.84	0.78	2.89	-1.10		
bdpps01	1.09	-3.13	-0.83	-3.47	4.74	
cdpps01	1.21	1.18	1.10	3.99	-4.64	1.81
DDPPS01	3.57	2.22	2.82	5.96	1.21	-3.04

	DDPPS01
DDPPS01	1.60

Summary Statistics for Standardized Residuals

```
 Smallest Standardized Residual =   -4.64
   Median Standardized Residual =    0.74
  Largest Standardized Residual =    5.96
```

Stemleaf Plot

```
 - 4|6
 - 2|51006333
 - 0|2100986544444 3321100
   0|1222233345555666788888990011111222333455556666688999
   2|0123896
   4|07
   6|0
```

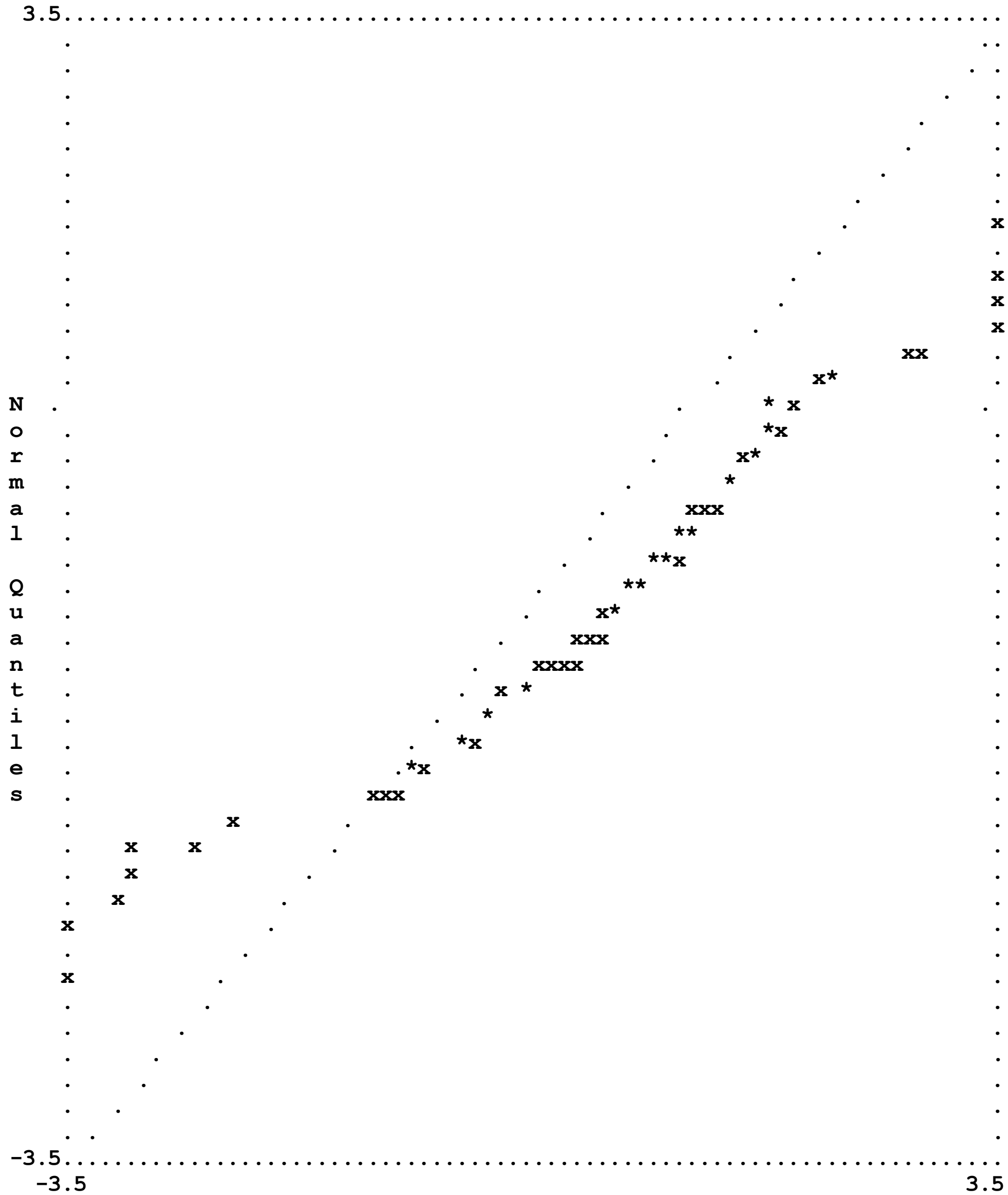
Largest Negative Standardized Residuals

Residual for	**cbecs09**	and	**ATMSCALE**	**-2.99**
Residual for	**bdpps01**	and	**cprcs06**	**-3.13**
Residual for	**bdpps01**	and	**ADPPS01**	**-3.47**
Residual for	**cdpps01**	and	**bdpps01**	**-4.64**
Residual for	**DDPPS01**	and	**cdpps01**	**-3.04**

Largest Positive Standardized Residuals

Residual for	**ADPPS01**	and	**DPRCS06**	**2.89**
Residual for	**bdpps01**	and	**bdpps01**	**4.74**
Residual for	**cdpps01**	and	**ADPPS01**	**3.99**
Residual for	**DDPPS01**	and	**bprcs06**	**3.57**
Residual for	**DDPPS01**	and	**DPRCS06**	**2.82**
Residual for	**DDPPS01**	and	**ADPPS01**	**5.96**

Qplot of Standardized Residuals



Modification Indices and Expected Change

Modification Indices for LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.03	1.92	1.53	11.20	5.76	1.73
BTMSCALE	0.04	0.03	2.47	4.12	5.76	2.37
bbecs04	0.91	0.03	- -	0.22	0.53	0.09
cbecs09	5.90	0.39	0.30	- -	0.24	3.90
DBECdS09	0.20	1.19	0.30	- -	- -	0.33
APRCS02	0.36	0.18	0.04	0.01	0.49	0.03
bprcs06	6.11	0.04	0.94	0.00	3.24	0.20
cprcs06	0.75	0.40	0.25	0.30	0.02	0.00
DPRCS06	1.93	0.52	0.14	0.04	1.66	1.35
ADPPS01	5.49	2.75	0.17	1.16	4.29	1.44
bdpps01	2.25	0.42	0.42	2.50	3.45	3.45
cdpps01	1.56	0.07	0.57	0.31	1.42	0.36
DDPPS01	0.01	0.38	2.61	2.18	0.30	3.22

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	4.41	2.44	1.17	3.86	10.14	13.33
BTMSCALE	2.19	2.47	1.39	4.41	4.30	2.53
bbecs04	1.43	0.14	0.06	0.23	0.56	1.49
cbecs09	1.78	5.98	0.00	1.67	0.56	1.94
DBECdS09	10.99	5.98	- -	0.79	0.02	1.94
APRCS02	0.85	0.42	0.18	0.57	0.05	0.69
bprcs06	0.03	1.08	0.45	0.50	5.22	1.86
cprcs06	0.70	0.43	0.47	1.65	5.82	0.22
DPRCS06	0.12	5.98	0.43	3.19	0.31	0.17
ADPPS01	1.45	7.58	12.47	- -	1.18	23.21
bdpps01	4.54	15.51	14.25	19.25	- -	26.83
cdpps01	0.01	0.23	0.15	0.68	2.59	- -
DDPPS01	12.61	7.92	6.49	20.60	7.33	2.01

	DP4ETA13
ATMSCALE	6.13
BTMSCALE	0.79
bbecs04	0.63
cbecs09	0.11
DBECdS09	- -
APRCS02	0.30
bprcs06	7.14
cprcs06	0.18
DPRCS06	- -
ADPPS01	36.19
bdpps01	5.69
cdpps01	7.63
DDPPS01	- -

Expected Change for LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.09	-0.40	-0.28	-0.76	-0.57	-1.84
BTMSCALE	0.03	-0.09	0.65	0.47	0.55	1.21
bbecs04	0.03	-0.01	- -	0.07	-0.08	0.09
cbecs09	-0.04	-0.01	0.05	- -	0.10	-0.40
DBECdS09	0.01	0.02	-0.03	- -	- -	0.11
APRCS02	0.01	0.01	0.01	0.00	0.03	-0.09
bprcs06	-0.05	0.00	0.07	0.00	-0.13	-0.15
cprcs06	0.01	0.01	-0.02	0.04	-0.01	0.01
DPRCS06	0.02	-0.02	-0.02	-0.01	0.09	0.24
ADPPS01	0.11	0.06	0.04	0.13	0.27	0.80
bdpps01	-0.05	-0.02	-0.07	-0.19	-0.23	-0.78
cdpps01	-0.04	0.01	0.07	0.09	0.19	0.25
DDPPS01	0.00	0.02	0.14	0.17	0.09	0.66

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	-0.65	-0.49	-0.36	-0.42	-0.48	-0.38
BTMSCALE	0.47	0.56	0.48	0.23	0.23	0.15
bbecs04	0.61	-0.09	-0.05	-0.03	0.09	0.06
cbecs09	0.19	1.16	0.00	-0.04	-0.03	-0.08
DBECdS09	-0.39	-0.66	- -	0.03	0.00	0.05
APRCS02	0.08	0.05	0.03	-0.07	0.01	0.02
bprcs06	0.09	0.30	0.15	0.03	0.13	0.05
cprcs06	0.17	1.18	0.22	-0.04	-0.08	-0.02
DPRCS06	-0.06	19.52	-1.18	0.05	0.02	0.01
ADPPS01	0.20	0.47	0.64	- -	0.47	0.34
bdpps01	-0.40	-0.73	-0.72	-0.87	- -	-0.52
cdpps01	0.02	0.10	0.08	0.07	-0.23	- -
DDPPS01	0.49	0.45	0.47	0.29	0.20	-0.90

	DP4ETA13
ATMSCALE	-0.29
BTMSCALE	0.10
bbecs04	0.04
cbecs09	0.01
DBECdS09	- -
APRCS02	-0.01
bprcs06	0.10
cprcs06	0.02
DPRCS06	- -
ADPPS01	0.42
bdpps01	-0.17
cdpps01	-0.47
DDPPS01	- -

Standardized Expected Change for LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.61	-2.54	-0.69	-1.40	-0.96	-1.38
BTMSCALE	0.17	-0.60	1.58	0.88	0.93	0.91
bbecs04	0.17	-0.08	- -	0.14	-0.14	0.07
cbecs09	-0.27	-0.08	0.13	- -	0.17	-0.30
DBECdS09	0.04	0.12	-0.07	- -	- -	0.08
APRCS02	0.07	0.03	0.02	0.01	0.05	-0.07
bprcs06	-0.35	-0.03	0.17	-0.01	-0.23	-0.11
cprcs06	0.09	0.06	-0.06	0.07	-0.02	0.00
DPRCS06	0.16	-0.13	-0.05	-0.02	0.16	0.18
ADPPS01	0.75	0.40	0.10	0.24	0.46	0.60
bdpps01	-0.31	-0.13	-0.16	-0.35	-0.39	-0.59
cdpps01	-0.27	0.06	0.18	0.17	0.31	0.19
DDPPS01	0.02	0.12	0.34	0.32	0.16	0.50

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	-1.07	-0.73	-0.52	-1.53	-1.73	-1.50
BTMSCALE	0.78	0.82	0.69	0.82	0.82	0.58
bbecs04	1.00	-0.13	-0.07	-0.11	0.31	0.22
cbecs09	0.32	1.71	-0.01	-0.15	-0.09	-0.32
DBECdS09	-0.64	-0.97	- -	0.09	0.02	0.18
APRCS02	0.13	0.07	0.04	-0.26	0.03	0.07
bprcs06	0.15	0.45	0.22	0.11	0.45	0.21
cprcs06	0.28	1.74	0.32	-0.14	-0.28	-0.08
DPRCS06	-0.09	28.84	-1.67	0.19	0.06	0.06
ADPPS01	0.32	0.69	0.90	- -	1.69	1.33
bdpps01	-0.66	-1.08	-1.02	-3.16	- -	-2.02
cdpps01	0.03	0.14	0.12	0.27	-0.83	- -
DDPPS01	0.81	0.66	0.67	1.07	0.71	-3.52

	DP4ETA13
ATMSCALE	-0.98
BTMSCALE	0.32
bbecs04	0.12
cbecs09	0.05
DBECdS09	- -
APRCS02	-0.04
bprcs06	0.34
cprcs06	0.06
DPRCS06	- -
ADPPS01	1.41
bdpps01	-0.58
cdpps01	-1.57
DDPPS01	- -

Modification Indices for BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	3.86	1.16	7.87	2.34	0.03
TEM2eta2	- -	- -	1.97	7.94	6.28	2.21
AGG2eta3	0.06	- -	- -	0.22	0.51	0.35
AGG3eta4	5.74	0.03	- -	- -	0.24	3.21
AGG4eta5	0.20	1.19	0.30	- -	- -	0.33
PAR1ETA6	0.03	0.29	0.09	0.05	0.03	0.03
PAR2ETA7	2.38	0.03	0.11	0.22	4.36	- -
PAR3ETA8	2.35	0.43	0.89	0.22	1.20	0.36
PAR4ETA9	1.98	0.43	0.15	0.04	1.66	1.40
DP1ETA10	- -	3.86	0.99	0.53	2.43	0.03
DP2ETA11	5.45	0.09	0.06	1.09	2.14	1.40
DP3ETA12	1.69	0.54	2.41	3.87	4.78	2.61
DP4ETA13	0.05	0.47	2.43	2.15	0.41	3.66

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	3.72	1.11	0.49	- -	5.45	5.23
TEM2eta2	2.08	2.39	1.49	3.86	3.98	5.87
AGG2eta3	- -	0.14	0.06	1.21	- -	1.49
AGG3eta4	1.43	- -	0.00	0.68	0.56	- -
AGG4eta5	10.99	5.98	- -	0.79	0.02	1.94
PAR1ETA6	0.95	0.74	0.42	- -	0.05	1.88
PAR2ETA7	0.03	1.12	1.06	0.57	- -	2.65
PAR3ETA8	- -	0.43	0.42	0.00	5.22	- -
PAR4ETA9	0.25	- -	0.43	3.30	0.32	0.22
DP1ETA10	2.43	3.61	8.06	- -	5.45	29.00
DP2ETA11	1.15	11.79	11.64	- -	- -	23.77
DP3ETA12	3.86	5.82	4.53	23.77	- -	- -
DP4ETA13	11.30	7.56	6.48	22.70	7.73	- -

	DP4ETA13
TEM1eta1	2.16
TEM2eta2	3.57
AGG2eta3	0.87
AGG3eta4	0.11
AGG4eta5	- -
PAR1ETA6	0.52
PAR2ETA7	10.40
PAR3ETA8	0.25
PAR4ETA9	- -
DP1ETA10	38.60
DP2ETA11	9.33
DP3ETA12	7.73
DP4ETA13	- -

Expected Change for BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	-1.19	-0.36	-0.82	-0.45	-0.41
TEM2eta2	- -	- -	0.56	0.83	0.70	1.29
AGG2eta3	-0.01	- -	- -	0.07	-0.09	-0.20
AGG3eta4	-0.04	0.00	- -	- -	0.10	-0.40
AGG4eta5	0.01	0.02	-0.03	- -	- -	0.11
PAR1ETA6	0.00	0.01	0.01	0.01	0.01	-0.09
PAR2ETA7	-0.04	0.00	0.03	0.06	-0.25	- -
PAR3ETA8	0.03	0.01	-0.05	0.04	0.09	0.13
PAR4ETA9	0.02	-0.01	-0.02	-0.01	0.09	0.24
DP1ETA10	- -	0.09	0.16	0.12	0.27	1.59
DP2ETA11	-0.08	-0.01	0.03	-0.15	-0.21	-0.54
DP3ETA12	-0.05	0.03	0.16	0.40	0.45	0.74
DP4ETA13	0.01	0.02	0.14	0.17	0.11	0.71

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	-0.95	-0.49	-0.35	- -	-0.48	-0.28
TEM2eta2	0.45	0.56	0.53	0.22	0.22	0.24
AGG2eta3	- -	-0.09	-0.05	-0.08	- -	0.06
AGG3eta4	-0.21	- -	0.00	-0.03	-0.03	- -
AGG4eta5	-0.39	-0.66	- -	0.03	0.00	0.05
PAR1ETA6	0.09	0.07	0.05	- -	0.01	0.03
PAR2ETA7	0.09	0.33	0.28	0.05	- -	0.06
PAR3ETA8	- -	1.18	0.24	0.00	-0.08	- -
PAR4ETA9	-0.08	- -	-1.18	0.05	0.02	0.02
DP1ETA10	0.51	0.56	0.82	- -	1.87	0.71
DP2ETA11	-0.23	-0.77	-0.77	- -	- -	-0.50
DP3ETA12	0.33	0.56	0.54	0.57	- -	- -
DP4ETA13	0.47	0.44	0.47	0.31	0.20	- -

	DP4ETA13
TEM1eta1	-0.20
TEM2eta2	0.22
AGG2eta3	0.04
AGG3eta4	0.01
AGG4eta5	- -
PAR1ETA6	0.02
PAR2ETA7	0.12
PAR3ETA8	0.02
PAR4ETA9	- -
DP1ETA10	0.61
DP2ETA11	-0.26
DP3ETA12	-0.52
DP4ETA13	- -

Standardized Expected Change for BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	-0.03	-0.02	-0.07	-0.04	-0.08
TEM2eta2	- -	- -	0.04	0.07	0.06	0.27
AGG2eta3	0.00	- -	- -	0.02	-0.02	-0.11
AGG3eta4	0.00	0.00	- -	- -	0.03	-0.29
AGG4eta5	0.00	0.00	-0.01	- -	- -	0.09
PAR1ETA6	0.00	0.00	0.01	0.01	0.01	-0.17
PAR2ETA7	0.00	0.00	0.01	0.02	-0.09	- -
PAR3ETA8	0.00	0.00	-0.01	0.01	0.04	0.12
PAR4ETA9	0.00	0.00	-0.01	-0.01	0.04	0.23
DP1ETA10	- -	0.00	0.02	0.02	0.04	0.58
DP2ETA11	0.00	0.00	0.00	-0.02	-0.04	-0.20
DP3ETA12	0.00	0.00	0.02	0.05	0.07	0.25
DP4ETA13	0.00	0.00	0.02	0.03	0.02	0.28

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	-0.09	-0.05	-0.04	- -	-0.02	-0.01
TEM2eta2	0.04	0.06	0.06	0.01	0.01	0.01
AGG2eta3	- -	-0.02	-0.01	-0.01	- -	0.01
AGG3eta4	-0.07	- -	0.00	0.00	0.00	- -
AGG4eta5	-0.14	-0.27	- -	0.00	0.00	0.01
PAR1ETA6	0.07	0.06	0.05	- -	0.00	0.01
PAR2ETA7	0.03	0.14	0.12	0.01	- -	0.01
PAR3ETA8	- -	0.54	0.11	0.00	-0.02	- -
PAR4ETA9	-0.04	- -	-0.59	0.01	0.00	0.00
DP1ETA10	0.08	0.10	0.16	- -	0.14	0.05
DP2ETA11	-0.04	-0.15	-0.15	- -	- -	-0.04
DP3ETA12	0.05	0.10	0.10	0.04	- -	- -
DP4ETA13	0.08	0.09	0.10	0.03	0.02	- -

	DP4ETA13
TEM1eta1	-0.01
TEM2eta2	0.01
AGG2eta3	0.01
AGG3eta4	0.00
AGG4eta5	- -
PAR1ETA6	0.01
PAR2ETA7	0.02
PAR3ETA8	0.00
PAR4ETA9	- -
DP1ETA10	0.05
DP2ETA11	-0.02
DP3ETA12	-0.04
DP4ETA13	- -

Modification Indices for PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -					
TEM2eta2	3.86	- -				
AGG2eta3	0.02	0.06	- -			
AGG3eta4	5.24	4.00	0.07	- -		
AGG4eta5	0.10	1.03	1.60	0.19	- -	
PAR1ETA6	0.03	0.34	0.03	0.08	0.00	- -
PAR2ETA7	2.53	0.94	0.35	0.04	14.20	0.92
PAR3ETA8	2.36	0.37	0.90	1.37	1.12	0.08
PAR4ETA9	1.29	3.15	0.05	0.02	4.45	0.22
DP1ETA10	- -	3.86	1.11	0.21	0.68	0.03
DP2ETA11	5.45	1.23	1.21	0.03	0.56	0.05
DP3ETA12	2.91	3.15	1.49	0.56	2.14	2.09
DP4ETA13	0.14	0.52	0.19	0.11	1.94	0.00

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	- -					
PAR3ETA8	0.02	- -				
PAR4ETA9	0.98	0.11	- -			
DP1ETA10	1.01	0.05	2.68	- -		
DP2ETA11	0.57	11.27	1.29	5.45	- -	
DP3ETA12	2.65	5.22	0.01	27.16	23.77	- -
DP4ETA13	8.87	0.25	0.22	22.98	1.78	7.73

	DP4ETA13
DP4ETA13	- -

Expected Change for PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -					
TEM2eta2	-35.44	- -				
AGG2eta3	-0.15	0.39	- -			
AGG3eta4	-1.78	1.63	0.10	- -		
AGG4eta5	0.21	0.61	-0.31	0.15	- -	
PAR1ETA6	-0.17	0.25	-0.03	-0.04	-0.01	- -
PAR2ETA7	-1.72	0.76	0.66	-0.07	-0.97	0.22
PAR3ETA8	1.12	-0.48	-0.21	0.27	0.21	-0.03
PAR4ETA9	0.84	-1.46	-0.05	-0.02	0.36	-0.05
DP1ETA10	- -	2.83	-0.95	-0.21	0.31	0.65
DP2ETA11	-3.22	1.34	0.76	-0.07	-0.24	0.05
DP3ETA12	-2.61	2.43	0.64	0.61	0.63	0.37
DP4ETA13	-0.49	0.85	0.20	0.12	-0.80	0.00

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	- -					
PAR3ETA8	-0.08	- -				
PAR4ETA9	-0.34	0.08	- -			
DP1ETA10	0.78	-0.09	0.64	- -		
DP2ETA11	-0.47	-1.17	-0.37	12.50	- -	
DP3ETA12	0.72	1.63	0.05	7.88	-5.65	- -
DP4ETA13	1.09	0.15	-0.29	4.08	-1.01	-4.15

(Expected Change for PSI – continued)

	DP4ETA13
DP4ETA13	- -

Standardized Expected Change for PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -					
TEM2eta2	-0.84	- -				
AGG2eta3	-0.01	0.03	- -			
AGG3eta4	-0.15	0.14	0.02	- -		
AGG4eta5	0.02	0.06	-0.08	0.05	- -	
PAR1ETA6	-0.03	0.05	-0.02	-0.03	-0.01	- -
PAR2ETA7	-0.16	0.07	0.17	-0.02	-0.35	0.18
PAR3ETA8	0.12	-0.05	-0.06	0.10	0.08	-0.03
PAR4ETA9	0.09	-0.16	-0.01	-0.01	0.15	-0.05
DP1ETA10	- -	0.12	-0.11	-0.03	0.05	0.24
DP2ETA11	-0.14	0.06	0.09	-0.01	-0.04	0.02
DP3ETA12	-0.10	0.10	0.07	0.08	0.10	0.13
DP4ETA13	-0.02	0.04	0.02	0.02	-0.14	0.00

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	- -					
PAR3ETA8	-0.03	- -				
PAR4ETA9	-0.15	0.04	- -			
DP1ETA10	0.13	-0.02	0.12	- -		
DP2ETA11	-0.08	-0.22	-0.07	0.97	- -	
DP3ETA12	0.11	0.28	0.01	0.55	-0.41	- -
DP4ETA13	0.20	0.03	-0.06	0.33	-0.08	-0.32

	DP4ETA13
DP4ETA13	- -

Modification Indices for THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	1.43					
BTMSCALE	0.20	0.13				
bbecs04	1.08	0.50	0.07			
cbecs09	5.17	0.07	1.21	0.19		
DBECdS09	0.04	2.59	1.37	0.19	- -	
APRCS02	0.15	0.08	0.01	0.64	0.99	0.92
bprcs06	7.40	0.52	2.09	1.05	8.08	0.83
cprcs06	0.58	0.30	1.39	1.86	0.47	0.00
DPRCS06	2.60	1.69	0.01	1.58	4.45	0.07
ADPPS01	1.80	0.93	0.84	0.81	1.43	0.39
bdpps01	1.32	0.24	0.11	0.06	0.83	- -
cdpps01	4.46	0.22	1.05	0.89	1.66	2.15
DDPPS01	0.63	0.00	0.16	0.73	2.59	1.70

(Modification Indices for THETA-EPS – continued)

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	0.26					
cprcs06	1.16	0.51				
DPRCS06	0.36	0.16	4.45			
ADPPS01	0.34	0.07	4.53	1.20		
bdpps01	2.10	5.44	0.93	12.40	22.47	
cdpps01	0.62	0.39	0.02	2.81	7.42	3.27
DDPPS01	7.52	0.46	0.55	18.50	0.30	9.00

	DDPPS01
DDPPS01	2.57

Expected Change for THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	15.33					
BTMSCALE	-1.61	-2.57				
bbecs04	0.85	-0.89	-0.30			
cbecs09	-1.32	0.14	0.31	-0.26		
DBECdS09	-0.11	0.82	-0.24	0.15	- -	
APRCS02	0.23	0.11	-0.02	-0.09	0.11	-0.33
bprcs06	-1.88	0.50	0.45	0.18	-0.48	0.14
cprcs06	0.42	0.28	-0.25	0.22	-0.10	0.00
DPRCS06	0.92	-0.87	-0.03	-0.20	0.36	-0.03
ADPPS01	2.15	1.11	-0.42	-0.29	0.38	-0.21
bdpps01	-1.35	0.54	0.18	0.07	-0.27	- -
cdpps01	-2.67	0.55	0.49	-0.40	0.42	0.36
DDPPS01	-0.94	-0.06	0.17	0.29	-0.93	-0.30

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	-0.39					
cprcs06	0.25	-0.20				
DPRCS06	-0.12	0.09	-10.71			
ADPPS01	-0.22	0.08	0.68	-4.76		
bdpps01	0.58	-0.68	-0.29	-4.47	9.20	
cdpps01	-0.32	0.24	0.05	1.23	-2.38	4.88
DDPPS01	0.98	0.21	-0.45	2.87	-0.34	-3.99

	DDPPS01
DDPPS01	17.36

Maximum Modification Index is 38.60 for Element (10,13) of BETA

Covariance Matrix of Parameter Estimates

	BE 2_1	BE 3_2	BE 3_7	BE 3_11	BE 4_3	BE 4_8
BE 2_1	0.00					
BE 3_2	0.00	0.00				
BE 3_7	0.00	0.00	0.01			
BE 3_11	0.00	0.00	0.00	0.00		
BE 4_3	0.00	0.00	0.00	0.00	0.00	
BE 4_8	0.00	0.00	0.00	0.00	0.00	0.01
BE 4_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 5_4	0.00	0.00	0.00	0.00	0.00	0.00
BE 5_9	0.00	0.00	0.00	0.00	0.00	0.00
BE 5_13	0.00	0.00	0.00	0.00	0.00	0.00
BE 6_1	0.00	0.00	0.00	0.00	0.00	0.00
BE 6_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 7_6	0.00	0.00	0.00	0.00	0.00	0.00
BE 7_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_2	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_7	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 9_8	0.00	0.00	0.00	0.00	0.00	0.00
BE 9_13	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	-0.04	0.00	0.00	0.00	0.00	0.00
PS 2_2	-0.03	-0.01	0.01	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00

	BE 4_12	BE 5_4	BE 5_9	BE 5_13	BE 6_1	BE 6_10
BE 4_12	0.00					
BE 5_4	0.00	0.00				
BE 5_9	0.00	0.00	0.01			
BE 5_13	0.00	0.00	0.00	0.00		
BE 6_1	0.00	0.00	0.00	0.00	0.00	
BE 6_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 7_6	0.00	0.00	0.00	0.00	0.00	0.00
BE 7_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_2	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_7	0.00	0.00	0.00	0.00	0.00	0.00

(Covariance Matrix of Parameter Estimates – continued)

	BE 4_12	BE 5_4	BE 5_9	BE 5_13	BE 6_1	BE 6_10
BE 8_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 9_8	0.00	0.00	0.00	0.00	0.00	0.00
BE 9_13	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 2_2	0.00	0.00	0.00	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00

	BE 7_6	BE 7_11	BE 8_2	BE 8_7	BE 8_12	BE 9_8
BE 7_6	0.07					
BE 7_11	0.00	0.00				
BE 8_2	0.00	0.00	0.00			
BE 8_7	0.00	0.00	0.00	0.01		
BE 8_12	0.00	0.00	0.00	0.00	0.00	
BE 9_8	0.00	0.00	0.00	0.00	0.00	0.01
BE 9_13	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	0.01	0.00	0.00	0.00	0.00	0.00
PS 2_2	0.01	0.00	0.00	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	-0.01	0.00	0.00	0.00	0.00	0.00
PS 7_7	-0.02	0.00	0.00	-0.01	0.00	0.00
PS 8_8	0.00	0.00	0.00	-0.01	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	-0.01
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00

(Covariance Matrix of Parameter Estimates – continued)

	BE 9_13	BE 11_10	BE 12_11	BE 13_12	PS 1_1	PS 2_2
BE 9_13	0.00					
BE 11_10	0.00	0.00				
BE 12_11	0.00	0.00	0.00			
BE 13_12	0.00	0.00	0.00	0.00		
PS 1_1	0.00	0.00	0.00	0.00	16.04	
PS 2_2	0.00	0.00	0.00	0.00	0.18	10.29
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.01
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	-0.01
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	0.00	1.02	0.02
PS 10_10	0.00	-0.03	0.00	0.00	0.07	0.00
PS 11_11	0.00	-0.02	-0.01	0.00	0.00	0.00
PS 12_12	0.00	0.00	-0.01	-0.01	0.00	0.00
PS 13_13	0.00	0.00	0.00	-0.01	0.00	0.00

	PS 3_3	PS 4_4	PS 5_5	PS 6_6	PS 7_7	PS 8_8
PS 3_3	0.21					
PS 4_4	0.00	0.07				
PS 5_5	0.00	0.00	0.04			
PS 6_6	0.00	0.00	0.00	0.01		
PS 7_7	0.00	0.00	0.00	0.00	0.12	
PS 8_8	0.00	0.00	0.00	0.00	0.01	0.05
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00

	PS 9_9	PS 10_1	PS 10_10	PS 11_11	PS 12_12	PS 13_13
PS 9_9	0.05					
PS 10_1	0.00	2.62				
PS 10_10	0.00	0.36	1.89			
PS 11_11	0.00	0.02	0.06	0.96		
PS 12_12	0.00	0.00	0.00	0.00	1.53	
PS 13_13	0.00	0.00	0.00	0.00	0.01	0.83

Correlation Matrix of Parameter Estimates

	BE 2_1	BE 3_2	BE 3_7	BE 3_11	BE 4_3	BE 4_8
BE 2_1	1.00					
BE 3_2	-0.07	1.00				
BE 3_7	-0.01	-0.30	1.00			
BE 3_11	-0.01	0.00	-0.21	1.00		
BE 4_3	0.00	-0.09	0.00	-0.02	1.00	
BE 4_8	0.00	0.03	-0.13	0.02	-0.36	1.00
BE 4_12	0.00	0.00	0.05	-0.10	-0.01	-0.30
BE 5_4	0.00	0.00	0.00	0.00	-0.08	0.03
BE 5_9	0.00	0.00	0.00	0.00	0.03	-0.15
BE 5_13	0.00	0.00	0.00	0.00	0.01	0.04
BE 6_1	0.01	-0.02	-0.05	0.01	-0.01	0.00
BE 6_10	0.00	0.00	0.01	0.00	0.00	0.00
BE 7_6	-0.02	-0.02	0.01	0.00	0.00	0.00
BE 7_11	0.01	0.02	-0.04	-0.05	0.00	0.00
BE 8_2	-0.02	0.07	-0.05	0.00	-0.01	-0.01
BE 8_7	0.00	-0.01	0.07	0.00	-0.01	-0.06
BE 8_12	0.00	0.00	0.00	0.05	0.01	-0.02
BE 9_8	0.00	-0.01	0.01	0.00	0.01	0.07
BE 9_13	0.00	0.00	0.00	0.00	0.00	-0.01
BE 11_10	0.00	0.00	0.00	-0.03	0.00	0.00
BE 12_11	0.00	0.00	0.00	0.02	-0.01	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	-0.16	0.00	0.00	0.00	0.00	0.00
PS 2_2	-0.15	-0.15	0.02	0.01	0.00	0.00
PS 3_3	0.01	-0.12	-0.06	-0.03	-0.16	0.06
PS 4_4	0.00	0.01	0.00	0.01	-0.12	-0.04
PS 5_5	0.00	0.00	0.00	0.00	0.02	-0.01
PS 6_6	0.01	0.01	0.00	0.00	0.00	0.00
PS 7_7	0.01	0.03	-0.10	0.02	0.01	0.00
PS 8_8	0.00	0.00	0.01	-0.01	0.03	-0.07
PS 9_9	0.00	0.00	-0.01	0.00	-0.01	0.01
PS 10_1	-0.02	0.00	0.00	-0.01	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.01	-0.04	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.01	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00

	BE 4_12	BE 5_4	BE 5_9	BE 5_13	BE 6_1	BE 6_10
BE 4_12	1.00					
BE 5_4	-0.02	1.00				
BE 5_9	0.03	-0.42	1.00			
BE 5_13	-0.11	-0.07	-0.20	1.00		
BE 6_1	0.00	0.00	0.00	0.00	1.00	
BE 6_10	0.00	0.00	0.00	0.00	-0.13	1.00
BE 7_6	0.00	0.00	0.00	0.00	-0.30	-0.02
BE 7_11	0.00	0.00	0.00	0.00	0.11	-0.20
BE 8_2	0.00	0.00	0.00	0.00	-0.16	0.02
BE 8_7	0.02	0.00	0.00	0.00	-0.01	0.00

(Correlation Matrix of Parameter Estimates – continued)

	BE 4_12	BE 5_4	BE 5_9	BE 5_13	BE 6_1	BE 6_10
BE 8_12	-0.08	0.00	0.00	0.00	0.00	0.00
BE 9_8	-0.01	0.00	-0.02	0.00	0.02	0.00
BE 9_13	0.05	0.00	-0.01	-0.01	0.00	0.00
BE 11_10	0.00	0.00	0.00	0.00	0.00	0.05
BE 12_11	-0.02	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.02	0.00	0.00	-0.02	0.00	0.00
PS 1_1	0.00	0.00	0.00	0.00	-0.06	0.00
PS 2_2	0.00	0.00	0.00	0.00	-0.01	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	-0.01	-0.21	0.09	0.02	0.00	0.00
PS 5_5	0.01	-0.22	0.07	-0.01	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.05	-0.06
PS 7_7	0.00	0.00	0.00	0.00	0.07	0.01
PS 8_8	0.02	0.00	0.00	0.00	0.00	0.00
PS 9_9	-0.01	0.00	0.00	0.00	-0.01	0.00
PS 10_1	0.00	0.00	0.00	0.00	-0.05	-0.05
PS 10_10	0.00	0.00	0.00	0.00	0.00	-0.09
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	-0.04	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	-0.03	0.00	0.00

	BE 7_6	BE 7_11	BE 8_2	BE 8_7	BE 8_12	BE 9_8
BE 7_6	1.00					
BE 7_11	-0.41	1.00				
BE 8_2	-0.03	0.02	1.00			
BE 8_7	-0.09	-0.01	-0.23	1.00		
BE 8_12	0.02	-0.20	0.02	-0.10	1.00	
BE 9_8	0.01	-0.01	-0.22	-0.21	-0.06	1.00
BE 9_13	0.00	0.01	0.03	0.05	-0.24	-0.20
BE 11_10	0.00	-0.02	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	-0.01	-0.02	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.02	0.00
PS 1_1	0.01	0.00	0.01	0.00	0.00	0.00
PS 2_2	0.01	0.00	-0.04	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	-0.30	0.14	0.03	0.00	0.00	0.00
PS 7_7	-0.23	0.10	0.14	-0.41	0.05	-0.02
PS 8_8	0.04	0.02	0.16	-0.38	0.01	-0.23
PS 9_9	0.00	0.00	0.06	0.08	0.03	-0.37
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.01	-0.01	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.01	0.00	0.01	-0.05	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00

(Correlation Matrix of Parameter Estimates – continued)

	BE 9_13	BE 11_10	BE 12_11	BE 13_12	PS 1_1	PS 2_2
BE 9_13	1.00					
BE 11_10	0.00	1.00				
BE 12_11	0.00	-0.11	1.00			
BE 13_12	-0.02	0.00	-0.07	1.00		
PS 1_1	0.00	0.00	0.00	0.00	1.00	
PS 2_2	0.00	0.00	0.00	0.00	0.01	1.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.01
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	-0.01
PS 8_8	0.05	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.05	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	-0.04	0.00	0.00	0.16	0.00
PS 10_10	0.00	-0.31	0.00	0.00	0.01	0.00
PS 11_11	0.00	-0.28	-0.13	0.00	0.00	0.00
PS 12_12	0.00	0.02	-0.16	-0.15	0.00	0.00
PS 13_13	-0.01	0.00	0.01	-0.16	0.00	0.00

	PS 3_3	PS 4_4	PS 5_5	PS 6_6	PS 7_7	PS 8_8
PS 3_3	1.00					
PS 4_4	0.00	1.00				
PS 5_5	0.00	0.01	1.00			
PS 6_6	0.00	0.00	0.00	1.00		
PS 7_7	0.00	0.00	0.00	0.01	1.00	
PS 8_8	-0.01	0.00	0.00	0.00	0.09	1.00
PS 9_9	0.00	0.00	0.00	0.00	0.01	-0.05
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00

	PS 9_9	PS 10_1	PS 10_10	PS 11_11	PS 12_12	PS 13_13
PS 9_9	1.00					
PS 10_1	0.00	1.00				
PS 10_10	0.00	0.16	1.00			
PS 11_11	0.00	0.01	0.05	1.00		
PS 12_12	0.00	0.00	0.00	0.00	1.00	
PS 13_13	0.00	0.00	0.00	0.00	0.01	1.00

Covariances

Y - ETA

	ATMSCALE	**BTMSCALE**	**bbecs04**	**cbecs09**	**DBECdS09**	**APRCS02**
TEM1eta1	42.64	22.10	5.54	2.47	1.50	2.05
TEM2eta2	22.10	41.33	9.55	3.87	2.31	1.06
AGG2eta3	5.54	9.55	5.92	2.35	1.40	0.41
AGG3eta4	2.47	3.87	2.35	3.44	2.03	0.25
AGG4eta5	1.50	2.31	1.40	2.03	2.82	0.16
PAR1ETA6	2.05	1.06	0.41	0.25	0.16	0.56
PAR2ETA7	2.40	2.52	1.31	0.93	0.59	0.45
PAR3ETA8	1.99	2.32	1.07	1.01	0.67	0.33
PAR4ETA9	1.95	2.51	1.02	0.89	0.62	0.29
DP1ETA10	3.40	1.76	1.59	1.16	0.80	1.01
DP2ETA11	2.30	1.19	1.84	1.42	0.99	0.68
DP3ETA12	1.28	0.67	1.03	1.80	1.40	0.38
DP4ETA13	0.60	0.31	0.48	0.84	1.02	0.18

	bprcs06	**cprcs06**	**DPRCS06**	**ADPPS01**	**bdpps01**	**cdpps01**
TEM1eta1	2.40	1.99	1.95	3.40	2.30	1.28
TEM2eta2	2.52	2.32	2.51	1.76	1.19	0.67
AGG2eta3	1.31	1.07	1.02	1.59	1.84	1.03
AGG3eta4	0.93	1.01	0.89	1.16	1.42	1.80
AGG4eta5	0.59	0.67	0.62	0.80	0.99	1.40
PAR1ETA6	0.45	0.33	0.29	1.01	0.68	0.38
PAR2ETA7	2.71	1.82	1.49	1.07	0.96	0.54
PAR3ETA8	1.82	2.18	1.80	1.11	1.20	1.58
PAR4ETA9	1.49	1.80	2.00	0.98	1.07	1.48
DP1ETA10	1.07	1.11	0.98	13.20	8.91	4.98
DP2ETA11	0.96	1.20	1.07	8.91	12.70	7.11
DP3ETA12	0.54	1.58	1.48	4.98	7.11	15.31
DP4ETA13	0.25	0.73	0.92	2.32	3.31	7.14

	DDPPS01
TEM1eta1	0.60
TEM2eta2	0.31
AGG2eta3	0.48
AGG3eta4	0.84
AGG4eta5	1.02
PAR1ETA6	0.18
PAR2ETA7	0.25
PAR3ETA8	0.73
PAR4ETA9	0.92
DP1ETA10	2.32
DP2ETA11	3.31
DP3ETA12	7.14
DP4ETA13	11.26
MODEL 3C	rev

First Order Derivatives

LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.00	0.01	0.02	0.04	0.03	0.00
BTMSCALE	0.00	0.00	-0.01	-0.02	-0.03	-0.01
bbecs04	-0.10	0.01	0.00	-0.01	0.02	0.00
cbecs09	0.41	0.09	-0.02	0.00	-0.01	0.03
DBECdS09	-0.08	-0.18	0.03	0.00	0.00	-0.01
APRCS02	-0.09	-0.09	-0.02	-0.01	-0.04	0.00
bprcs06	0.32	0.02	-0.04	0.00	0.07	0.00
cprcs06	-0.16	-0.11	0.03	-0.02	0.01	0.00
DPRCS06	-0.22	0.07	0.02	0.01	-0.05	-0.02
ADPPS01	-0.14	-0.13	-0.01	-0.02	-0.04	-0.01
bdpps01	0.13	0.06	0.02	0.04	0.04	0.01
cdpps01	0.11	-0.02	-0.02	-0.01	-0.02	0.00
DDPPS01	-0.01	-0.06	-0.05	-0.04	-0.01	-0.01

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	0.02	0.01	0.01	0.03	0.06	0.10
BTMSCALE	-0.01	-0.01	-0.01	-0.06	-0.05	-0.05
bbecs04	-0.01	0.00	0.00	0.02	-0.02	-0.07
cbecs09	-0.03	-0.01	0.00	0.12	0.06	0.07
DBECdS09	0.08	0.03	0.00	-0.09	-0.01	-0.12
APRCS02	-0.03	-0.02	-0.02	0.02	-0.02	-0.11
bprcs06	0.00	-0.01	-0.01	-0.05	-0.12	-0.10
cprcs06	-0.01	0.00	-0.01	0.12	0.21	0.03
DPRCS06	0.01	0.00	0.00	-0.17	-0.05	-0.03
ADPPS01	-0.02	-0.05	-0.06	0.00	-0.01	-0.19
bdpps01	0.03	0.06	0.06	0.06	0.00	0.15
cdpps01	0.00	-0.01	-0.01	-0.03	0.03	0.00
DDPPS01	-0.07	-0.05	-0.04	-0.20	-0.10	0.01

	DP4ETA13
ATMSCALE	0.06
BTMSCALE	-0.02
bbecs04	-0.05
cbecs09	-0.02
DBECdS09	0.00
APRCS02	0.07
bprcs06	-0.20
cprcs06	-0.03
DPRCS06	0.00
ADPPS01	-0.24
bdpps01	0.09
cdpps01	0.05
DDPPS01	0.00

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	0.00	0.01	0.01	0.03	0.01	0.00
TEM2eta2	0.00	0.00	-0.01	-0.03	-0.03	0.00
AGG2eta3	0.02	0.00	0.00	-0.01	0.02	0.00
AGG3eta4	0.36	-0.02	0.00	0.00	-0.01	0.02
AGG4eta5	-0.08	-0.18	0.03	0.00	0.00	-0.01
PAR1ETA6	0.02	-0.11	-0.02	-0.01	-0.01	0.00
PAR2ETA7	0.17	-0.02	-0.01	-0.01	0.05	0.00
PAR3ETA8	-0.25	-0.07	0.05	-0.02	-0.04	-0.01
PAR4ETA9	-0.23	0.07	0.02	0.01	-0.05	-0.02
DP1ETA10	0.00	-0.12	-0.02	-0.01	-0.03	0.00
DP2ETA11	0.20	0.03	-0.01	0.02	0.03	0.01
DP3ETA12	0.10	-0.06	-0.04	-0.03	-0.03	-0.01
DP4ETA13	-0.02	-0.06	-0.05	-0.04	-0.01	-0.01

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	0.01	0.01	0.00	0.00	0.03	0.05
TEM2eta2	-0.01	-0.01	-0.01	-0.05	-0.05	-0.07
AGG2eta3	0.00	0.00	0.00	0.04	0.00	-0.07
AGG3eta4	0.02	0.00	0.00	0.07	0.05	0.00
AGG4eta5	0.08	0.03	0.00	-0.09	-0.01	-0.12
PAR1ETA6	-0.03	-0.03	-0.02	0.00	-0.02	-0.19
PAR2ETA7	0.00	-0.01	-0.01	-0.03	0.00	-0.12
PAR3ETA8	0.00	0.00	-0.01	0.00	0.18	0.00
PAR4ETA9	0.01	0.00	0.00	-0.17	-0.05	-0.04
DP1ETA10	-0.01	-0.02	-0.03	0.00	-0.01	-0.11
DP2ETA11	0.01	0.04	0.04	0.00	0.00	0.13
DP3ETA12	-0.03	-0.03	-0.02	-0.12	0.00	0.00
DP4ETA13	-0.07	-0.05	-0.04	-0.21	-0.11	0.00

	DP4ETA13
TEM1eta1	0.03
TEM2eta2	-0.05
AGG2eta3	-0.06
AGG3eta4	-0.02
AGG4eta5	0.00
PAR1ETA6	-0.09
PAR2ETA7	-0.24
PAR3ETA8	-0.04
PAR4ETA9	0.00
DP1ETA10	-0.18
DP2ETA11	0.10
DP3ETA12	0.04
DP4ETA13	0.00

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	0.00					
TEM2eta2	0.00	0.00				
AGG2eta3	0.00	0.00	0.00			
AGG3eta4	0.01	-0.01	0.00	0.00		
AGG4eta5	0.00	0.00	0.01	0.00	0.00	
PAR1ETA6	0.00	0.00	0.00	0.01	0.00	0.00
PAR2ETA7	0.00	0.00	0.00	0.00	0.04	-0.01
PAR3ETA8	-0.01	0.00	0.01	-0.01	-0.02	0.01
PAR4ETA9	0.00	0.01	0.00	0.00	-0.03	0.01
DP1ETA10	0.00	0.00	0.00	0.00	-0.01	0.00
DP2ETA11	0.00	0.00	0.00	0.00	0.01	0.00
DP3ETA12	0.00	0.00	-0.01	0.00	-0.01	-0.02
DP4ETA13	0.00	0.00	0.00	0.00	0.01	0.00

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	0.00					
PAR3ETA8	0.00	0.00				
PAR4ETA9	0.01	0.00	0.00			
DP1ETA10	0.00	0.00	-0.01	0.00		
DP2ETA11	0.00	0.03	0.01	0.00	0.00	
DP3ETA12	-0.01	-0.01	0.00	-0.01	0.01	0.00
DP4ETA13	-0.02	0.00	0.00	-0.02	0.01	0.01

	DP4ETA13
DP4ETA13	0.00

THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	0.00					
BTMSCALE	0.00	0.00				
bbecs04	0.00	0.00	0.00			
cbecs09	0.01	0.00	-0.01	0.00		
DBECdS09	0.00	-0.01	0.02	0.00	0.00	
APRCS02	0.00	0.00	0.00	0.02	-0.03	0.01
bprcs06	0.01	0.00	-0.01	-0.02	0.05	-0.02
cprcs06	0.00	0.00	0.02	-0.02	0.01	0.00
DPRCS06	-0.01	0.01	0.00	0.02	-0.03	0.01
ADPPS01	0.00	0.00	0.01	0.01	-0.01	0.01
bdpps01	0.00	0.00	0.00	0.00	0.01	0.00
cdpps01	0.00	0.00	-0.01	0.01	-0.01	-0.02
DDPPS01	0.00	0.00	0.00	-0.01	0.01	0.02

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	0.00					
cprcs06	-0.01	0.01				
DPRCS06	0.01	-0.01	0.00			
ADPPS01	0.00	0.00	-0.02	0.00		
bdpps01	-0.01	0.02	0.01	0.01	-0.01	
cdpps01	0.01	0.00	0.00	-0.01	0.01	0.00
DDPPS01	-0.02	-0.01	0.00	-0.02	0.00	0.01

	DDPPS01
DDPPS01	0.00

Factor Scores Regressions

ETA

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
TEM1eta1	0.74	0.09	0.04	0.01	0.00	0.21
TEM2eta2	0.09	0.70	0.26	0.06	0.01	0.00
AGG2eta3	0.01	0.06	0.60	0.13	0.03	0.01
AGG3eta4	0.00	0.01	0.06	0.65	0.15	0.00
AGG4eta5	0.00	0.00	0.01	0.13	0.69	0.00
PAR1ETA6	0.02	0.00	0.00	0.00	0.00	0.27
PAR2ETA7	0.01	0.00	0.03	0.03	0.01	0.07
PAR3ETA8	0.00	0.00	0.01	0.04	0.01	0.02
PAR4ETA9	0.00	0.01	0.01	0.02	0.02	0.02
DP1ETA10	0.01	0.00	0.01	0.01	0.00	0.13
DP2ETA11	0.00	-0.01	0.04	0.02	0.01	0.03
DP3ETA12	0.00	0.00	-0.01	0.06	0.02	0.00
DP4ETA13	0.00	0.00	0.00	-0.01	0.04	0.00

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
TEM1eta1	0.03	0.02	0.02	0.02	0.00	0.00
TEM2eta2	0.00	0.02	0.06	-0.01	-0.02	-0.01
AGG2eta3	0.04	0.01	0.01	0.01	0.02	-0.01
AGG3eta4	0.01	0.03	0.01	0.00	0.00	0.01
AGG4eta5	0.00	0.01	0.01	0.00	0.00	0.00
PAR1ETA6	0.04	0.02	0.01	0.03	0.01	0.00
PAR2ETA7	0.42	0.20	0.11	0.01	0.01	-0.02
PAR3ETA8	0.15	0.37	0.21	0.00	0.00	0.02
PAR4ETA9	0.09	0.23	0.35	0.00	0.00	0.02
DP1ETA10	0.02	0.01	0.01	0.61	0.18	0.03
DP2ETA11	0.01	0.01	0.01	0.15	0.62	0.09
DP3ETA12	-0.03	0.06	0.04	0.02	0.08	0.70
DP4ETA13	-0.01	0.00	0.03	0.00	0.01	0.10

	DDPPS01
TEM1eta1	0.00
TEM2eta2	0.00
AGG2eta3	0.00
AGG3eta4	0.00
AGG4eta5	0.01
PAR1ETA6	0.00
PAR2ETA7	-0.01
PAR3ETA8	0.00
PAR4ETA9	0.02
DP1ETA10	0.00
DP2ETA11	0.01
DP3ETA12	0.12
DP4ETA13	0.72

Standardized Solution

LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	6.53	- -	- -	- -	- -	- -
BTMSCALE	- -	6.43	- -	- -	- -	- -
bbecs04	- -	- -	2.43	- -	- -	- -
cbecs09	- -	- -	- -	1.86	- -	- -
DBECdS09	- -	- -	- -	- -	1.68	- -
APRCS02	- -	- -	- -	- -	- -	0.75
bprcs06	- -	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -	- -	- -
bprcs06	1.65	- -	- -	- -	- -	- -
cprcs06	- -	1.48	- -	- -	- -	- -
DPRCS06	- -	- -	1.41	- -	- -	- -
ADPPS01	- -	- -	- -	3.63	- -	- -
bdpps01	- -	- -	- -	- -	3.56	- -
cdpps01	- -	- -	- -	- -	- -	3.91
DDPPS01	- -	- -	- -	- -	- -	- -

	DP4ETA13
ATMSCALE	- -
BTMSCALE	- -
bbecs04	- -
cbecs09	- -
DBECdS09	- -
APRCS02	- -
bprcs06	- -
cprcs06	- -
DPRCS06	- -
ADPPS01	- -
bdpps01	- -
cdpps01	- -
DDPPS01	3.36

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.53	- -	- -	- -	- -	- -
AGG2eta3	- -	0.56	- -	- -	- -	- -
AGG3eta4	- -	- -	0.45	- -	- -	- -
AGG4eta5	- -	- -	- -	0.63	- -	- -
PAR1ETA6	0.37	- -	- -	- -	- -	- -
PAR2ETA7	- -	0.17	- -	- -	- -	0.31
PAR3ETA8	- -	0.07	- -	- -	- -	- -
PAR4ETA9	- -	0.07	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.17	- -	- -	- -	0.16	- -
AGG3eta4	- -	0.20	- -	- -	- -	0.15
AGG4eta5	- -	- -	0.03	- -	- -	- -
PAR1ETA6	- -	- -	- -	0.32	- -	- -
PAR2ETA7	- -	- -	- -	- -	0.08	- -
PAR3ETA8	0.71	- -	- -	- -	- -	0.21
PAR4ETA9	- -	0.83	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.69	- -	- -
DP3ETA12	- -	- -	- -	- -	0.51	- -
DP4ETA13	- -	- -	- -	- -	- -	0.54

	DP4ETA13
TEM1eta1	- -
TEM2eta2	- -
AGG2eta3	- -
AGG3eta4	- -
AGG4eta5	0.09
PAR1ETA6	- -
PAR2ETA7	- -
PAR3ETA8	- -
PAR4ETA9	0.07
DP1ETA10	- -
DP2ETA11	- -
DP3ETA12	- -
DP4ETA13	- -

Correlation Matrix of ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	1.00					
TEM2eta2	0.53	1.00				
AGG2eta3	0.35	0.61	1.00			
AGG3eta4	0.20	0.32	0.52	1.00		
AGG4eta5	0.14	0.21	0.34	0.65	1.00	
PAR1ETA6	0.42	0.22	0.22	0.18	0.13	1.00
PAR2ETA7	0.22	0.24	0.33	0.30	0.21	0.36
PAR3ETA8	0.21	0.24	0.30	0.37	0.27	0.30
PAR4ETA9	0.21	0.28	0.30	0.34	0.26	0.27
DP1ETA10	0.14	0.08	0.18	0.17	0.13	0.37
DP2ETA11	0.10	0.05	0.21	0.21	0.17	0.26
DP3ETA12	0.05	0.03	0.11	0.25	0.21	0.13
DP4ETA13	0.03	0.01	0.06	0.13	0.18	0.07

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	1.00					
PAR3ETA8	0.75	1.00				
PAR4ETA9	0.64	0.86	1.00			
DP1ETA10	0.18	0.21	0.19	1.00		
DP2ETA11	0.16	0.23	0.21	0.69	1.00	
DP3ETA12	0.08	0.27	0.27	0.35	0.51	1.00
DP4ETA13	0.05	0.15	0.19	0.19	0.28	0.54

	DP4ETA13
DP4ETA13	1.00

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	1.00					
TEM2eta2	- -	0.72				
AGG2eta3	- -	- -	0.57			
AGG3eta4	- -	- -	- -	0.66		
AGG4eta5	- -	- -	- -	- -	0.57	
PAR1ETA6	- -	- -	- -	- -	- -	0.73
PAR2ETA7	- -	- -	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -	- -	- -
PAR4ETA9	- -	- -	- -	- -	- -	- -
DP1ETA10	0.14	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	0.84					
PAR3ETA8	- -	0.39				
PAR4ETA9	- -	- -	0.25			
DP1ETA10	- -	- -	- -	1.00		
DP2ETA11	- -	- -	- -	- -	0.53	
DP3ETA12	- -	- -	- -	- -	- -	0.74
DP4ETA13	- -	- -	- -	- -	- -	- -

(PSI – continued)

	DP4ETA13
DP4ETA13	0.70

Total and Indirect Effects

Total Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.52	- -	- -	- -	- -	- -
	(0.06)					
	8.70					
AGG2eta3	0.12	0.22	- -	- -	- -	0.17
	(0.02)	(0.02)				(0.10)
	7.07	9.70				1.73
AGG3eta4	0.05	0.09	0.34	- -	- -	0.16
	(0.01)	(0.01)	(0.05)			(0.08)
	5.84	6.72	6.70			2.15
AGG4eta5	0.03	0.05	0.19	0.57	- -	0.10
	(0.01)	(0.01)	(0.03)	(0.06)		(0.05)
	5.10	5.84	5.69	9.49		2.00
PAR1ETA6	0.04	- -	- -	- -	- -	- -
	(0.01)					
	4.55					
PAR2ETA7	0.05	0.04	- -	- -	- -	0.67
	(0.01)	(0.01)				(0.26)
	3.81	4.55				2.59
PAR3ETA8	0.04	0.04	- -	- -	- -	0.43
	(0.01)	(0.01)				(0.17)
	4.33	4.21				2.53
PAR4ETA9	0.04	0.05	- -	- -	- -	0.34
	(0.01)	(0.02)				(0.14)
	4.06	3.12				2.48
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -

(Total Effects of ETA on ETA – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.25	- -	- -	0.09	0.12	- -
	(0.11)			(0.03)	(0.04)	
	2.35			3.07	2.74	
AGG3eta4	0.24	0.25	- -	0.07	0.09	0.09
	(0.06)	(0.09)		(0.02)	(0.02)	(0.03)
	3.75	2.69		4.58	4.16	3.11
AGG4eta5	0.15	0.17	0.03	0.05	0.07	0.07
	(0.05)	(0.08)	(0.09)	(0.01)	(0.02)	(0.02)
	3.07	2.22	0.40	4.57	4.33	3.64
PAR1ETA6	- -	- -	- -	0.07	- -	- -
				(0.02)		
				3.11		
PAR2ETA7	- -	- -	- -	0.07	0.04	- -
				(0.03)	(0.04)	
				2.66	0.93	
PAR3ETA8	0.64	- -	- -	0.07	0.07	0.08
	(0.08)			(0.02)	(0.03)	(0.03)
	7.95			4.04	2.57	3.15
PAR4ETA9	0.51	0.80	- -	0.06	0.06	0.08
	(0.07)	(0.09)		(0.02)	(0.02)	(0.02)
	6.80	9.34		4.12	2.82	3.55
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.67	- -	- -
				(0.06)		
				10.59		
DP3ETA12	- -	- -	- -	0.38	0.56	- -
				(0.06)	(0.07)	
				6.78	8.08	
DP4ETA13	- -	- -	- -	0.18	0.26	0.47
				(0.03)	(0.04)	(0.05)
				5.52	6.15	8.75

	DP4ETA13
TEM1eta1	- -
TEM2eta2	- -
AGG2eta3	- -
AGG3eta4	- -
AGG4eta5	0.05
	(0.03)
	1.54
PAR1ETA6	- -
PAR2ETA7	- -
PAR3ETA8	- -
PAR4ETA9	0.03
	(0.03)
	0.95
DP1ETA10	- -
DP2ETA11	- -
DP3ETA12	- -
DP4ETA13	- -

Largest Eigenvalue of B*B' (Stability Index) is 0.707

Indirect Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.12	0.01	- -	- -	- -	0.17
	(0.02)	(0.00)				(0.10)
	7.07	2.14				1.73
AGG3eta4	0.05	0.09	- -	- -	- -	0.16
	(0.01)	(0.01)				(0.08)
	5.84	6.72				2.15
AGG4eta5	0.03	0.05	0.19	- -	- -	0.10
	(0.01)	(0.01)	(0.03)			(0.05)
	5.10	5.84	5.69			2.00
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	0.05	- -	- -	- -	- -	- -
	(0.01)					
	3.81					
PAR3ETA8	0.04	0.03	- -	- -	- -	0.43
	(0.01)	(0.01)				(0.17)
	4.33	3.96				2.53
PAR4ETA9	0.04	0.03	- -	- -	- -	0.34
	(0.01)	(0.01)				(0.14)
	4.06	4.28				2.48
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	- -	- -	- -	0.09	0.01	- -
				(0.03)	(0.01)	
				3.07	0.88	
AGG3eta4	0.24	- -	- -	0.07	0.09	0.02
	(0.06)			(0.02)	(0.02)	(0.01)
	3.75			4.58	4.16	2.06
AGG4eta5	0.15	0.17	- -	0.05	0.07	0.07
	(0.05)	(0.08)		(0.01)	(0.02)	(0.02)
	3.07	2.22		4.57	4.33	3.64
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	- -	- -	- -	0.07	- -	- -
				(0.03)		
				2.66		
PAR3ETA8	- -	- -	- -	0.07	0.07	- -
				(0.02)	(0.03)	
				4.04	2.57	
PAR4ETA9	0.51	- -	- -	0.06	0.06	0.08
	(0.07)			(0.02)	(0.02)	(0.02)
	6.80			4.12	2.82	3.55

(Indirect Effects of ETA on ETA – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	0.38	- -	- -
				(0.06)		
				6.78		
DP4ETA13	- -	- -	- -	0.18	0.26	- -
				(0.03)	(0.04)	
				5.52	6.15	

	DP4ETA13
TEM1eta1	- -
TEM2eta2	- -
AGG2eta3	- -
AGG3eta4	- -
AGG4eta5	0.00
	(0.00)
	0.37
PAR1ETA6	- -
PAR2ETA7	- -
PAR3ETA8	- -
PAR4ETA9	- -
DP1ETA10	- -
DP2ETA11	- -
DP3ETA12	- -
DP4ETA13	- -

Total Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	1.00	- -	- -	- -	- -	- -
BTMSCALE	0.52	1.00	- -	- -	- -	- -
	(0.06)					
	8.70					
bbecs04	0.12	0.22	1.00	- -	- -	0.17
	(0.02)	(0.02)				(0.10)
	7.07	9.70				1.73
cbecs09	0.05	0.09	0.34	1.00	- -	0.16
	(0.01)	(0.01)	(0.05)			(0.08)
	5.84	6.72	6.70			2.15
DBECdS09	0.03	0.05	0.19	0.57	1.00	0.10
	(0.01)	(0.01)	(0.03)	(0.06)		(0.05)
	5.10	5.84	5.69	9.49		2.00
APRCS02	0.04	- -	- -	- -	- -	1.00
	(0.01)					
	4.55					
bprcs06	0.05	0.04	- -	- -	- -	0.67
	(0.01)	(0.01)				(0.26)
	3.81	4.55				2.59
cprcs06	0.04	0.04	- -	- -	- -	0.43
	(0.01)	(0.01)				(0.17)
	4.33	4.21				2.53

(Total Effects of ETA on Y – continued)

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
DPRCS06	0.04	0.05	- -	- -	- -	0.34
	(0.01)	(0.02)				(0.14)
	4.06	3.12				2.48
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	0.25	- -	- -	0.09	0.12	- -
	(0.11)			(0.03)	(0.04)	
	2.35			3.07	2.74	
cbecs09	0.24	0.25	- -	0.07	0.09	0.09
	(0.06)	(0.09)		(0.02)	(0.02)	(0.03)
	3.75	2.69		4.58	4.16	3.11
DBECdS09	0.15	0.17	0.03	0.05	0.07	0.07
	(0.05)	(0.08)	(0.09)	(0.01)	(0.02)	(0.02)
	3.07	2.22	0.40	4.57	4.33	3.64
APRCS02	- -	- -	- -	0.07	- -	- -
				(0.02)		
				3.11		
bprcs06	1.00	- -	- -	0.07	0.04	- -
				(0.03)	(0.04)	
				2.66	0.93	
cprcs06	0.64	1.00	- -	0.07	0.07	0.08
	(0.08)			(0.02)	(0.03)	(0.03)
	7.95			4.04	2.57	3.15
DPRCS06	0.51	0.80	1.00	0.06	0.06	0.08
	(0.07)	(0.09)		(0.02)	(0.02)	(0.02)
	6.80	9.34		4.12	2.82	3.55
ADPPS01	- -	- -	- -	1.00	- -	- -
bdpps01	- -	- -	- -	0.67	1.00	- -
				(0.06)		
				10.59		
cdpps01	- -	- -	- -	0.38	0.56	1.00
				(0.06)	(0.07)	
				6.78	8.08	
DDPPS01	- -	- -	- -	0.18	0.26	0.47
				(0.03)	(0.04)	(0.05)
				5.52	6.15	8.75

(Total Effects of ETA on Y – continued)

	DP4ETA13
ATMSCALE	- -
BTMSCALE	- -
bbecs04	- -
cbecs09	- -
DBECdS09	0.05
	(0.03)
	1.54
APRCS02	- -
bprcs06	- -
cprcs06	- -
DPRCS06	0.03
	(0.03)
	0.95
ADPPS01	- -
bdpps01	- -
cdpps01	- -
DDPPS01	1.00

Indirect Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	0.52	- -	- -	- -	- -	- -
	(0.06)					
	8.70					
bbecs04	0.12	0.22	- -	- -	- -	0.17
	(0.02)	(0.02)				(0.10)
	7.07	9.70				1.73
cbecs09	0.05	0.09	0.34	- -	- -	0.16
	(0.01)	(0.01)	(0.05)			(0.08)
	5.84	6.72	6.70			2.15
DBECdS09	0.03	0.05	0.19	0.57	- -	0.10
	(0.01)	(0.01)	(0.03)	(0.06)		(0.05)
	5.10	5.84	5.69	9.49		2.00
APRCS02	0.04	- -	- -	- -	- -	- -
	(0.01)					
	4.55					
bprcs06	0.05	0.04	- -	- -	- -	0.67
	(0.01)	(0.01)				(0.26)
	3.81	4.55				2.59
cprcs06	0.04	0.04	- -	- -	- -	0.43
	(0.01)	(0.01)				(0.17)
	4.33	4.21				2.53
DPRCS06	0.04	0.05	- -	- -	- -	0.34
	(0.01)	(0.02)				(0.14)
	4.06	3.12				2.48
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -

(Indirect Effects of ETA on Y – continued)

	PAR2ETA7	**PAR3ETA8**	**PAR4ETA9**	**DP1ETA10**	**DP2ETA11**	**DP3ETA12**
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	0.25	- -	- -	0.09	0.12	- -
	(0.11)			(0.03)	(0.04)	
	2.35			3.07	2.74	
cbecs09	0.24	0.25	- -	0.07	0.09	0.09
	(0.06)	(0.09)		(0.02)	(0.02)	(0.03)
	3.75	2.69		4.58	4.16	3.11
DBECdS09	0.15	0.17	0.03	0.05	0.07	0.07
	(0.05)	(0.08)	(0.09)	(0.01)	(0.02)	(0.02)
	3.07	2.22	0.40	4.57	4.33	3.64
APRCS02	- -	- -	- -	0.07	- -	- -
				(0.02)		
				3.11		
bprcs06	- -	- -	- -	0.07	0.04	- -
				(0.03)	(0.04)	
				2.66	0.93	
cprcs06	0.64	- -	- -	0.07	0.07	0.08
	(0.08)			(0.02)	(0.03)	(0.03)
	7.95			4.04	2.57	3.15
	PAR2ETA7	**PAR3ETA8**	**PAR4ETA9**	**DP1ETA10**	**DP2ETA11**	**DP3ETA12**
DPRCS06	0.51	0.80	- -	0.06	0.06	0.08
	(0.07)	(0.09)		(0.02)	(0.02)	(0.02)
	6.80	9.34		4.12	2.82	3.55
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	0.67	- -	- -
				(0.06)		
				10.59		
cdpps01	- -	- -	- -	0.38	0.56	- -
				(0.06)	(0.07)	
				6.78	8.08	
DDPPS01	- -	- -	- -	0.18	0.26	0.47
				(0.03)	(0.04)	(0.05)
				5.52	6.15	8.75

	DP4ETA13
ATMSCALE	- -
BTMSCALE	- -
bbecs04	- -
cbecs09	- -
DBECdS09	0.05
	(0.03)
	1.54
APRCS02	- -
bprcs06	- -
cprcs06	- -
DPRCS06	0.03
	(0.03)
	0.95

Standardized Total and Indirect Effects

Standardized Total Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.53	- -	- -	- -	- -	- -
AGG2eta3	0.33	0.59	- -	- -	- -	0.05
AGG3eta4	0.18	0.30	0.45	- -	- -	0.07
AGG4eta5	0.12	0.20	0.28	0.63	- -	0.05
PAR1ETA6	0.37	- -	- -	- -	- -	- -
PAR2ETA7	0.20	0.17	- -	- -	- -	0.31
PAR3ETA8	0.18	0.19	- -	- -	- -	0.22
PAR4ETA9	0.19	0.23	- -	- -	- -	0.18
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.17	- -	- -	0.13	0.17	- -
AGG3eta4	0.21	0.20	- -	0.15	0.18	0.19
AGG4eta5	0.15	0.15	0.03	0.11	0.14	0.17
PAR1ETA6	- -	- -	- -	0.32	- -	- -
PAR2ETA7	- -	- -	- -	0.15	0.08	- -
PAR3ETA8	0.71	- -	- -	0.18	0.16	0.21
PAR4ETA9	0.59	0.83	- -	0.16	0.15	0.21
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.69	- -	- -
DP3ETA12	- -	- -	- -	0.35	0.51	- -
DP4ETA13	- -	- -	- -	0.19	0.28	0.54

	DP4ETA13
TEM1eta1	- -
TEM2eta2	- -
AGG2eta3	- -
AGG3eta4	- -
AGG4eta5	0.09
PAR1ETA6	- -
PAR2ETA7	- -
PAR3ETA8	- -
PAR4ETA9	0.07
DP1ETA10	- -
DP2ETA11	- -
DP3ETA12	- -
DP4ETA13	- -

Standardized Indirect Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.33	0.03	- -	- -	- -	0.05
AGG3eta4	0.18	0.30	- -	- -	- -	0.07
AGG4eta5	0.12	0.20	0.28	- -	- -	0.05
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	0.20	- -	- -	- -	- -	- -
PAR3ETA8	0.18	0.12	- -	- -	- -	0.22
PAR4ETA9	0.19	0.16	- -	- -	- -	0.18
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	- -	- -	- -	0.13	0.01	- -
AGG3eta4	0.21	- -	- -	0.15	0.18	0.04
AGG4eta5	0.15	0.15	- -	0.11	0.14	0.17
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	- -	- -	- -	0.15	- -	- -
PAR3ETA8	- -	- -	- -	0.18	0.16	- -
PAR4ETA9	0.59	- -	- -	0.16	0.15	0.21
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	0.35	- -	- -
DP4ETA13	- -	- -	- -	0.19	0.28	- -

	DP4ETA13
TEM1eta1	- -
TEM2eta2	- -
AGG2eta3	- -
AGG3eta4	- -
AGG4eta5	0.00
PAR1ETA6	- -
PAR2ETA7	- -
PAR3ETA8	- -
PAR4ETA9	- -
DP1ETA10	- -
DP2ETA11	- -
DP3ETA12	- -
DP4ETA13	- -

Standardized Total Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	6.53	- -	- -	- -	- -	- -
BTMSCALE	3.38	6.43	- -	- -	- -	- -
bbecs04	0.80	1.44	2.43	- -	- -	0.12
cbecs09	0.34	0.56	0.83	1.86	- -	0.12
DBECdS09	0.20	0.33	0.47	1.06	1.68	0.08
APRCS02	0.28	- -	- -	- -	- -	0.75
bprcs06	0.33	0.28	- -	- -	- -	0.50
cprcs06	0.27	0.28	- -	- -	- -	0.32
DPRCS06	0.27	0.32	- -	- -	- -	0.26
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	0.41	- -	- -	0.32	0.41	- -
cbecs09	0.40	0.36	- -	0.27	0.34	0.35
DBECdS09	0.25	0.25	0.05	0.19	0.24	0.29
APRCS02	- -	- -	- -	0.24	- -	- -
bprcs06	1.65	- -	- -	0.25	0.13	- -
cprcs06	1.05	1.48	- -	0.27	0.24	0.31
DPRCS06	0.84	1.18	1.41	0.23	0.22	0.30
ADPPS01	- -	- -	- -	3.63	- -	- -
bdpps01	- -	- -	- -	2.45	3.56	- -
cdpps01	- -	- -	- -	1.37	1.99	3.91
DDPPS01	- -	- -	- -	0.64	0.93	1.82

	DP4ETA13
ATMSCALE	- -
BTMSCALE	- -
bbecs04	- -
cbecs09	- -
DBECdS09	0.15
APRCS02	- -
bprcs06	- -
cprcs06	- -
DPRCS06	0.10
ADPPS01	- -
bdpps01	- -
cdpps01	- -
DDPPS01	3.36

Standardized Indirect Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	3.38	- -	- -	- -	- -	- -
bbecs04	0.80	1.44	- -	- -	- -	0.12
cbecs09	0.34	0.56	0.83	- -	- -	0.12
DBECdS09	0.20	0.33	0.47	1.06	- -	0.08
APRCS02	0.28	- -	- -	- -	- -	- -
bprcs06	0.33	0.28	- -	- -	- -	0.50
cprcs06	0.27	0.28	- -	- -	- -	0.32
DPRCS06	0.27	0.32	- -	- -	- -	0.26
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	0.41	- -	- -	0.32	0.41	- -
cbecs09	0.40	0.36	- -	0.27	0.34	0.35
DBECdS09	0.25	0.25	0.05	0.19	0.24	0.29
APRCS02	- -	- -	- -	0.24	- -	- -
bprcs06	- -	- -	- -	0.25	0.13	- -
cprcs06	1.05	- -	- -	0.27	0.24	0.31
DPRCS06	0.84	1.18	- -	0.23	0.22	0.30
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	2.45	- -	- -
cdpps01	- -	- -	- -	1.37	1.99	- -
DDPPS01	- -	- -	- -	0.64	0.93	1.82

	DP4ETA13
ATMSCALE	- -
BTMSCALE	- -
bbecs04	- -
cbecs09	- -
DBECdS09	0.15
APRCS02	- -
bprcs06	- -
cprcs06	- -
DPRCS06	0.10
ADPPS01	- -
bdpps01	- -
cdpps01	- -
DDPPS01	- -

Time used: 0.203 Seconds

E.4A: MODEL 4A – INCOME INSTABILITY

```
 DA NI=36 NO=355 MA=CM
 CM (SEE MODEL 1)
 LA
 ATMSCALE BTMSCALE  bbecs04 cbecs09 DBECdS09 APRCS02  bprcs06 cprcs06 DPRCS06
ADPPS01  bdpps01 cdpps01 DDPPS01 C1IN1000  C2IN1000 C3IN1000 C4IN1000 AINLEVEL
BINLEVEL CINLEVEL DINLEVEL AINHSRCa  BINHSRCa CINHSRCa DINHSRCa AINHSRCR  BINHSRCR
CINHSRCR DINHSRCR T2T1PCTD  T3T2PCTD T4T3PCTD WOWC4H10 WOWC3H10  WOWC2H10
WOWC1H10
 SE
 ATMSCALE BTMSCALE  bbecs04 cbecs09 DBECdS09 APRCS02  bprcs06 cprcs06 DPRCS06
ADPPS01 bdpps01  cdpps01 DDPPS01 T2T1PCTD T3T2PCTD  T4T3PCTD /
 MO  NY=16  NE=16 LY=FU,FI BE=FU,FI PS=SY,FI TE=SY,FI
 LE
 TEM1eta1 TEM2eta2 AGG2eta3  AGG3eta4 AGG4eta5 PAR1ETA6 PAR2ETA7 PAR3ETA8
PAR4ETA9
 DP1ETA10 DP2ETA11 DP3ETA12 DP4ETA13 PC2ETA14 PC3ETA15 PC4ETA16
 VA 1.0 LY(1,1) LY(2,2) LY(3,3) LY(4,4) LY(5,5) LY(6,6) LY(7,7) LY(8,8) LY(9,9)
 VA 1.0 LY(10,10) LY(11,11) LY(12,12) LY(13,13) LY(14,14) LY(15,15) LY(16,16)
 FR BE(2,1)
 FR     BE(3,2)          BE(3,7)         BE(3,11)
 FR        BE(4,3)           BE(4,8)         BE(4,12)
 FR            BE(5,4)           BE(5,9)         BE(5,13)
 FR  BE(6,1)                            BE(6,10)
 FR      BE(7,2)     BE(7,6)             BE(7,11)
 FR      BE(8,2)         BE(8,7)             BE(8,12)
 FR      BE(9,2)             BE(9,8)             BE(9,13)
 FR  BE(11,10)           BE(11,14)
 FR      BE(12,11)            BE(12,15)
 FR           BE(13,12)           BE (13,16)
 FR                          BE(15,14)
 FR                              BE(16,15)
 EQ BE(6,1) BE(7,2)
 EQ BE(8,2) BE(9,2)
 FR PS (1,1)
 FR      PS(2,2)
 FR          PS(3,3)
 FR              PS(4,4)
 FR                  PS(5,5)
 FR                      PS(6,6)
 FR                          PS(7,7)
 FR                              PS(8,8)
 FR                                  PS(9,9)
 FR    PS(10,1)                          PS(10,10)
 FR                                          PS(11,11)
 FR                                              PS(12,12)
 FR                                                  PS(13,13)
 FR                                                      PS(14,14)
 FR                                                          PS(15,15)
 FR                                                              PS(16,16)
```

VA 10.6798 TE(1,1)
VA 10.3209 TE(2,2)
VA 2.2081 TE(3,3)
VA 0.9855 TE(4,4)
VA 0.8070 TE(5,5)
VA 1.1417 TE(6,6)
VA 2.1281 TE(7,7)
VA 1.5910 TE(8,8)
VA 1.7461 TE(9,9)
VA 5.1192 TE(10,10)
VA 4.3210 TE(11,11)
VA 4.0873 TE(12,12)
VA 3.3677 TE(13,13)
VA 0.0092 TE(14,14)
VA 0.0099 TE(15,15)
VA 0.0248 TE(16,16)
PD
OU ALL

Number of Input Variables 36
Number of Y - Variables 16
Number of X - Variables 0
Number of ETA - Variables 16
Number of KSI - Variables 0
Number of Observations 355

Covariance Matrix

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	53.40					
BTMSCALE	21.96	51.60				
bbecs04	5.36	9.74	8.18			
cbecs09	0.38	4.28	2.48	4.48		
DBECdS09	0.71	3.31	1.33	2.09	3.67	
APRCS02	2.14	1.39	0.44	0.17	0.24	1.68
bprcs06	0.84	2.84	1.51	0.99	0.21	0.52
cprcs06	1.95	2.93	0.99	1.14	0.63	0.38
DPRCS06	2.32	2.57	1.01	0.88	0.80	0.35
ADPPS01	3.95	4.59	1.74	1.20	1.43	0.98
bdpps01	-0.38	2.37	2.00	1.11	0.80	0.60
cdpps01	-2.29	2.41	1.92	2.01	1.96	0.69
DDPPS01	-0.79	1.74	1.46	1.41	1.27	0.24
T2T1PCTD	0.08	-0.21	-0.10	-0.04	-0.01	- -
T3T2PCTD	-0.09	-0.13	-0.01	0.01	0.03	-0.02
T4T3PCTD	0.01	0.21	0.02	0.14	-0.03	-0.04

(Covariance Matrix - continued)

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	4.84					
cprcs06	1.94	3.79				
DPRCS06	1.52	1.88	3.80			
ADPPS01	1.37	1.39	2.08	18.28		
bdpps01	1.17	0.31	0.80	8.50	17.28	
cdpps01	1.08	1.84	1.80	7.55	6.19	19.46
DDPPS01	1.79	1.49	1.45	6.82	4.07	6.84
T2T1PCTD	0.08	-0.01	- -	0.11	-0.02	-0.06
T3T2PCTD	-0.12	-0.06	0.01	0.03	-0.12	-0.10
T4T3PCTD	0.07	0.02	0.03	-0.10	0.13	0.11

	DDPPS01	T2T1PCTD	T3T2PCTD	T4T3PCTD
DDPPS01	14.64			
T2T1PCTD	-0.04	0.18		
T3T2PCTD	0.01	-0.04	0.20	
T4T3PCTD	-0.01	-0.02	-0.09	0.50

Parameter Specifications

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	0	0	0	0	0	0
TEM2eta2	1	0	0	0	0	0
AGG2eta3	0	2	0	0	0	0
AGG3eta4	0	0	5	0	0	0
AGG4eta5	0	0	0	8	0	0
PAR1ETA6	11	0	0	0	0	0
PAR2ETA7	0	11	0	0	0	13
PAR3ETA8	0	15	0	0	0	0
PAR4ETA9	0	15	0	0	0	0
DP1ETA10	0	0	0	0	0	0
DP2ETA11	0	0	0	0	0	0
DP3ETA12	0	0	0	0	0	0
DP4ETA13	0	0	0	0	0	0
PC2ETA14	0	0	0	0	0	0
PC3ETA15	0	0	0	0	0	0
PC4ETA16	0	0	0	0	0	0

(Beta - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	0	0	0	0	0	0
TEM2eta2	0	0	0	0	0	0
AGG2eta3	3	0	0	0	4	0
AGG3eta4	0	6	0	0	0	7
AGG4eta5	0	0	9	0	0	0
PAR1ETA6	0	0	0	12	0	0
PAR2ETA7	0	0	0	0	14	0
PAR3ETA8	16	0	0	0	0	17
PAR4ETA9	0	18	0	0	0	0
DP1ETA10	0	0	0	0	0	0
DP2ETA11	0	0	0	20	0	0
DP3ETA12	0	0	0	0	22	0
DP4ETA13	0	0	0	0	0	24
PC2ETA14	0	0	0	0	0	0
PC3ETA15	0	0	0	0	0	0
PC4ETA16	0	0	0	0	0	0

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
TEM1eta1	0	0	0	0
TEM2eta2	0	0	0	0
AGG2eta3	0	0	0	0
AGG3eta4	0	0	0	0
AGG4eta5	10	0	0	0
PAR1ETA6	0	0	0	0
PAR2ETA7	0	0	0	0
PAR3ETA8	0	0	0	0
PAR4ETA9	19	0	0	0
DP1ETA10	0	0	0	0
DP2ETA11	0	21	0	0
DP3ETA12	0	0	23	0
DP4ETA13	0	0	0	25
PC2ETA14	0	0	0	0
PC3ETA15	0	26	0	0
PC4ETA16	0	0	27	0

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	28					
TEM2eta2	0	29				
AGG2eta3	0	0	30			
AGG3eta4	0	0	0	31		
AGG4eta5	0	0	0	0	32	
PAR1ETA6	0	0	0	0	0	33
PAR2ETA7	0	0	0	0	0	0
PAR3ETA8	0	0	0	0	0	0
PAR4ETA9	0	0	0	0	0	0
DP1ETA10	37	0	0	0	0	0
DP2ETA11	0	0	0	0	0	0
DP3ETA12	0	0	0	0	0	0
DP4ETA13	0	0	0	0	0	0
PC2ETA14	0	0	0	0	0	0
PC3ETA15	0	0	0	0	0	0
PC4ETA16	0	0	0	0	0	0

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	34					
PAR3ETA8	0	35				
PAR4ETA9	0	0	36			
DP1ETA10	0	0	0	38		
DP2ETA11	0	0	0	0	39	
DP3ETA12	0	0	0	0	0	40
DP4ETA13	0	0	0	0	0	0
PC2ETA14	0	0	0	0	0	0
PC3ETA15	0	0	0	0	0	0
PC4ETA16	0	0	0	0	0	0

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
DP4ETA13	41			
PC2ETA14	0	42		
PC3ETA15	0	0	43	
PC4ETA16	0	0	0	44

Initial Estimates (TSLS)
LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	1.00	- -	- -	- -	- -	- -
BTMSCALE	- -	1.00	- -	- -	- -	- -
bbecs04	- -	- -	1.00	- -	- -	- -
cbecs09	- -	- -	- -	1.00	- -	- -
DBECdS09	- -	- -	- -	- -	1.00	- -
APRCS02	- -	- -	- -	- -	- -	1.00
bprcs06	- -	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -
T4T3PCTD	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -	- -	- -
bprcs06	1.00	- -	- -	- -	- -	- -
cprcs06	- -	1.00	- -	- -	- -	- -
DPRCS06	- -	- -	1.00	- -	- -	- -
ADPPS01	- -	- -	- -	1.00	- -	- -
bdpps01	- -	- -	- -	- -	1.00	- -
cdpps01	- -	- -	- -	- -	- -	1.00
DDPPS01	- -	- -	- -	- -	- -	- -
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -
T4T3PCTD	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
ATMSCALE	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -
bprcs06	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -
DDPPS01	1.00	- -	- -	- -
T2T1PCTD	- -	1.00	- -	- -
T3T2PCTD	- -	- -	1.00	- -
T4T3PCTD	- -	- -	- -	1.00

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.51	- -	- -	- -	- -	- -
AGG2eta3	- -	0.21	- -	- -	- -	- -
AGG3eta4	- -	- -	0.35	- -	- -	- -
AGG4eta5	- -	- -	- -	0.55	- -	- -
PAR1ETA6	0.04	- -	- -	- -	- -	- -
PAR2ETA7	- -	0.04	- -	- -	- -	0.81
PAR3ETA8	- -	0.01	- -	- -	- -	- -
PAR4ETA9	- -	0.01	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.30	- -	- -	- -	0.09	- -
AGG3eta4	- -	0.32	- -	- -	- -	0.05
AGG4eta5	- -	- -	0.13	- -	- -	- -
PAR1ETA6	- -	- -	- -	0.06	- -	- -
PAR2ETA7	- -	- -	- -	- -	0.05	- -
PAR3ETA8	0.67	- -	- -	- -	- -	0.07
PAR4ETA9	- -	0.84	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.65	- -	- -
DP3ETA12	- -	- -	- -	- -	0.48	- -
DP4ETA13	- -	- -	- -	- -	- -	0.45
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
TEM1eta1	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -
AGG2eta3	- -	- -	- -	- -
AGG3eta4	- -	- -	- -	- -
AGG4eta5	0.03	- -	- -	- -
PAR1ETA6	- -	- -	- -	- -
PAR2ETA7	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -
PAR4ETA9	0.02	- -	- -	- -
DP1ETA10	- -	- -	- -	- -
DP2ETA11	- -	-0.54	- -	- -
DP3ETA12	- -	- -	-0.23	- -
DP4ETA13	- -	- -	- -	-0.12
PC2ETA14	- -	- -	- -	- -
PC3ETA15	- -	-0.24	- -	- -
PC4ETA16	- -	- -	-0.47	- -

Covariance Matrix of ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	42.72					
TEM2eta2	21.96	41.28				
AGG2eta3	5.64	9.58	5.90			
AGG3eta4	2.70	4.08	2.45	3.45		
AGG4eta5	1.78	2.59	1.51	2.07	2.84	
PAR1ETA6	2.02	1.04	0.42	0.28	0.20	0.53
PAR2ETA7	2.67	2.62	1.46	1.13	0.85	0.50
PAR3ETA8	2.12	2.26	1.14	1.14	0.89	0.37
PAR4ETA9	2.04	2.38	1.07	1.01	0.85	0.32
DP1ETA10	3.95	2.03	1.56	1.11	0.80	0.97
DP2ETA11	2.57	1.32	1.78	1.31	0.95	0.63
DP3ETA12	1.22	0.63	0.85	1.51	1.20	0.30
DP4ETA13	0.54	0.28	0.38	0.67	0.77	0.13
PC2ETA14	- -	- -	-0.01	-0.01	0.00	- -
PC3ETA15	- -	- -	0.00	0.00	0.00	- -
PC4ETA16	- -	- -	0.00	0.00	0.00	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	2.69					
PAR3ETA8	1.86	2.08				
PAR4ETA9	1.60	1.79	1.98			
DP1ETA10	1.26	1.15	1.02	13.16		
DP2ETA11	1.16	1.22	1.09	8.56	13.04	
DP3ETA12	0.55	1.44	1.34	4.07	6.19	15.36
DP4ETA13	0.25	0.64	0.74	1.81	2.76	6.85
PC2ETA14	0.00	-0.01	0.00	- -	-0.09	-0.03
PC3ETA15	0.00	0.00	0.00	- -	0.02	-0.03
PC4ETA16	0.00	0.00	0.00	- -	-0.01	0.02

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
DP4ETA13	11.28			
PC2ETA14	-0.02	0.17		
PC3ETA15	0.00	-0.04	0.19	
PC4ETA16	-0.05	0.02	-0.09	0.48

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	42.72					
TEM2eta2	- -	29.99				
AGG2eta3	- -	- -	3.29			
AGG3eta4	- -	- -	- -	2.17		
AGG4eta5	- -	- -	- -	- -	1.56	
PAR1ETA6	- -	- -	- -	- -	- -	0.38
PAR2ETA7	- -	- -	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -	- -	- -
PAR4ETA9	- -	- -	- -	- -	- -	- -
DP1ETA10	3.95	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	2.12					
PAR3ETA8	- -	0.72				
PAR4ETA9	- -	- -	0.44			
DP1ETA10	- -	- -	- -	13.16		
DP2ETA11	- -	- -	- -	- -	7.42	
DP3ETA12	- -	- -	- -	- -	- -	12.40
DP4ETA13	- -	- -	- -	- -	- -	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
DP4ETA13	8.22			
PC2ETA14	- -	0.17		
PC3ETA15	- -	- -	0.18	
PC4ETA16	- -	- -	- -	0.44

Squared Multiple Correlations for Structural Equations

TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
- -	0.27	0.44	0.37	0.45	0.27

PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
0.21	0.66	0.78	- -	0.43	0.19

DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
0.27	- -	0.05	0.09

THETA-EPS

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
10.68	10.32	2.21	0.99	0.81	1.14

bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
2.13	1.59	1.75	5.12	4.32	4.09

DDPPS01	T2T1PCTD	T3T2PCTD	T4T3PCTD
3.37	0.01	0.01	0.02

Behavior under Minimization Iterations

ITER	TRY	ABSCISA	SLOPE	FUNCTION
1	0	0.00000000D+00	-0.21781791D-01	0.25432571D+00
	1	0.10000000D+01	0.44675235D-03	0.24367221D+00
2	0	0.00000000D+00	-0.69903534D-03	0.24367221D+00
	1	0.10000000D+01	-0.53551598D-04	0.24329469D+00
3	0	0.00000000D+00	-0.20313489D-04	0.24329469D+00
	1	0.10000000D+01	-0.70059182D-07	0.24328450D+00
4	0	0.00000000D+00	-0.52610726D-06	0.24328450D+00
	1	0.10000000D+01	-0.57011873D-07	0.24328421D+00
	2	0.20000000D+01	0.41234323D-06	0.24328439D+00
	3	0.11214685D+01	-0.13871023D-10	0.24328420D+00
5	0	0.00000000D+00	-0.16508657D-07	0.24328420D+00
	1	0.11214685D+01	0.16102855D-08	0.24328420D+00
6	0	0.00000000D+00	-0.37984227D-09	0.24328420D+00
	1	0.11214685D+01	0.46122407D-10	0.24328420D+00
	2	0.10000387D+01	0.71466619D-16	0.24328420D+00
7	0	0.00000000D+00	-0.46746532D-11	0.24328420D+00
	1	0.10000387D+01	-0.20959964D-12	0.24328420D+00

Number of Iterations = 7

LISREL Estimates (Maximum Likelihood)
LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	1.00	- -	- -	- -	- -	- -
BTMSCALE	- -	1.00	- -	- -	- -	- -
bbecs04	- -	- -	1.00	- -	- -	- -
cbecs09	- -	- -	- -	1.00	- -	- -
DBECdS09	- -	- -	- -	- -	1.00	- -
APRCS02	- -	- -	- -	- -	- -	1.00
bprcs06	- -	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -
T4T3PCTD	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -	- -	- -
bprcs06	1.00	- -	- -	- -	- -	- -
cprcs06	- -	1.00	- -	- -	- -	- -
DPRCS06	- -	- -	1.00	- -	- -	- -
ADPPS01	- -	- -	- -	1.00	- -	- -
bdpps01	- -	- -	- -	- -	1.00	- -
cdpps01	- -	- -	- -	- -	- -	1.00
DDPPS01	- -	- -	- -	- -	- -	- -
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -
T4T3PCTD	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
ATMSCALE	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -
bprcs06	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -
DDPPS01	1.00	- -	- -	- -
T2T1PCTD	- -	1.00	- -	- -
T3T2PCTD	- -	- -	1.00	- -
T4T3PCTD	- -	- -	- -	1.00

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.52 (0.06) 8.70	- -	- -	- -	- -	- -
AGG2eta3	- -	0.21 (0.02) 8.89	- -	- -	- -	- -
AGG3eta4	- -	- -	0.34 (0.05) 6.69	- -	- -	- -
AGG4eta5	- -	- -	- -	0.57 (0.06) 9.49	- -	- -
PAR1ETA6	0.04 (0.01) 4.54	- -	- -	- -	- -	- -
PAR2ETA7	- -	0.04 (0.01) 4.54	- -	- -	- -	0.68 (0.26) 2.60
PAR3ETA8	- -	0.02 (0.01) 1.66	- -	- -	- -	- -
PAR4ETA9	- -	0.02 (0.01) 1.66	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

(BETA - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.25	- -	- -	- -	0.11	- -
	(0.11)				(0.04)	
	2.35				2.57	
AGG3eta4	- -	0.25	- -	- -	- -	0.07
		(0.09)				(0.03)
		2.69				2.32
AGG4eta5	- -	- -	0.03	- -	- -	- -
			(0.09)			
			0.39			
PAR1ETA6	- -	- -	- -	0.07	- -	- -
				(0.02)		
				3.12		
PAR2ETA7	- -	- -	- -	- -	0.03	- -
					(0.04)	
					0.89	
PAR3ETA8	0.64	- -	- -	- -	- -	0.08
	(0.08)					(0.03)
	7.95					3.15
PAR4ETA9	- -	0.80	- -	- -	- -	- -
		(0.09)				
		9.34				
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.68	- -	- -
				(0.06)		
				10.67		
DP3ETA12	- -	- -	- -	- -	0.56	- -
					(0.07)	
					8.11	
DP4ETA13	- -	- -	- -	- -	- -	0.47
						(0.05)
						8.77
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

(BETA - continued)

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
TEM1eta1	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -
AGG2eta3	- -	- -	- -	- -
AGG3eta4	- -	- -	- -	- -
AGG4eta5	0.05	- -	- -	- -
	(0.03)			
	1.50			
PAR1ETA6	- -	- -	- -	- -
PAR2ETA7	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -
PAR4ETA9	0.03	- -	- -	- -
	(0.03)			
	0.95			
DP1ETA10	- -	- -	- -	- -
DP2ETA11	- -	-0.50	- -	- -
		(0.46)		
		-1.09		
DP3ETA12	- -	- -	-0.26	- -
			(0.50)	
			-0.51	
DP4ETA13	- -	- -	- -	-0.13
				(0.27)
				-0.50
PC2ETA14	- -	- -	- -	- -
PC3ETA15	- -	-0.23	- -	- -
		(0.06)		
		-4.01		
PC4ETA16	- -	- -	-0.47	- -
			(0.08)	
			-5.55	

Covariance Matrix of ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	42.64					
TEM2eta2	22.10	41.33				
AGG2eta3	5.55	9.55	5.92			
AGG3eta4	2.47	3.87	2.35	3.44		
AGG4eta5	1.50	2.31	1.40	2.03	2.82	
PAR1ETA6	2.05	1.06	0.41	0.25	0.16	0.56
PAR2ETA7	2.41	2.52	1.31	0.93	0.59	0.45
PAR3ETA8	1.99	2.32	1.07	1.01	0.67	0.33
PAR4ETA9	1.95	2.51	1.02	0.89	0.62	0.29
DP1ETA10	3.39	1.76	1.60	1.17	0.80	1.01
DP2ETA11	2.30	1.19	1.86	1.42	1.00	0.69
DP3ETA12	1.29	0.67	1.04	1.80	1.40	0.38
DP4ETA13	0.60	0.31	0.49	0.84	1.02	0.18
PC2ETA14	- -	- -	-0.01	-0.01	-0.01	- -
PC3ETA15	- -	- -	0.00	0.00	0.00	- -
PC4ETA16	- -	- -	0.00	0.00	0.00	- -

(Covariance Matrix of ETA - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	2.71					
PAR3ETA8	1.82	2.18				
PAR4ETA9	1.49	1.80	2.00			
DP1ETA10	1.07	1.11	0.98	13.20		
DP2ETA11	0.95	1.20	1.07	8.96	12.75	
DP3ETA12	0.53	1.57	1.47	5.02	7.13	15.30
DP4ETA13	0.25	0.73	0.92	2.34	3.33	7.15
PC2ETA14	0.00	0.00	0.00	- -	-0.09	-0.04
PC3ETA15	0.00	0.00	0.00	- -	0.02	-0.04
PC4ETA16	0.00	0.00	0.00	- -	-0.01	0.02

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
DP4ETA13	11.27			
PC2ETA14	-0.02	0.17		
PC3ETA15	-0.01	-0.04	0.19	
PC4ETA16	-0.06	0.02	-0.09	0.48

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	42.64					
	(4.01)					
	10.65					
TEM2eta2	- -	29.88				
		(3.21)				
		9.31				
AGG2eta3	- -	- -	3.36			
			(0.45)			
			7.40			
AGG3eta4	- -	- -	- -	2.27		
				(0.26)		
				8.62		
AGG4eta5	- -	- -	- -	- -	1.59	
					(0.20)	
					7.83	
PAR1ETA6	- -	- -	- -	- -	- -	0.41
						(0.11)
						3.57
PAR2ETA7	- -	- -	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -	- -	- -
PAR4ETA9	- -	- -	- -	- -	- -	- -
DP1ETA10	3.39	- -	- -	- -	- -	- -
	(1.62)					
	2.10					
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

(PSI - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	2.27 (0.35) 6.53					
PAR3ETA8	- -	0.86 (0.22) 3.97				
PAR4ETA9	- -	- -	0.50 (0.22) 2.26			
DP1ETA10	- -	- -	- -	13.20 (1.38) 9.59		
DP2ETA11	- -	- -	- -	- -	6.62 (0.98) 6.78	
DP3ETA12	- -	- -	- -	- -	- -	11.30 (1.23) 9.17
DP4ETA13	- -	- -	- -	- -	- -	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
DP4ETA13	7.92 (0.91) 8.70			
PC2ETA14	- -	0.17 (0.01) 12.57		
PC3ETA15	- -	- -	0.18 (0.01) 12.57	
PC4ETA16	- -	- -	- -	0.44 (0.03) 12.66

Squared Multiple Correlations for Structural Equations

TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
- -	0.28	0.43	0.34	0.43	0.27

PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
0.16	0.61	0.75	- -	0.48	0.26

DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
0.30	- -	0.05	0.09

THETA-EPS

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
10.68	10.32	2.21	0.99	0.81	1.14
bprcs06	**cprcs06**	**DPRCS06**	**ADPPS01**	**bdpps01**	**cdpps01**
2.13	1.59	1.75	5.12	4.32	4.09
DDPPS01	**T2T1PCTD**	**T3T2PCTD**	**T4T3PCTD**		
3.37	0.01	0.01	0.02		

Squared Multiple Correlations for Y - Variables

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
0.80	0.80	0.73	0.78	0.78	0.33
bprcs06	**cprcs06**	**DPRCS06**	**ADPPS01**	**bdpps01**	**cdpps01**
0.56	0.58	0.53	0.72	0.75	0.79
DDPPS01	**T2T1PCTD**	**T3T2PCTD**	**T4T3PCTD**		
0.77	0.94	0.95	0.96		

Goodness of Fit Statistics

Degrees of Freedom = 92
Minimum Fit Function Chi-Square = 172.25 (P = 0.00)
Normal Theory Weighted Least Squares Chi-Square = 164.31 (P = 0.00)
Estimated Non-centrality Parameter (NCP) = 72.31
90 Percent Confidence Interval for NCP = (40.39 ; 112.07)

Minimum Fit Function Value = 0.49
Population Discrepancy Function Value (F0) = 0.20
90 Percent Confidence Interval for F0 = (0.11 ; 0.32)
Root Mean Square Error of Approximation (RMSEA) = 0.047
90 Percent Confidence Interval for RMSEA = (0.035 ; 0.059)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.64

Expected Cross-Validation Index (ECVI) = 0.71
90 Percent Confidence Interval for ECVI = (0.62 ; 0.83)
ECVI for Saturated Model = 0.77
ECVI for Independence Model = 4.39

Chi-Square for Independence Model with 120 Degrees of Freedom = 1521.74
Independence AIC = 1553.74
Model AIC = 252.31
Saturated AIC = 272.00
Independence CAIC = 1631.69
Model CAIC = 466.68
Saturated CAIC = 934.61

Normed Fit Index (NFI) = 0.89

Non-Normed Fit Index (NNFI) = 0.93
Parsimony Normed Fit Index (PNFI) = 0.68
Comparative Fit Index (CFI) = 0.94
Incremental Fit Index (IFI) = 0.94
Relative Fit Index (RFI) = 0.85

Critical N (CN) = 260.91

Root Mean Square Residual (RMR) = 0.79
Standardized RMR = 0.055
Goodness of Fit Index (GFI) = 0.95
Adjusted Goodness of Fit Index (AGFI) = 0.92
Parsimony Goodness of Fit Index (PGFI) = 0.64

Fitted Covariance Matrix

	ATMSCALE	**BTMSCALE**	**bbecs04**	**cbecs09**	**DBECdS09**	**APRCS02**
ATMSCALE	53.32					
BTMSCALE	22.10	51.65				
bbecs04	5.55	9.55	8.13			
cbecs09	2.47	3.87	2.35	4.43		
DBECdS09	1.50	2.31	1.40	2.03	3.63	
APRCS02	2.05	1.06	0.41	0.25	0.16	1.70
bprcs06	2.41	2.52	1.31	0.93	0.59	0.45
cprcs06	1.99	2.32	1.07	1.01	0.67	0.33
DPRCS06	1.95	2.51	1.02	0.89	0.62	0.29
ADPPS01	3.39	1.76	1.60	1.17	0.80	1.01
bdpps01	2.30	1.19	1.86	1.42	1.00	0.69
cdpps01	1.29	0.67	1.04	1.80	1.40	0.38
DDPPS01	0.60	0.31	0.49	0.84	1.02	0.18
T2T1PCTD	- -	- -	-0.01	-0.01	-0.01	- -
T3T2PCTD	- -	- -	0.00	0.00	0.00	- -
T4T3PCTD	- -	- -	0.00	0.00	0.00	- -

	bprcs06	**cprcs06**	**DPRCS06**	**ADPPS01**	**bdpps01**	**cdpps01**
bprcs06	4.84					
cprcs06	1.82	3.77				
DPRCS06	1.49	1.80	3.75			
ADPPS01	1.07	1.11	0.98	18.32		
bdpps01	0.95	1.20	1.07	8.96	17.07	
cdpps01	0.53	1.57	1.47	5.02	7.13	19.39
DDPPS01	0.25	0.73	0.92	2.34	3.33	7.15
T2T1PCTD	0.00	0.00	0.00	- -	-0.09	-0.04
T3T2PCTD	0.00	0.00	0.00	- -	0.02	-0.04
T4T3PCTD	0.00	0.00	0.00	- -	-0.01	0.02

	DDPPS01	**T2T1PCTD**	**T3T2PCTD**	**T4T3PCTD**
DDPPS01	14.64			
T2T1PCTD	-0.02	0.18		
T3T2PCTD	-0.01	-0.04	0.20	
T4T3PCTD	-0.06	0.02	-0.09	0.50

Fitted Residuals

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	0.08					
BTMSCALE	-0.14	-0.05				
bbecs04	-0.19	0.19	0.05			
cbecs09	-2.09	0.41	0.13	0.05		
DBECdS09	-0.79	1.00	-0.07	0.06	0.04	
APRCS02	0.09	0.33	0.03	-0.08	0.08	-0.02
bprcs06	-1.57	0.32	0.20	0.06	-0.38	0.07
cprcs06	-0.04	0.61	-0.08	0.13	-0.04	0.05
DPRCS06	0.37	0.06	-0.01	-0.01	0.18	0.06
ADPPS01	0.56	2.83	0.14	0.03	0.63	-0.03
bdpps01	-2.68	1.18	0.14	-0.31	-0.20	-0.09
cdpps01	-3.58	1.74	0.88	0.21	0.56	0.31
DDPPS01	-1.39	1.43	0.97	0.57	0.25	0.06
T2T1PCTD	0.08	-0.21	-0.09	-0.03	0.00	- -
T3T2PCTD	-0.09	-0.13	-0.01	0.01	0.03	-0.02
T4T3PCTD	0.01	0.21	0.02	0.14	-0.03	-0.04

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	0.00					
cprcs06	0.12	0.02				
DPRCS06	0.03	0.08	0.05			
ADPPS01	0.30	0.28	1.10	-0.04		
bdpps01	0.22	-0.89	-0.27	-0.46	0.21	
cdpps01	0.55	0.27	0.33	2.53	-0.94	0.07
DDPPS01	1.54	0.76	0.53	4.48	0.74	-0.31
T2T1PCTD	0.08	-0.01	0.00	0.11	0.07	-0.02
T3T2PCTD	-0.12	-0.06	0.01	0.03	-0.14	-0.06
T4T3PCTD	0.07	0.02	0.03	-0.10	0.14	0.09

	DDPPS01	T2T1PCTD	T3T2PCTD	T4T3PCTD
DDPPS01	0.00			
T2T1PCTD	-0.02	0.00		
T3T2PCTD	0.02	0.00	0.00	
T4T3PCTD	0.05	-0.04	0.00	0.00

Summary Statistics for Fitted Residuals

Smallest Fitted Residual = -3.58
Median Fitted Residual = 0.03
Largest Fitted Residual = 4.48

Stemleaf Plot

```
- 3|6
- 3|
- 2|7
- 2|1
- 1|6
- 1|4
```

- 0|9985
- 0|4333222111111111111100000000000000000000000000000000000000000000
  0|11111111111111111111111112222222233333334 4
  0|5566666789
  1|00124
  1|57
  2|
  2|58
  3|
  3|
  4|
  4|5

Standardized Residuals

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	0.54					
BTMSCALE	-0.42	-0.31				
bbecs04	-0.25	0.89	0.83			
cbecs09	-2.99	0.74	1.43	1.46		
DBECdS09	-1.17	1.65	-0.35	1.85	2.24	
APRCS02	0.34	0.76	0.16	-0.58	0.63	-1.01
bprcs06	-2.58	0.49	1.28	0.36	-2.26	0.87
cprcs06	-0.07	1.08	-0.42	1.31	-0.36	0.44
DPRCS06	0.61	0.20	-0.05	-0.08	1.87	0.54
ADPPS01	1.34	2.03	0.28	0.08	1.57	-0.40
bdpps01	-2.31	0.80	0.46	-0.89	-0.55	-0.43
cdpps01	-2.26	1.06	1.51	1.04	1.84	1.09
DDPPS01	-0.96	0.98	1.75	1.57	1.43	0.23
T2T1PCTD	0.49	-1.30	-1.42	-0.70	-0.11	- -
T3T2PCTD	-0.52	-0.76	-0.18	0.25	0.71	-0.64
T4T3PCTD	0.04	0.78	0.20	1.76	-0.39	-0.82

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	-0.03					
cprcs06	1.64	0.32				
DPRCS06	0.24	1.52	2.14			
ADPPS01	0.86	0.78	2.89	-1.09		
bdpps01	1.14	-3.11	-0.82	-3.66	3.02	
cdpps01	1.22	1.19	1.11	3.95	-4.66	1.69
DDPPS01	3.58	2.22	2.82	5.94	1.19	-3.03
T2T1PCTD	1.68	-0.12	0.10	1.14	1.33	-0.25
T3T2PCTD	-2.31	-1.26	0.27	0.29	-1.45	-1.44
T4T3PCTD	0.85	0.26	0.42	-0.62	0.90	0.58

	DDPPS01	T2T1PCTD	T3T2PCTD	T4T3PCTD
DDPPS01	0.08			
T2T1PCTD	-0.24	- -		
T3T2PCTD	0.20	-2.98	- -	
T4T3PCTD	0.78	-2.60	-2.47	- -

Summary Statistics for Standardized Residuals

Smallest Standardized Residual = -4.66
Median Standardized Residual = 0.29
Largest Standardized Residual = 5.94

Stemleaf Plot

```
- 4|7
- 3|71000
- 2|6653333
- 1|544332100
- 0|988876666544444443322211110000000
  0|111222222333333344455555666778888899999
  1|0011111122233333445556667777 8899
  2|012289
  3|069
  4|
  5|9
```

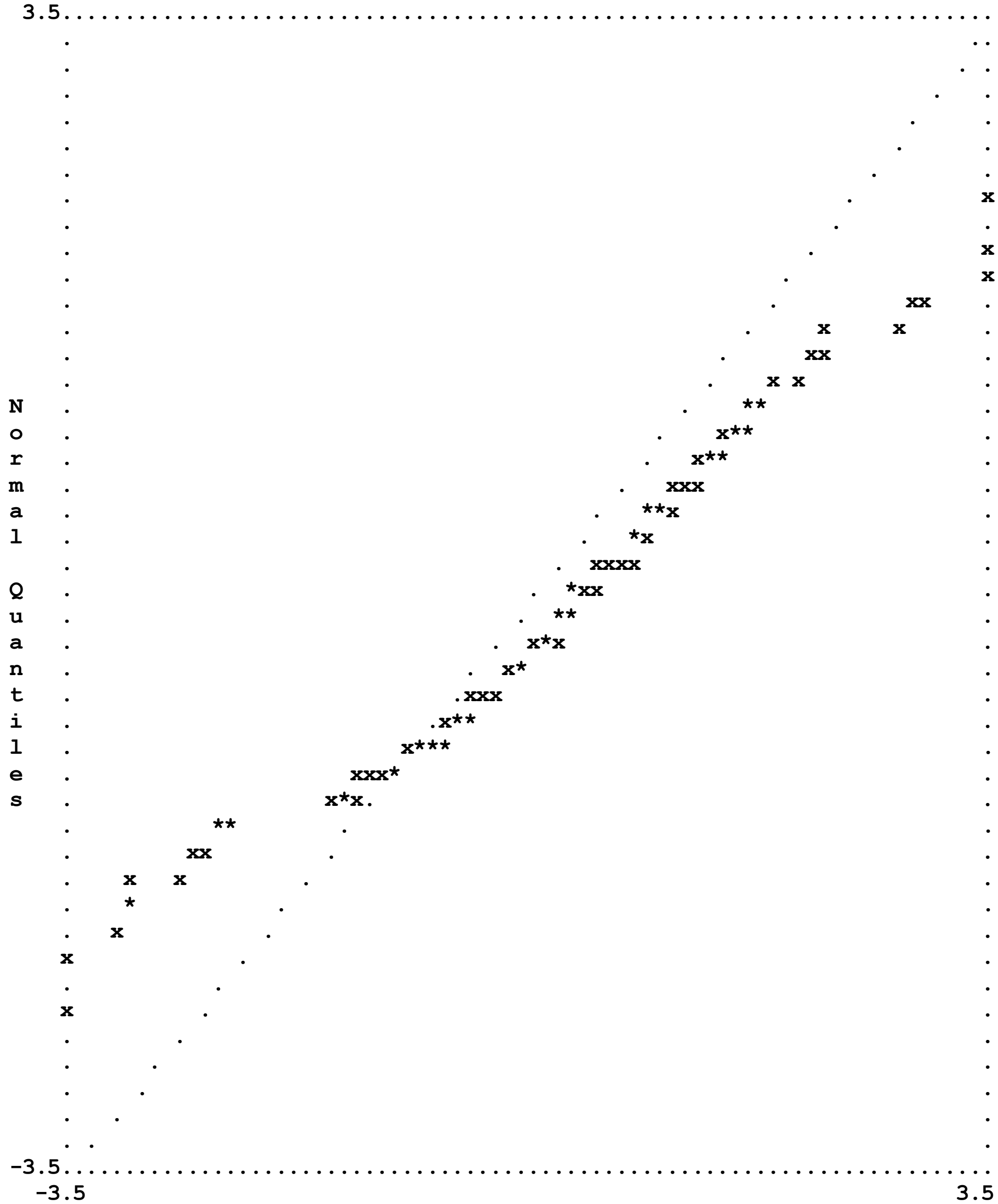
Largest Negative Standardized Residuals

Residual for	**cbecs09**	and	**ATMSCALE**	**-2.99**
Residual for	**bprcs06**	and	**ATMSCALE**	**-2.58**
Residual for	**bdpps01**	and	**cprcs06**	**-3.11**
Residual for	**bdpps01**	and	**ADPPS01**	**-3.66**
Residual for	**cdpps01**	and	**bdpps01**	**-4.66**
Residual for	**DDPPS01**	and	**cdpps01**	**-3.03**
Residual for	**T3T2PCTD**	and	**T2T1PCTD**	**-2.98**
Residual for	**T4T3PCTD**	and	**T2T1PCTD**	**-2.60**

Largest Positive Standardized Residuals

Residual for	**ADPPS01**	and	**DPRCS06**	**2.89**
Residual for	**bdpps01**	and	**bdpps01**	**3.02**
Residual for	**cdpps01**	and	**ADPPS01**	**3.95**
Residual for	**DDPPS01**	and	**bprcs06**	**3.58**
Residual for	**DDPPS01**	and	**DPRCS06**	**2.82**
Residual for	**DDPPS01**	and	**ADPPS01**	**5.94**

Qplot of Standardized Residuals



Modification Indices and Expected Change
Modification Indices for LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.03	1.90	1.53	11.20	5.76	1.72
BTMSCALE	0.04	0.03	2.52	4.15	5.78	2.38
bbecs04	0.91	0.03	- -	0.21	0.54	0.08
cbecs09	5.91	0.39	0.30	- -	0.25	3.90
DBECdS09	0.20	1.19	0.30	- -	- -	0.32
APRCS02	0.37	0.18	0.04	0.01	0.49	0.03
bprcs06	6.15	0.04	0.94	0.00	3.23	0.19
cprcs06	0.75	0.40	0.25	0.30	0.02	0.00
DPRCS06	1.93	0.51	0.14	0.04	1.67	1.35
ADPPS01	5.50	2.91	0.20	1.19	4.31	1.43
bdpps01	2.24	0.52	0.56	2.68	3.58	3.36
cdpps01	1.61	0.05	0.53	0.30	1.46	0.33
DDPPS01	0.01	0.40	2.64	2.29	0.28	3.18
T2T1PCTD	0.00	2.18	2.14	0.59	0.04	0.20
T3T2PCTD	0.37	0.63	0.24	0.26	0.44	1.19
T4T3PCTD	0.01	0.33	0.27	2.61	0.04	0.57

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	4.42	2.45	1.17	3.76	10.28	13.34
BTMSCALE	2.20	2.50	1.40	4.38	4.41	2.59
bbecs04	1.43	0.15	0.06	0.28	0.55	1.42
cbecs09	1.77	5.99	0.00	1.67	0.55	1.87
DBECdS09	10.97	5.99	- -	0.79	0.02	1.87
APRCS02	0.80	0.40	0.17	0.68	0.05	0.68
bprcs06	0.03	1.11	0.47	0.59	5.02	1.98
cprcs06	0.70	0.43	0.47	1.68	5.69	0.21
DPRCS06	0.12	6.00	0.43	3.19	0.33	0.16
ADPPS01	1.38	7.55	12.48	- -	0.37	22.91
bdpps01	4.04	15.12	14.08	18.95	- -	26.73
cdpps01	0.00	0.19	0.13	0.67	2.70	- -
DDPPS01	12.68	7.97	6.54	20.38	7.41	1.94
T2T1PCTD	0.43	0.01	0.02	1.27	0.56	0.26
T3T2PCTD	2.60	1.24	0.37	0.00	0.79	0.65
T4T3PCTD	0.07	0.14	0.25	0.09	0.22	0.26

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
ATMSCALE	6.12	1.11	0.00	0.03
BTMSCALE	0.79	1.14	0.55	0.58
bbecs04	0.62	1.49	0.14	0.51
cbecs09	0.10	0.18	0.12	4.47
DBECdS09	- -	0.11	0.66	2.26
APRCS02	0.30	0.15	0.09	0.81
bprcs06	7.17	4.12	4.96	0.69
cprcs06	0.19	0.38	0.57	0.11
DPRCS06	- -	0.00	1.85	0.00
ADPPS01	36.29	1.14	1.80	1.34
bdpps01	5.95	0.86	3.34	1.25
cdpps01	7.59	0.12	0.88	0.03
DDPPS01	- -	0.08	0.16	1.62
T2T1PCTD	0.11	- -	3.31	6.33
T3T2PCTD	0.03	7.07	- -	6.44
T4T3PCTD	0.46	6.82	0.33	- -

Expected Change for LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.09	-0.39	-0.28	-0.76	-0.57	-1.83
BTMSCALE	0.03	-0.09	0.66	0.47	0.55	1.21
bbecs04	0.03	-0.01	- -	0.07	-0.08	0.09
cbecs09	-0.04	-0.01	0.05	- -	0.10	-0.40
DBECdS09	0.01	0.02	-0.03	- -	- -	0.11
APRCS02	0.01	0.01	0.01	0.00	0.03	-0.09
bprcs06	-0.05	0.00	0.07	0.00	-0.13	-0.15
cprcs06	0.01	0.01	-0.02	0.04	-0.01	0.00
DPRCS06	0.02	-0.02	-0.02	-0.01	0.09	0.24
ADPPS01	0.11	0.06	0.04	0.13	0.27	0.79
bdpps01	-0.05	-0.02	-0.08	-0.19	-0.24	-0.77
cdpps01	-0.04	0.01	0.07	0.09	0.19	0.24
DDPPS01	0.00	0.02	0.14	0.18	0.09	0.66
T2T1PCTD	0.00	-0.01	-0.02	-0.01	0.00	0.02
T3T2PCTD	0.00	0.00	-0.01	0.01	0.01	-0.05
T4T3PCTD	0.00	0.00	0.01	0.03	0.00	-0.05

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	-0.65	-0.50	-0.37	-0.42	-0.49	-0.38
BTMSCALE	0.47	0.56	0.49	0.23	0.23	0.15
bbecs04	0.61	-0.09	-0.05	-0.03	0.09	0.06
cbecs09	0.19	1.16	0.00	-0.04	-0.03	-0.08
DBECdS09	-0.39	-0.66	- -	0.03	0.00	0.05
APRCS02	0.08	0.05	0.03	-0.08	0.01	0.02
bprcs06	0.09	0.31	0.15	0.03	0.12	0.05
cprcs06	0.17	1.18	0.23	-0.04	-0.08	-0.02
DPRCS06	-0.06	19.72	-1.18	0.05	0.02	0.01
ADPPS01	0.19	0.47	0.64	- -	0.25	0.34
bdpps01	-0.37	-0.72	-0.71	-0.87	- -	-0.51
cdpps01	0.01	0.09	0.08	0.07	-0.24	- -
DDPPS01	0.49	0.45	0.48	0.29	0.20	-0.88
T2T1PCTD	0.01	0.00	0.00	0.01	0.01	0.00
T3T2PCTD	-0.03	-0.02	-0.01	0.00	-0.01	-0.01
T4T3PCTD	0.01	0.01	0.02	0.00	0.01	0.01

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
ATMSCALE	-0.29	0.90	-0.05	-0.09
BTMSCALE	0.10	-0.84	-0.55	0.35
bbecs04	0.04	-0.38	0.11	-0.13
cbecs09	0.01	-0.09	0.07	0.28
DBECdS09	- -	0.07	0.16	-0.19
APRCS02	-0.01	-0.06	-0.05	-0.09
bprcs06	0.10	0.52	-0.54	0.13
cprcs06	0.02	-0.13	-0.15	-0.04
DPRCS06	- -	0.00	0.28	0.00
ADPPS01	0.42	0.59	0.62	-0.33
bdpps01	-0.17	0.87	-0.83	0.30
cdpps01	-0.46	-0.17	-0.83	0.06
DDPPS01	- -	-0.13	0.18	2.99
T2T1PCTD	0.00	- -	-1.64	-0.09
T3T2PCTD	0.00	-0.52	- -	-0.41
T4T3PCTD	0.01	-0.24	1.97	- -

Standardized Expected Change for LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.61	-2.53	-0.69	-1.40	-0.96	-1.37
BTMSCALE	0.17	-0.60	1.60	0.88	0.93	0.91
bbecs04	0.17	-0.08	- -	0.13	-0.14	0.07
cbecs09	-0.27	-0.08	0.13	- -	0.17	-0.30
DBECdS09	0.05	0.12	-0.07	- -	- -	0.08
APRCS02	0.07	0.03	0.02	0.01	0.05	-0.07
bprcs06	-0.35	-0.03	0.17	-0.01	-0.23	-0.11
cprcs06	0.09	0.06	-0.06	0.07	-0.02	0.00
DPRCS06	0.16	-0.13	-0.05	-0.02	0.16	0.18
ADPPS01	0.74	0.41	0.11	0.25	0.46	0.59
bdpps01	-0.31	-0.14	-0.19	-0.36	-0.40	-0.58
cdpps01	-0.28	0.05	0.17	0.17	0.32	0.18
DDPPS01	0.02	0.13	0.34	0.33	0.15	0.49
T2T1PCTD	0.00	-0.04	-0.04	-0.02	-0.01	0.01
T3T2PCTD	-0.02	-0.02	-0.01	0.01	0.02	-0.04
T4T3PCTD	0.00	0.02	0.02	0.06	0.01	-0.04

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	-1.07	-0.73	-0.52	-1.51	-1.74	-1.51
BTMSCALE	0.78	0.83	0.69	0.82	0.83	0.58
bbecs04	1.00	-0.13	-0.07	-0.12	0.31	0.22
cbecs09	0.32	1.71	-0.01	-0.15	-0.09	-0.32
DBECdS09	-0.64	-0.97	- -	0.09	0.02	0.18
APRCS02	0.12	0.07	0.04	-0.28	0.03	0.07
bprcs06	0.15	0.46	0.22	0.12	0.44	0.21
cprcs06	0.28	1.74	0.32	-0.14	-0.27	-0.08
DPRCS06	-0.09	29.13	-1.66	0.19	0.06	0.06
ADPPS01	0.32	0.69	0.90	- -	0.88	1.32
bdpps01	-0.62	-1.06	-1.00	-3.15	- -	-2.00
cdpps01	0.02	0.13	0.11	0.27	-0.85	- -
DDPPS01	0.81	0.67	0.67	1.06	0.71	-3.44
T2T1PCTD	0.02	0.00	0.00	0.03	0.03	-0.01
T3T2PCTD	-0.04	-0.03	-0.02	0.00	-0.02	-0.03
T4T3PCTD	0.01	0.02	0.02	-0.01	0.02	0.02

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
ATMSCALE	-0.98	0.37	-0.02	-0.06
BTMSCALE	0.32	-0.34	-0.24	0.24
bbecs04	0.12	-0.16	0.05	-0.09
cbecs09	0.05	-0.04	0.03	0.19
DBECdS09	- -	0.03	0.07	-0.13
APRCS02	-0.04	-0.03	-0.02	-0.06
bprcs06	0.34	0.21	-0.23	0.09
cprcs06	0.06	-0.05	-0.07	-0.03
DPRCS06	- -	0.00	0.12	0.00
ADPPS01	1.41	0.24	0.27	-0.23
bdpps01	-0.59	0.36	-0.36	0.20
cdpps01	-1.55	-0.07	-0.36	0.04
DDPPS01	- -	-0.05	0.08	2.07
T2T1PCTD	-0.01	- -	-0.72	-0.06
T3T2PCTD	0.00	-0.21	- -	-0.29
T4T3PCTD	0.05	-0.10	0.86	- -

Modification Indices for BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	3.76	1.14	7.85	2.33	0.03
TEM2eta2	- -	- -	2.02	7.96	6.30	2.19
AGG2eta3	0.06	- -	- -	0.21	0.51	0.37
AGG3eta4	5.75	0.03	- -	- -	0.25	3.22
AGG4eta5	0.20	1.19	0.30	- -	- -	0.32
PAR1ETA6	0.03	0.29	0.10	0.05	0.03	0.03
PAR2ETA7	2.42	0.03	0.12	0.23	4.31	- -
PAR3ETA8	2.33	0.43	0.88	0.23	1.21	0.35
PAR4ETA9	1.98	0.43	0.15	0.04	1.67	1.39
DP1ETA10	- -	3.76	0.86	0.47	2.36	0.03
DP2ETA11	5.46	0.15	0.01	1.23	2.23	1.40
DP3ETA12	1.74	0.49	2.34	3.92	4.85	2.51
DP4ETA13	0.05	0.49	2.47	2.26	0.39	3.61
PC2ETA14	0.10	1.59	1.81	0.54	0.07	0.52
PC3ETA15	0.32	1.02	0.49	0.00	0.35	0.87
PC4ETA16	0.01	0.31	0.23	2.49	0.03	0.65

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	3.76	1.13	0.50	- -	5.47	5.20
TEM2eta2	2.08	2.40	1.50	3.76	4.10	5.91
AGG2eta3	- -	0.15	0.06	1.37	- -	1.42
AGG3eta4	1.43	- -	0.00	0.68	0.55	- -
AGG4eta5	10.97	5.99	- -	0.79	0.02	1.87
PAR1ETA6	0.91	0.72	0.40	- -	0.05	1.91
PAR2ETA7	0.03	1.15	1.08	0.68	- -	2.77
PAR3ETA8	- -	0.43	0.43	0.00	5.02	- -
PAR4ETA9	0.25	- -	0.43	3.30	0.33	0.21
DP1ETA10	2.57	3.62	8.04	- -	1.53	28.02
DP2ETA11	0.93	11.48	11.52	- -	- -	23.74
DP3ETA12	3.70	5.63	4.42	23.67	- -	- -
DP4ETA13	11.36	7.61	6.53	22.48	7.81	- -
PC2ETA14	1.24	0.12	0.03	1.31	1.31	0.03
PC3ETA15	3.17	1.71	0.67	0.00	1.11	1.47
PC4ETA16	0.03	0.09	0.20	0.17	0.17	0.26

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
TEM1eta1	2.15	0.03	0.37	0.02
TEM2eta2	3.54	3.24	0.23	0.74
AGG2eta3	0.84	1.88	0.63	0.02
AGG3eta4	0.10	0.06	0.81	1.77
AGG4eta5	- -	0.11	0.66	2.26
PAR1ETA6	0.53	0.02	1.01	0.30
PAR2ETA7	10.43	1.65	2.98	0.60
PAR3ETA8	0.26	0.42	0.24	0.00
PAR4ETA9	- -	0.00	1.92	0.00
DP1ETA10	38.08	1.24	0.01	0.13
DP2ETA11	9.78	- -	3.31	1.85
DP3ETA12	7.69	0.48	- -	0.14
DP4ETA13	- -	0.06	0.33	- -
PC2ETA14	0.04	- -	- -	6.79
PC3ETA15	0.00	- -	- -	6.79
PC4ETA16	0.46	6.79	- -	- -

Expected Change for BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	-1.17	-0.36	-0.82	-0.44	-0.41
TEM2eta2	- -	- -	0.56	0.83	0.70	1.28
AGG2eta3	-0.01	- -	- -	0.07	-0.09	-0.20
AGG3eta4	-0.04	0.00	- -	- -	0.10	-0.40
AGG4eta5	0.01	0.02	-0.03	- -	- -	0.11
PAR1ETA6	0.00	0.01	0.01	0.01	0.01	-0.09
PAR2ETA7	-0.04	0.00	0.04	0.06	-0.25	- -
PAR3ETA8	0.03	0.01	-0.05	0.04	0.10	0.13
PAR4ETA9	0.02	-0.01	-0.02	-0.01	0.09	0.24
DP1ETA10	- -	0.09	0.15	0.12	0.26	1.60
DP2ETA11	-0.08	-0.01	0.01	-0.16	-0.22	-0.53
DP3ETA12	-0.05	0.03	0.16	0.40	0.45	0.73
DP4ETA13	0.01	0.02	0.14	0.18	0.10	0.70
PC2ETA14	0.00	0.00	-0.01	-0.01	0.00	0.03
PC3ETA15	0.00	0.00	-0.01	0.00	0.01	-0.04
PC4ETA16	0.00	0.00	0.01	0.03	0.00	-0.06

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	-0.95	-0.50	-0.36	- -	-0.48	-0.28
TEM2eta2	0.45	0.56	0.54	0.22	0.22	0.24
AGG2eta3	- -	-0.09	-0.05	-0.08	- -	0.06
AGG3eta4	-0.21	- -	0.00	-0.03	-0.03	- -
AGG4eta5	-0.39	-0.66	- -	0.03	0.00	0.05
PAR1ETA6	0.08	0.07	0.05	- -	0.01	0.03
PAR2ETA7	0.09	0.34	0.28	0.05	- -	0.07
PAR3ETA8	- -	1.18	0.24	0.00	-0.08	- -
PAR4ETA9	-0.08	- -	-1.18	0.05	0.02	0.02
DP1ETA10	0.52	0.56	0.82	- -	0.81	0.70
DP2ETA11	-0.21	-0.75	-0.76	- -	- -	-0.49
DP3ETA12	0.33	0.55	0.54	0.57	- -	- -
DP4ETA13	0.47	0.44	0.48	0.31	0.21	- -
PC2ETA14	0.02	0.01	0.00	0.01	0.01	0.00
PC3ETA15	-0.03	-0.02	-0.02	0.00	-0.01	-0.01
PC4ETA16	0.00	0.01	0.01	0.00	0.00	0.01

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
TEM1eta1	-0.19	0.16	-0.55	0.09
TEM2eta2	0.22	-1.54	-0.39	0.43
AGG2eta3	0.04	-0.44	0.24	-0.03
AGG3eta4	0.01	-0.06	0.21	0.19
AGG4eta5	- -	0.07	0.16	-0.19
PAR1ETA6	0.02	0.02	-0.15	-0.05
PAR2ETA7	0.12	0.34	-0.43	0.12
PAR3ETA8	0.02	-0.13	0.10	-0.01
PAR4ETA9	- -	0.00	0.29	0.00
DP1ETA10	0.60	0.63	-0.06	-0.11
DP2ETA11	-0.26	- -	-0.83	0.37
DP3ETA12	-0.52	-0.38	- -	0.12
DP4ETA13	- -	-0.11	0.27	- -
PC2ETA14	0.00	- -	- -	-0.09
PC3ETA15	0.00	- -	- -	-0.43
PC4ETA16	0.01	-0.24	- -	- -

Standardized Expected Change for BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	-0.03	-0.02	-0.07	-0.04	-0.08
TEM2eta2	- -	- -	0.04	0.07	0.07	0.27
AGG2eta3	0.00	- -	- -	0.02	-0.02	-0.11
AGG3eta4	0.00	0.00	- -	- -	0.03	-0.29
AGG4eta5	0.00	0.00	-0.01	- -	- -	0.09
PAR1ETA6	0.00	0.00	0.01	0.01	0.01	-0.17
PAR2ETA7	0.00	0.00	0.01	0.02	-0.09	- -
PAR3ETA8	0.00	0.00	-0.01	0.01	0.04	0.12
PAR4ETA9	0.00	0.00	-0.01	-0.01	0.04	0.23
DP1ETA10	- -	0.00	0.02	0.02	0.04	0.59
DP2ETA11	0.00	0.00	0.00	-0.02	-0.04	-0.20
DP3ETA12	0.00	0.00	0.02	0.05	0.07	0.25
DP4ETA13	0.00	0.00	0.02	0.03	0.02	0.28
PC2ETA14	0.00	0.00	-0.01	-0.01	-0.01	0.10
PC3ETA15	0.00	0.00	-0.01	0.00	0.01	-0.13
PC4ETA16	0.00	0.00	0.00	0.03	0.00	-0.11

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	-0.09	-0.05	-0.04	- -	-0.02	-0.01
TEM2eta2	0.04	0.06	0.06	0.01	0.01	0.01
AGG2eta3	- -	-0.02	-0.01	-0.01	- -	0.01
AGG3eta4	-0.07	- -	0.00	0.00	0.00	- -
AGG4eta5	-0.14	-0.27	- -	0.00	0.00	0.01
PAR1ETA6	0.07	0.06	0.05	- -	0.00	0.01
PAR2ETA7	0.03	0.14	0.12	0.01	- -	0.01
PAR3ETA8	- -	0.54	0.11	0.00	-0.01	- -
PAR4ETA9	-0.04	- -	-0.59	0.01	0.00	0.00
DP1ETA10	0.09	0.10	0.16	- -	0.06	0.05
DP2ETA11	-0.04	-0.14	-0.15	- -	- -	-0.04
DP3ETA12	0.05	0.09	0.10	0.04	- -	- -
DP4ETA13	0.08	0.09	0.10	0.03	0.02	- -
PC2ETA14	0.03	0.01	0.01	0.01	0.01	0.00
PC3ETA15	-0.04	-0.04	-0.03	0.00	-0.01	-0.01
PC4ETA16	0.00	0.01	0.01	0.00	0.00	0.00

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
TEM1eta1	-0.01	0.06	-0.19	0.02
TEM2eta2	0.01	-0.58	-0.14	0.10
AGG2eta3	0.01	-0.44	0.23	-0.02
AGG3eta4	0.00	-0.08	0.26	0.15
AGG4eta5	- -	0.10	0.23	-0.16
PAR1ETA6	0.01	0.08	-0.46	-0.10
PAR2ETA7	0.02	0.50	-0.59	0.11
PAR3ETA8	0.00	-0.22	0.15	-0.01
PAR4ETA9	- -	0.00	0.46	0.00
DP1ETA10	0.05	0.42	-0.04	-0.05
DP2ETA11	-0.02	- -	-0.53	0.15
DP3ETA12	-0.04	-0.24	- -	0.05
DP4ETA13	- -	-0.08	0.18	- -
PC2ETA14	0.00	- -	- -	-0.33
PC3ETA15	0.00	- -	- -	-1.42
PC4ETA16	0.01	-0.84	- -	- -

Modification Indices for PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -					
TEM2eta2	3.76	- -				
AGG2eta3	0.01	0.06	- -			
AGG3eta4	5.24	3.99	0.07	- -		
AGG4eta5	0.11	1.03	1.60	0.19	- -	
PAR1ETA6	0.03	0.35	0.02	0.08	0.01	- -
PAR2ETA7	2.59	0.95	0.37	0.04	14.19	0.87
PAR3ETA8	2.35	0.36	0.90	1.37	1.13	0.08
PAR4ETA9	1.30	3.14	0.05	0.02	4.47	0.22
DP1ETA10	- -	3.76	1.27	0.22	0.68	0.03
DP2ETA11	5.46	0.99	0.91	0.03	0.54	0.06
DP3ETA12	2.96	3.05	1.50	0.66	2.20	2.03
DP4ETA13	0.14	0.54	0.19	0.14	2.20	0.00
PC2ETA14	0.03	3.24	1.88	0.06	0.11	0.02
PC3ETA15	0.34	0.81	0.26	0.75	0.82	0.99
PC4ETA16	0.00	0.57	0.01	2.81	1.77	0.78

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	- -					
PAR3ETA8	0.03	- -				
PAR4ETA9	0.98	0.12	- -			
DP1ETA10	1.14	0.05	2.68	- -		
DP2ETA11	0.35	11.53	1.28	5.46	- -	
DP3ETA12	2.55	5.20	0.03	27.09	24.84	- -
DP4ETA13	8.98	0.25	0.21	22.76	1.81	7.58
PC2ETA14	1.65	0.42	0.00	1.24	- -	0.48
PC3ETA15	2.21	0.13	2.03	0.02	3.31	0.48
PC4ETA16	0.08	0.01	0.17	0.17	0.78	0.14

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
DP4ETA13	- -			
PC2ETA14	0.06	- -		
PC3ETA15	0.29	- -	- -	
PC4ETA16	0.33	6.79	6.79	- -

Expected Change for PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -					
TEM2eta2	-35.05	- -				
AGG2eta3	-0.14	0.39	- -			
AGG3eta4	-1.78	1.63	0.10	- -		
AGG4eta5	0.21	0.61	-0.31	0.15	- -	
PAR1ETA6	-0.17	0.25	-0.03	-0.04	-0.01	- -
PAR2ETA7	-1.74	0.76	0.68	-0.07	-0.97	0.21
PAR3ETA8	1.11	-0.48	-0.21	0.27	0.21	-0.03
PAR4ETA9	0.84	-1.46	-0.05	-0.02	0.36	-0.05
DP1ETA10	- -	2.79	-1.02	-0.21	0.31	0.65
DP2ETA11	-3.22	1.20	0.65	-0.08	-0.24	0.06
DP3ETA12	-2.63	2.39	0.64	0.65	0.64	0.36
DP4ETA13	-0.49	0.87	0.19	0.13	-0.85	0.00
PC2ETA14	0.03	-0.26	-0.08	-0.01	0.01	0.00
PC3ETA15	-0.10	-0.13	0.03	0.04	0.03	-0.03
PC4ETA16	-0.01	0.18	0.01	0.11	-0.08	-0.04

(Expected Change for PSI - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	- -					
PAR3ETA8	-0.09	- -				
PAR4ETA9	-0.34	0.08	- -			
DP1ETA10	0.83	-0.09	0.64	- -		
DP2ETA11	-0.37	-1.18	-0.37	12.52	- -	
DP3ETA12	0.71	1.62	0.07	7.90	-5.71	- -
DP4ETA13	1.10	0.15	-0.28	4.06	-1.01	-4.09
PC2ETA14	0.06	-0.02	0.00	0.11	- -	-0.07
PC3ETA15	-0.07	0.01	0.05	0.01	-0.15	-0.30
PC4ETA16	0.02	0.00	0.02	-0.06	0.11	0.05

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
DP4ETA13	- -			
PC2ETA14	-0.02	- -		
PC3ETA15	0.05	- -	- -	
PC4ETA16	0.25	-0.04	-0.19	- -

Standardized Expected Change for PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -					
TEM2eta2	-0.83	- -				
AGG2eta3	-0.01	0.02	- -			
AGG3eta4	-0.15	0.14	0.02	- -		
AGG4eta5	0.02	0.06	-0.07	0.05	- -	
PAR1ETA6	-0.03	0.05	-0.02	-0.03	-0.01	- -
PAR2ETA7	-0.16	0.07	0.17	-0.02	-0.35	0.17
PAR3ETA8	0.12	-0.05	-0.06	0.10	0.08	-0.03
PAR4ETA9	0.09	-0.16	-0.01	-0.01	0.15	-0.05
DP1ETA10	- -	0.12	-0.12	-0.03	0.05	0.24
DP2ETA11	-0.14	0.05	0.07	-0.01	-0.04	0.02
DP3ETA12	-0.10	0.10	0.07	0.09	0.10	0.12
DP4ETA13	-0.02	0.04	0.02	0.02	-0.15	0.00
PC2ETA14	0.01	-0.10	-0.07	-0.01	0.02	0.01
PC3ETA15	-0.03	-0.05	0.03	0.05	0.05	-0.09
PC4ETA16	0.00	0.04	0.01	0.09	-0.07	-0.07

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	- -					
PAR3ETA8	-0.04	- -				
PAR4ETA9	-0.15	0.04	- -			
DP1ETA10	0.14	-0.02	0.12	- -		
DP2ETA11	-0.06	-0.22	-0.07	0.97	- -	
DP3ETA12	0.11	0.28	0.01	0.56	-0.41	- -
DP4ETA13	0.20	0.03	-0.06	0.33	-0.08	-0.31
PC2ETA14	0.08	-0.04	0.00	0.07	- -	-0.04
PC3ETA15	-0.10	0.02	0.09	0.01	-0.10	-0.17
PC4ETA16	0.02	0.00	0.02	-0.02	0.05	0.02

(Standardized Expected Change for PSI - continued)

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
DP4ETA13	- -			
PC2ETA14	-0.01	- -		
PC3ETA15	0.03	- -	- -	
PC4ETA16	0.11	-0.14	-0.62	- -

Modification Indices for THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	1.42					
BTMSCALE	0.20	0.13				
bbecs04	1.09	0.51	0.07			
cbecs09	5.17	0.06	1.21	0.19		
DBECdS09	0.04	2.59	1.38	0.19	- -	
APRCS02	0.16	0.08	0.01	0.64	0.99	0.87
bprcs06	7.46	0.52	2.11	1.05	8.09	0.80
cprcs06	0.57	0.30	1.39	1.85	0.47	0.00
DPRCS06	2.60	1.68	0.01	1.58	4.47	0.07
ADPPS01	1.74	0.99	0.79	0.79	1.40	0.37
bdpps01	1.22	0.19	0.05	0.05	0.83	0.00
cdpps01	4.44	0.19	1.06	0.92	1.76	2.15
DDPPS01	0.63	0.00	0.14	0.85	2.89	1.78
T2T1PCTD	0.83	1.47	1.27	0.12	0.23	0.20
T3T2PCTD	0.00	0.60	0.00	0.85	0.27	0.44
T4T3PCTD	0.05	0.33	0.39	5.53	1.82	1.15

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	0.24					
cprcs06	1.14	0.51				
DPRCS06	0.37	0.16	4.47			
ADPPS01	0.42	0.08	4.54	1.19		
bdpps01	2.60	5.52	0.97	12.82	23.57	
cdpps01	0.69	0.36	0.03	3.00	7.86	3.18
DDPPS01	7.64	0.44	0.53	18.35	0.31	8.99
T2T1PCTD	2.83	0.85	0.06	2.10	0.09	0.32
T3T2PCTD	2.87	1.05	2.17	1.98	2.39	0.76
T4T3PCTD	0.06	0.32	0.20	0.47	0.39	0.00

	DDPPS01	T2T1PCTD	T3T2PCTD	T4T3PCTD
DDPPS01	2.80			
T2T1PCTD	0.07	3.31		
T3T2PCTD	0.13	8.50	6.71	
T4T3PCTD	0.77	6.52	6.03	0.33

Expected Change for THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	15.25					
BTMSCALE	-1.62	-2.57				
bbecs04	0.86	-0.89	-0.30			
cbecs09	-1.32	0.14	0.31	-0.27		
DBECdS09	-0.11	0.82	-0.24	0.15	- -	
APRCS02	0.23	0.11	-0.02	-0.09	0.11	-0.32
bprcs06	-1.89	0.51	0.45	0.18	-0.48	0.14
cprcs06	0.42	0.28	-0.25	0.22	-0.10	0.00
DPRCS06	0.92	-0.87	-0.03	-0.20	0.36	-0.03
ADPPS01	2.10	1.14	-0.41	-0.29	0.37	-0.20
bdpps01	-1.29	0.49	0.12	0.06	-0.26	-0.01
cdpps01	-2.66	0.51	0.49	-0.41	0.43	0.36
DDPPS01	-0.94	-0.04	0.16	0.31	-0.98	-0.30
T2T1PCTD	0.13	-0.16	-0.06	-0.01	0.02	-0.01
T3T2PCTD	0.00	-0.10	0.00	0.03	0.02	-0.02
T4T3PCTD	-0.05	0.12	-0.05	0.14	-0.08	-0.05

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	-0.37					
cprcs06	0.25	-0.20				
DPRCS06	-0.12	0.09	-10.83			
ADPPS01	-0.25	0.09	0.68	-4.68		
bdpps01	0.64	-0.68	-0.29	-4.53	9.32	
cdpps01	-0.33	0.23	0.06	1.27	-2.43	4.79
DDPPS01	0.98	0.21	-0.44	2.85	-0.34	-3.97
T2T1PCTD	0.07	-0.03	0.01	0.13	0.04	-0.05
T3T2PCTD	-0.07	-0.04	0.05	0.11	-0.12	-0.12
T4T3PCTD	0.02	-0.03	0.03	-0.09	0.08	0.00

	DDPPS01	T2T1PCTD	T3T2PCTD	T4T3PCTD
DDPPS01	17.97			
T2T1PCTD	-0.02	-1.28		
T3T2PCTD	0.03	-0.09	-0.39	
T4T3PCTD	0.35	-0.04	-0.17	1.83

Maximum Modification Index is 38.08 for Element (10,13) of BETA

Covariance Matrix of Parameter Estimates

	BE 2_1	BE 3_2	BE 3_7	BE 3_11	BE 4_3	BE 4_8
BE 2_1	0.00					
BE 3_2	0.00	0.00				
BE 3_7	0.00	0.00	0.01			
BE 3_11	0.00	0.00	0.00	0.00		
BE 4_3	0.00	0.00	0.00	0.00	0.00	
BE 4_8	0.00	0.00	0.00	0.00	0.00	0.01
BE 4_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 5_4	0.00	0.00	0.00	0.00	0.00	0.00
BE 5_9	0.00	0.00	0.00	0.00	0.00	0.00
BE 5_13	0.00	0.00	0.00	0.00	0.00	0.00
BE 6_1	0.00	0.00	0.00	0.00	0.00	0.00
BE 6_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 7_6	0.00	0.00	0.00	0.00	0.00	0.00
BE 7_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_2	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_7	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 9_8	0.00	0.00	0.00	0.00	0.00	0.00
BE 9_13	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_16	0.00	0.00	0.00	0.00	0.00	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	-0.04	0.00	0.00	0.00	0.00	0.00
PS 2_2	-0.03	-0.01	0.01	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00

(Covariance Matrix of Parameter Estimates – continued)

	BE 4_12	BE 5_4	BE 5_9	BE 5_13	BE 6_1	BE 6_10
BE 4_12	0.00					
BE 5_4	0.00	0.00				
BE 5_9	0.00	0.00	0.01			
BE 5_13	0.00	0.00	0.00	0.00		
BE 6_1	0.00	0.00	0.00	0.00	0.00	
BE 6_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 7_6	0.00	0.00	0.00	0.00	0.00	0.00
BE 7_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_2	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_7	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 9_8	0.00	0.00	0.00	0.00	0.00	0.00
BE 9_13	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_16	0.00	0.00	0.00	0.00	0.00	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 2_2	0.00	0.00	0.00	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00

(Covariance Matrix of Parameter Estimates - continued)

	BE 7_6	BE 7_11	BE 8_2	BE 8_7	BE 8_12	BE 9_8
BE 7_6	0.07					
BE 7_11	0.00	0.00				
BE 8_2	0.00	0.00	0.00			
BE 8_7	0.00	0.00	0.00	0.01		
BE 8_12	0.00	0.00	0.00	0.00	0.00	
BE 9_8	0.00	0.00	0.00	0.00	0.00	0.01
BE 9_13	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_16	0.00	0.00	0.00	0.00	0.00	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	0.01	0.00	0.00	0.00	0.00	0.00
PS 2_2	0.01	0.00	0.00	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	-0.01	0.00	0.00	0.00	0.00	0.00
PS 7_7	-0.02	0.00	0.00	-0.01	0.00	0.00
PS 8_8	0.00	0.00	0.00	-0.01	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	-0.01
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00

	BE 9_13	BE 11_10	BE 11_14	BE 12_11	BE 12_15	BE 13_12
BE 9_13	0.00					
BE 11_10	0.00	0.00				
BE 11_14	0.00	0.00	0.22			
BE 12_11	0.00	0.00	0.00	0.00		
BE 12_15	0.00	0.00	0.01	0.00	0.25	
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_16	0.00	0.00	0.00	0.00	0.01	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00

(Covariance Matrix of Parameter Estimates - continued)

	BE 9_13	**BE 11_10**	**BE 11_14**	**BE 12_11**	**BE 12_15**	**BE 13_12**
PS 1_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 2_2	0.00	0.00	0.00	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	-0.03	0.00	0.00	0.00	0.00
PS 11_11	0.00	-0.02	0.00	-0.01	0.00	0.00
PS 12_12	0.00	0.00	0.00	-0.01	0.00	-0.01
PS 13_13	0.00	0.00	0.00	0.00	0.00	-0.01
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00

	BE 13_16	**BE 15_14**	**BE 16_15**	**PS 1_1**	**PS 2_2**	**PS 3_3**
BE 13_16	0.07					
BE 15_14	0.00	0.00				
BE 16_15	0.00	0.00	0.01			
PS 1_1	0.00	0.00	0.00	16.04		
PS 2_2	0.00	0.00	0.00	0.18	10.29	
PS 3_3	0.00	0.00	0.00	0.00	0.01	0.21
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	-0.01	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	1.02	0.02	0.00
PS 10_10	0.00	0.00	0.00	0.07	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00

(Covariance Matrix of Parameter Estimates - continued)

	PS 4_4	PS 5_5	PS 6_6	PS 7_7	PS 8_8	PS 9_9
PS 4_4	0.07					
PS 5_5	0.00	0.04				
PS 6_6	0.00	0.00	0.01			
PS 7_7	0.00	0.00	0.00	0.12		
PS 8_8	0.00	0.00	0.00	0.01	0.05	
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.05
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00

	PS 10_1	PS 10_10	PS 11_11	PS 12_12	PS 13_13	PS 14_14
PS 10_1	2.62					
PS 10_10	0.36	1.89				
PS 11_11	0.02	0.07	0.95			
PS 12_12	0.00	0.00	0.00	1.52		
PS 13_13	0.00	0.00	0.00	0.01	0.83	
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00

	PS 15_15	PS 16_16
PS 15_15	0.00	
PS 16_16	0.00	0.00

Correlation Matrix of Parameter Estimates

	BE 2_1	BE 3_2	BE 3_7	BE 3_11	BE 4_3	BE 4_8
BE 2_1	1.00					
BE 3_2	-0.06	1.00				
BE 3_7	-0.01	-0.30	1.00			
BE 3_11	-0.01	0.00	-0.20	1.00		
BE 4_3	0.00	-0.09	0.00	-0.02	1.00	
BE 4_8	0.00	0.03	-0.13	0.02	-0.36	1.00
BE 4_12	0.00	0.00	0.05	-0.10	-0.01	-0.30
BE 5_4	0.00	0.00	0.00	0.00	-0.08	0.03
BE 5_9	0.00	0.00	0.00	0.00	0.03	-0.15
BE 5_13	0.00	0.00	0.00	0.00	0.01	0.04
BE 6_1	0.01	-0.02	-0.05	0.01	-0.01	0.00
BE 6_10	0.00	0.00	0.01	0.00	0.00	0.00
BE 7_6	-0.02	-0.02	0.01	0.00	0.00	0.00
BE 7_11	0.01	0.02	-0.04	-0.05	0.00	0.00
BE 8_2	-0.02	0.07	-0.05	0.00	-0.01	-0.01
BE 8_7	0.00	-0.01	0.07	0.00	-0.01	-0.06
BE 8_12	0.00	0.00	0.00	0.05	0.01	-0.02

(Correlation Matrix of Parameter Estimates – continued)

	BE 2_1	BE 3_2	BE 3_7	BE 3_11	BE 4_3	BE 4_8
BE 9_8	0.00	-0.01	0.01	0.00	0.01	0.07
BE 9_13	0.00	0.00	0.00	0.00	0.00	-0.01
BE 11_10	0.00	0.00	0.00	-0.03	0.00	0.00
BE 11_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	0.02	-0.01	0.00
BE 12_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_16	0.00	0.00	0.00	0.00	0.00	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	-0.16	0.00	0.00	0.00	0.00	0.00
PS 2_2	-0.15	-0.15	0.02	0.01	0.00	0.00
PS 3_3	0.01	-0.12	-0.06	-0.03	-0.16	0.06
PS 4_4	0.00	0.01	0.00	0.01	-0.12	-0.04
PS 5_5	0.00	0.00	0.00	0.00	0.02	-0.01
PS 6_6	0.01	0.01	0.00	0.00	0.00	0.00
PS 7_7	0.01	0.03	-0.10	0.02	0.01	0.00
PS 8_8	0.00	0.00	0.01	-0.01	0.03	-0.07
PS 9_9	0.00	0.00	-0.01	0.00	-0.01	0.01
PS 10_1	-0.02	0.00	0.00	-0.01	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.01	-0.04	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.01	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00

	BE 4_12	BE 5_4	BE 5_9	BE 5_13	BE 6_1	BE 6_10
BE 4_12	1.00					
BE 5_4	-0.02	1.00				
BE 5_9	0.03	-0.42	1.00			
BE 5_13	-0.11	-0.07	-0.19	1.00		
BE 6_1	0.00	0.00	0.00	0.00	1.00	
BE 6_10	0.00	0.00	0.00	0.00	-0.13	1.00
BE 7_6	0.00	0.00	0.00	0.00	-0.30	-0.02
BE 7_11	0.00	0.00	0.00	0.00	0.11	-0.20
BE 8_2	0.00	0.00	0.00	0.00	-0.16	0.02
BE 8_7	0.02	0.00	0.00	0.00	-0.01	0.00
BE 8_12	-0.08	0.00	0.00	0.00	0.00	0.00
BE 9_8	-0.01	0.00	-0.02	0.00	0.02	0.00
BE 9_13	0.05	0.00	-0.01	-0.01	0.00	0.00
BE 11_10	0.00	0.00	0.00	0.00	0.00	0.05
BE 11_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	-0.02	0.00	0.00	0.00	0.00	0.00
BE 12_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.02	0.00	0.00	-0.02	0.00	0.00
BE 13_16	0.00	0.00	0.00	0.00	0.00	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00

(Correlation Matrix of Parameter Estimates – continued)

	BE 4_12	BE 5_4	BE 5_9	BE 5_13	BE 6_1	BE 6_10
PS 1_1	0.00	0.00	0.00	0.00	-0.06	0.00
PS 2_2	0.00	0.00	0.00	0.00	-0.01	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	-0.01	-0.21	0.09	0.02	0.00	0.00
PS 5_5	0.01	-0.22	0.07	-0.01	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.05	-0.06
PS 7_7	0.00	0.00	0.00	0.00	0.07	0.01
PS 8_8	0.02	0.00	0.00	0.00	0.00	0.00
PS 9_9	-0.01	0.00	0.00	0.00	-0.01	0.00
PS 10_1	0.00	0.00	0.00	0.00	-0.05	-0.05
PS 10_10	0.00	0.00	0.00	0.00	0.00	-0.09
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	-0.04	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	-0.03	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00

	BE 7_6	BE 7_11	BE 8_2	BE 8_7	BE 8_12	BE 9_8
BE 7_6	1.00					
BE 7_11	-0.41	1.00				
BE 8_2	-0.03	0.02	1.00			
BE 8_7	-0.09	-0.01	-0.23	1.00		
BE 8_12	0.02	-0.20	0.02	-0.10	1.00	
BE 9_8	0.01	-0.01	-0.22	-0.21	-0.06	1.00
BE 9_13	0.00	0.01	0.03	0.05	-0.24	-0.20
BE 11_10	0.00	-0.02	0.00	0.00	0.00	0.00
BE 11_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	-0.01	-0.02	0.00
BE 12_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.02	0.00
BE 13_16	0.00	0.00	0.00	0.00	0.00	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	0.01	0.00	0.01	0.00	0.00	0.00
PS 2_2	0.01	0.00	-0.04	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	-0.30	0.14	0.03	0.00	0.00	0.00
PS 7_7	-0.24	0.10	0.14	-0.41	0.05	-0.02
PS 8_8	0.04	0.02	0.16	-0.38	0.01	-0.23
PS 9_9	0.00	0.00	0.06	0.08	0.03	-0.37
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.01	-0.01	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.01	0.00	0.01	-0.05	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00

(Correlation Matrix of Parameter Estimates – continued)

	BE 9_13	BE 11_10	BE 11_14	BE 12_11	BE 12_15	BE 13_12
BE 9_13	1.00					
BE 11_10	0.00	1.00				
BE 11_14	0.00	0.00	1.00			
BE 12_11	0.00	-0.11	0.01	1.00		
BE 12_15	0.00	0.00	0.04	-0.02	1.00	
BE 13_12	-0.02	0.00	0.00	-0.07	0.00	1.00
BE 13_16	0.00	0.00	0.00	0.00	0.04	-0.01
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 2_2	0.00	0.00	0.00	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	0.00
PS 8_8	0.05	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.05	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	-0.04	0.00	0.00	0.00	0.00
PS 10_10	0.00	-0.31	0.00	0.00	0.00	0.00
PS 11_11	0.00	-0.29	0.00	-0.13	0.00	0.00
PS 12_12	0.00	0.02	0.00	-0.16	0.00	-0.15
PS 13_13	-0.01	0.00	0.00	0.01	0.00	-0.16
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00

	BE 13_16	BE 15_14	BE 16_15	PS 1_1	PS 2_2	PS 3_3
BE 13_16	1.00					
BE 15_14	0.00	1.00				
BE 16_15	0.00	0.00	1.00			
PS 1_1	0.00	0.00	0.00	1.00		
PS 2_2	0.00	0.00	0.00	0.01	1.00	
PS 3_3	0.00	0.00	0.00	0.00	0.01	1.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	-0.01	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	-0.01
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	0.16	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.01	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.02	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.02	0.02	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.02	0.00	0.00	0.00

(Correlation Matrix of Parameter Estimates – continued)

	PS 4_4	PS 5_5	PS 6_6	PS 7_7	PS 8_8	PS 9_9
PS 4_4	1.00					
PS 5_5	0.01	1.00				
PS 6_6	0.00	0.00	1.00			
PS 7_7	0.00	0.00	0.02	1.00		
PS 8_8	0.00	0.00	0.00	0.09	1.00	
PS 9_9	0.00	0.00	0.00	0.01	-0.05	1.00
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00

	PS 10_1	PS 10_10	PS 11_11	PS 12_12	PS 13_13	PS 14_14
PS 10_1	1.00					
PS 10_10	0.16	1.00				
PS 11_11	0.01	0.05	1.00			
PS 12_12	0.00	0.00	0.00	1.00		
PS 13_13	0.00	0.00	0.00	0.01	1.00	
PS 14_14	0.00	0.00	0.00	0.00	0.00	1.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00

	PS 15_15	PS 16_16
PS 15_15	1.00	
PS 16_16	0.00	1.00

Covariances

Y - ETA

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
TEM1eta1	42.64	22.10	5.55	2.47	1.50	2.05
TEM2eta2	22.10	41.33	9.55	3.87	2.31	1.06
AGG2eta3	5.55	9.55	5.92	2.35	1.40	0.41
AGG3eta4	2.47	3.87	2.35	3.44	2.03	0.25
AGG4eta5	1.50	2.31	1.40	2.03	2.82	0.16
PAR1ETA6	2.05	1.06	0.41	0.25	0.16	0.56
PAR2ETA7	2.41	2.52	1.31	0.93	0.59	0.45
PAR3ETA8	1.99	2.32	1.07	1.01	0.67	0.33
PAR4ETA9	1.95	2.51	1.02	0.89	0.62	0.29
DP1ETA10	3.39	1.76	1.60	1.17	0.80	1.01
DP2ETA11	2.30	1.19	1.86	1.42	1.00	0.69
DP3ETA12	1.29	0.67	1.04	1.80	1.40	0.38
DP4ETA13	0.60	0.31	0.49	0.84	1.02	0.18
PC2ETA14	- -	- -	-0.01	-0.01	-0.01	- -
PC3ETA15	- -	- -	0.00	0.00	0.00	- -
PC4ETA16	- -	- -	0.00	0.00	0.00	- -

(Y – ETA – continued)

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
TEM1eta1	2.41	1.99	1.95	3.39	2.30	1.29
TEM2eta2	2.52	2.32	2.51	1.76	1.19	0.67
AGG2eta3	1.31	1.07	1.02	1.60	1.86	1.04
AGG3eta4	0.93	1.01	0.89	1.17	1.42	1.80
AGG4eta5	0.59	0.67	0.62	0.80	1.00	1.40
PAR1ETA6	0.45	0.33	0.29	1.01	0.69	0.38
PAR2ETA7	2.71	1.82	1.49	1.07	0.95	0.53
PAR3ETA8	1.82	2.18	1.80	1.11	1.20	1.57
PAR4ETA9	1.49	1.80	2.00	0.98	1.07	1.47
DP1ETA10	1.07	1.11	0.98	13.20	8.96	5.02
DP2ETA11	0.95	1.20	1.07	8.96	12.75	7.13
DP3ETA12	0.53	1.57	1.47	5.02	7.13	15.30
DP4ETA13	0.25	0.73	0.92	2.34	3.33	7.15
PC2ETA14	0.00	0.00	0.00	- -	-0.09	-0.04
PC3ETA15	0.00	0.00	0.00	- -	0.02	-0.04
PC4ETA16	0.00	0.00	0.00	- -	-0.01	0.02

	DDPPS01	T2T1PCTD	T3T2PCTD	T4T3PCTD
TEM1eta1	0.60	- -	- -	- -
TEM2eta2	0.31	- -	- -	- -
AGG2eta3	0.49	-0.01	0.00	0.00
AGG3eta4	0.84	-0.01	0.00	0.00
AGG4eta5	1.02	-0.01	0.00	0.00
PAR1ETA6	0.18	- -	- -	- -
PAR2ETA7	0.25	0.00	0.00	0.00
PAR3ETA8	0.73	0.00	0.00	0.00
PAR4ETA9	0.92	0.00	0.00	0.00
DP1ETA10	2.34	- -	- -	- -
DP2ETA11	3.33	-0.09	0.02	-0.01
DP3ETA12	7.15	-0.04	-0.04	0.02
DP4ETA13	11.27	-0.02	-0.01	-0.06
PC2ETA14	-0.02	0.17	-0.04	0.02
PC3ETA15	-0.01	-0.04	0.19	-0.09
PC4ETA16	-0.06	0.02	-0.09	0.48

First Order Derivatives

LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.00	0.01	0.02	0.04	0.03	0.00
BTMSCALE	0.00	0.00	-0.01	-0.02	-0.03	-0.01
bbecs04	-0.10	0.01	0.00	-0.01	0.02	0.00
cbecs09	0.41	0.09	-0.02	0.00	-0.01	0.03
DBECdS09	-0.08	-0.18	0.03	0.00	0.00	-0.01
APRCS02	-0.09	-0.10	-0.02	-0.01	-0.04	0.00
bprcs06	0.32	0.02	-0.04	0.00	0.07	0.00
cprcs06	-0.16	-0.11	0.03	-0.02	0.01	0.00
DPRCS06	-0.22	0.07	0.02	0.01	-0.05	-0.02
ADPPS01	-0.14	-0.13	-0.01	-0.03	-0.04	-0.01
bdpps01	0.13	0.07	0.02	0.04	0.04	0.01
cdpps01	0.11	-0.02	-0.02	-0.01	-0.02	0.00
DDPPS01	-0.01	-0.06	-0.05	-0.04	-0.01	-0.01

(LAMBDA-Y – continued)

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
T2T1PCTD	-0.04	1.11	0.40	0.16	0.04	-0.03
T3T2PCTD	0.45	0.58	0.13	-0.11	-0.12	0.07
T4T3PCTD	0.04	-0.26	-0.09	-0.21	-0.02	0.03

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	0.02	0.01	0.01	0.03	0.06	0.10
BTMSCALE	-0.01	-0.01	-0.01	-0.05	-0.05	-0.05
bbecs04	-0.01	0.00	0.00	0.02	-0.02	-0.07
cbecs09	-0.03	-0.01	0.00	0.12	0.06	0.07
DBECdS09	0.08	0.03	0.00	-0.09	-0.01	-0.11
APRCS02	-0.03	-0.02	-0.02	0.02	-0.02	-0.11
bprcs06	0.00	-0.01	-0.01	-0.05	-0.11	-0.10
cprcs06	-0.01	0.00	-0.01	0.12	0.21	0.03
DPRCS06	0.01	0.00	0.00	-0.17	-0.05	-0.03
ADPPS01	-0.02	-0.05	-0.06	0.00	0.00	-0.19
bdpps01	0.03	0.06	0.06	0.06	0.00	0.15
cdpps01	0.00	-0.01	0.00	-0.03	0.03	0.00
DDPPS01	-0.07	-0.05	-0.04	-0.20	-0.11	0.01
T2T1PCTD	-0.11	0.01	0.02	-0.45	-0.21	0.20
T3T2PCTD	0.27	0.17	0.09	0.00	0.35	0.21
T4T3PCTD	-0.03	-0.04	-0.05	0.08	-0.12	-0.14

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
ATMSCALE	0.06	0.00	0.00	0.00
BTMSCALE	-0.02	0.00	0.00	0.00
bbecs04	-0.05	0.01	0.00	0.01
cbecs09	-0.02	0.01	0.00	-0.05
DBECdS09	0.00	0.00	-0.01	0.03
APRCS02	0.07	0.01	0.01	0.03
bprcs06	-0.20	-0.02	0.03	-0.02
cprcs06	-0.03	0.01	0.01	0.01
DPRCS06	0.00	0.00	-0.02	0.00
ADPPS01	-0.24	-0.01	-0.01	0.01
bdpps01	0.10	0.00	0.01	-0.01
cdpps01	0.05	0.00	0.00	0.00
DDPPS01	0.00	0.00	0.00	0.00
T2T1PCTD	0.12	0.00	0.01	0.21
T3T2PCTD	-0.05	0.04	0.00	0.04
T4T3PCTD	-0.10	0.08	0.00	0.00

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	0.00	0.01	0.01	0.03	0.01	0.00
TEM2eta2	0.00	0.00	-0.01	-0.03	-0.03	0.00
AGG2eta3	0.02	0.00	0.00	-0.01	0.02	0.01
AGG3eta4	0.36	-0.02	0.00	0.00	-0.01	0.02
AGG4eta5	-0.08	-0.18	0.03	0.00	0.00	-0.01
PAR1ETA6	0.02	-0.11	-0.02	-0.01	-0.01	0.00
PAR2ETA7	0.17	-0.02	-0.01	-0.01	0.05	0.00
PAR3ETA8	-0.25	-0.06	0.05	-0.02	-0.04	-0.01
PAR4ETA9	-0.23	0.06	0.02	0.01	-0.05	-0.02
DP1ETA10	0.00	-0.11	-0.02	-0.01	-0.03	0.00
DP2ETA11	0.20	0.03	0.00	0.02	0.03	0.01
DP3ETA12	0.10	-0.05	-0.04	-0.03	-0.03	-0.01
DP4ETA13	-0.02	-0.06	-0.05	-0.04	-0.01	-0.01
PC2ETA14	-0.24	0.92	0.35	0.15	0.05	-0.05
PC3ETA15	0.41	0.72	0.18	0.00	-0.11	0.06
PC4ETA16	0.04	-0.25	-0.08	-0.21	-0.02	0.03

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	0.01	0.01	0.00	0.00	0.03	0.05
TEM2eta2	-0.01	-0.01	-0.01	-0.05	-0.05	-0.07
AGG2eta3	0.00	0.00	0.00	0.05	0.00	-0.07
AGG3eta4	0.02	0.00	0.00	0.07	0.05	0.00
AGG4eta5	0.08	0.03	0.00	-0.09	-0.01	-0.11
PAR1ETA6	-0.03	-0.03	-0.02	0.00	-0.02	-0.19
PAR2ETA7	0.00	-0.01	-0.01	-0.04	0.00	-0.12
PAR3ETA8	0.00	0.00	-0.01	0.00	0.18	0.00
PAR4ETA9	0.01	0.00	0.00	-0.17	-0.05	-0.04
DP1ETA10	-0.01	-0.02	-0.03	0.00	-0.01	-0.11
DP2ETA11	0.01	0.04	0.04	0.00	0.00	0.14
DP3ETA12	-0.03	-0.03	-0.02	-0.12	0.00	0.00
DP4ETA13	-0.07	-0.05	-0.04	-0.21	-0.11	0.00
PC2ETA14	-0.19	-0.05	-0.03	-0.44	-0.30	0.07
PC3ETA15	0.29	0.20	0.11	-0.02	0.40	0.28
PC4ETA16	-0.02	-0.03	-0.04	0.10	-0.10	-0.14

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
TEM1eta1	0.03	0.00	0.00	0.00
TEM2eta2	-0.05	0.01	0.00	0.00
AGG2eta3	-0.06	0.01	-0.01	0.00
AGG3eta4	-0.02	0.00	-0.01	-0.03
AGG4eta5	0.00	0.00	-0.01	0.03
PAR1ETA6	-0.09	0.00	0.02	0.02
PAR2ETA7	-0.24	-0.01	0.02	-0.01
PAR3ETA8	-0.04	0.01	-0.01	0.00
PAR4ETA9	0.00	0.00	-0.02	0.00
DP1ETA10	-0.18	-0.01	0.00	0.00
DP2ETA11	0.11	0.00	0.01	-0.01
DP3ETA12	0.04	0.00	0.00	0.00
DP4ETA13	0.00	0.00	0.00	0.00
PC2ETA14	0.07	0.00	0.00	0.21
PC3ETA15	-0.02	0.00	0.00	0.04
PC4ETA16	-0.10	0.08	0.00	0.00

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	0.00					
TEM2eta2	0.00	0.00				
AGG2eta3	0.00	0.00	0.00			
AGG3eta4	0.01	-0.01	0.00	0.00		
AGG4eta5	0.00	0.00	0.01	0.00	0.00	
PAR1ETA6	0.00	0.00	0.00	0.01	0.00	0.00
PAR2ETA7	0.00	0.00	0.00	0.00	0.04	-0.01
PAR3ETA8	-0.01	0.00	0.01	-0.01	-0.02	0.01
PAR4ETA9	0.00	0.01	0.00	0.00	-0.03	0.01
DP1ETA10	0.00	0.00	0.00	0.00	-0.01	0.00
DP2ETA11	0.00	0.00	0.00	0.00	0.01	0.00
DP3ETA12	0.00	0.00	-0.01	0.00	-0.01	-0.02
DP4ETA13	0.00	0.00	0.00	0.00	0.01	0.00
PC2ETA14	0.00	0.03	0.07	0.02	-0.03	-0.02
PC3ETA15	0.01	0.02	-0.03	-0.06	-0.07	0.10
PC4ETA16	0.00	-0.01	0.00	-0.07	0.06	0.06

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	0.00					
PAR3ETA8	0.00	0.00				
PAR4ETA9	0.01	0.00	0.00			
DP1ETA10	0.00	0.00	-0.01	0.00		
DP2ETA11	0.00	0.03	0.01	0.00	0.00	
DP3ETA12	-0.01	-0.01	0.00	-0.01	0.01	0.00
DP4ETA13	-0.02	0.00	0.00	-0.02	0.01	0.01
PC2ETA14	-0.08	0.05	0.00	-0.03	0.00	0.02
PC3ETA15	0.09	-0.03	-0.11	0.00	0.06	0.00
PC4ETA16	-0.01	0.00	-0.02	0.01	-0.02	-0.01

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
DP4ETA13	0.00			
PC2ETA14	0.01	0.00		
PC3ETA15	-0.02	0.00	0.00	
PC4ETA16	0.00	0.47	0.10	0.00

THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	0.00					
BTMSCALE	0.00	0.00				
bbecs04	0.00	0.00	0.00			
cbecs09	0.01	0.00	-0.01	0.00		
DBECdS09	0.00	-0.01	0.02	0.00	0.00	
APRCS02	0.00	0.00	0.00	0.02	-0.03	0.01
bprcs06	0.01	0.00	-0.01	-0.02	0.05	-0.02
cprcs06	0.00	0.00	0.02	-0.02	0.01	0.00
DPRCS06	-0.01	0.01	0.00	0.02	-0.03	0.01

(THETA-EPS - continued)

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ADPPS01	0.00	0.00	0.01	0.01	-0.01	0.01
bdpps01	0.00	0.00	0.00	0.00	0.01	0.00
cdpps01	0.00	0.00	-0.01	0.01	-0.01	-0.02
DDPPS01	0.00	0.00	0.00	-0.01	0.01	0.02
T2T1PCTD	-0.02	0.03	0.06	0.03	-0.04	0.05
T3T2PCTD	0.00	0.02	0.00	-0.07	-0.04	0.07
T4T3PCTD	0.00	-0.01	0.02	-0.11	0.07	0.07

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	0.00					
cprcs06	-0.01	0.01				
DPRCS06	0.01	-0.01	0.00			
ADPPS01	0.00	0.00	-0.02	0.00		
bdpps01	-0.01	0.02	0.01	0.01	-0.01	
cdpps01	0.01	0.00	0.00	-0.01	0.01	0.00
DDPPS01	-0.02	-0.01	0.00	-0.02	0.00	0.01
T2T1PCTD	-0.11	0.07	-0.02	-0.04	-0.01	0.02
T3T2PCTD	0.11	0.08	-0.11	-0.05	0.06	0.02
T4T3PCTD	-0.01	0.03	-0.02	0.01	-0.01	0.00

	DDPPS01	T2T1PCTD	T3T2PCTD	T4T3PCTD
DDPPS01	0.00			
T2T1PCTD	0.01	0.01		
T3T2PCTD	-0.01	0.27	0.05	
T4T3PCTD	-0.01	0.48	0.10	0.00

Factor Scores Regressions

ETA

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
TEM1eta1	0.74	0.09	0.04	0.01	0.00	0.21
TEM2eta2	0.09	0.70	0.26	0.06	0.01	0.00
AGG2eta3	0.01	0.06	0.60	0.13	0.03	0.01
AGG3eta4	0.00	0.01	0.06	0.65	0.15	0.00
AGG4eta5	0.00	0.00	0.01	0.13	0.69	0.00
PAR1ETA6	0.02	0.00	0.00	0.00	0.00	0.27
PAR2ETA7	0.01	0.00	0.03	0.03	0.01	0.07
PAR3ETA8	0.00	0.00	0.01	0.04	0.01	0.02
PAR4ETA9	0.00	0.01	0.01	0.02	0.02	0.02
DP1ETA10	0.01	0.00	0.01	0.01	0.00	0.13
DP2ETA11	0.00	-0.01	0.04	0.02	0.01	0.03
DP3ETA12	0.00	0.00	-0.01	0.06	0.02	0.00
DP4ETA13	0.00	0.00	0.00	-0.01	0.04	0.00
PC2ETA14	0.00	0.00	0.00	0.00	0.00	0.00
PC3ETA15	0.00	0.00	0.00	0.00	0.00	0.00
PC4ETA16	0.00	0.00	0.00	0.00	0.00	0.00

(ETA – continued)

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
TEM1eta1	0.03	0.02	0.02	0.02	0.00	0.00
TEM2eta2	0.00	0.02	0.06	-0.01	-0.02	-0.01
AGG2eta3	0.04	0.01	0.01	0.01	0.02	-0.01
AGG3eta4	0.01	0.03	0.01	0.00	0.00	0.01
AGG4eta5	0.00	0.01	0.01	0.00	0.00	0.00
PAR1ETA6	0.04	0.02	0.01	0.03	0.01	0.00
PAR2ETA7	0.42	0.20	0.11	0.01	0.00	-0.02
PAR3ETA8	0.15	0.37	0.21	0.00	0.00	0.02
PAR4ETA9	0.09	0.23	0.35	0.00	0.00	0.02
DP1ETA10	0.02	0.01	0.01	0.61	0.18	0.03
DP2ETA11	0.01	0.01	0.01	0.15	0.62	0.09
DP3ETA12	-0.03	0.06	0.04	0.02	0.08	0.70
DP4ETA13	-0.01	0.00	0.03	0.00	0.01	0.10
PC2ETA14	0.00	0.00	0.00	0.00	0.00	0.00
PC3ETA15	0.00	0.00	0.00	0.00	0.00	0.00
PC4ETA16	0.00	0.00	0.00	0.00	0.00	0.00

	DDPPS01	T2T1PCTD	T3T2PCTD	T4T3PCTD
TEM1eta1	0.00	0.00	0.00	0.00
TEM2eta2	0.00	0.01	0.00	0.00
AGG2eta3	0.00	-0.01	0.00	0.00
AGG3eta4	0.00	0.00	0.00	0.00
AGG4eta5	0.01	0.00	0.00	0.00
PAR1ETA6	0.00	0.00	0.00	0.00
PAR2ETA7	-0.01	0.00	0.00	0.00
PAR3ETA8	0.00	0.00	0.00	0.00
PAR4ETA9	0.02	0.00	0.00	0.00
DP1ETA10	0.00	0.10	0.01	0.00
DP2ETA11	0.01	-0.15	0.03	0.00
DP3ETA12	0.12	-0.02	-0.06	0.02
DP4ETA13	0.72	0.00	-0.01	-0.04
PC2ETA14	0.00	0.94	-0.01	0.00
PC3ETA15	0.00	-0.01	0.94	-0.01
PC4ETA16	0.00	0.00	-0.02	0.96

Standardized Solution

LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	6.53	- -	- -	- -	- -	- -
BTMSCALE	- -	6.43	- -	- -	- -	- -
bbecs04	- -	- -	2.43	- -	- -	- -
cbecs09	- -	- -	- -	1.86	- -	- -
DBECdS09	- -	- -	- -	- -	1.68	- -
APRCS02	- -	- -	- -	- -	- -	0.75
bprcs06	- -	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -
T4T3PCTD	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -	- -	- -
bprcs06	1.65	- -	- -	- -	- -	- -
cprcs06	- -	1.48	- -	- -	- -	- -
DPRCS06	- -	- -	1.41	- -	- -	- -
ADPPS01	- -	- -	- -	3.63	- -	- -
bdpps01	- -	- -	- -	- -	3.57	- -
cdpps01	- -	- -	- -	- -	- -	3.91
DDPPS01	- -	- -	- -	- -	- -	- -
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -
T4T3PCTD	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
ATMSCALE	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -
bprcs06	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -
DDPPS01	3.36	- -	- -	- -
T2T1PCTD	- -	0.41	- -	- -
T3T2PCTD	- -	- -	0.44	- -
T4T3PCTD	- -	- -	- -	0.69

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.53	- -	- -	- -	- -	- -
AGG2eta3	- -	0.56	- -	- -	- -	- -
AGG3eta4	- -	- -	0.45	- -	- -	- -
AGG4eta5	- -	- -	- -	0.63	- -	- -
PAR1ETA6	0.37	- -	- -	- -	- -	- -
PAR2ETA7	- -	0.17	- -	- -	- -	0.31
PAR3ETA8	- -	0.07	- -	- -	- -	- -
PAR4ETA9	- -	0.07	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.17	- -	- -	- -	0.16	- -
AGG3eta4	- -	0.20	- -	- -	- -	0.15
AGG4eta5	- -	- -	0.03	- -	- -	- -
PAR1ETA6	- -	- -	- -	0.32	- -	- -
PAR2ETA7	- -	- -	- -	- -	0.07	- -
PAR3ETA8	0.71	- -	- -	- -	- -	0.21
PAR4ETA9	- -	0.83	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.69	- -	- -
DP3ETA12	- -	- -	- -	- -	0.51	- -
DP4ETA13	- -	- -	- -	- -	- -	0.54
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
TEM1eta1	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -
AGG2eta3	- -	- -	- -	- -
AGG3eta4	- -	- -	- -	- -
AGG4eta5	0.09	- -	- -	- -
PAR1ETA6	- -	- -	- -	- -
PAR2ETA7	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -
PAR4ETA9	0.07	- -	- -	- -
DP1ETA10	- -	- -	- -	- -
DP2ETA11	- -	-0.06	- -	- -
DP3ETA12	- -	- -	-0.03	- -
DP4ETA13	- -	- -	- -	-0.03
PC2ETA14	- -	- -	- -	- -
PC3ETA15	- -	-0.22	- -	- -
PC4ETA16	- -	- -	-0.30	- -

Correlation Matrix of ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	1.00					
TEM2eta2	0.53	1.00				
AGG2eta3	0.35	0.61	1.00			
AGG3eta4	0.20	0.32	0.52	1.00		
AGG4eta5	0.14	0.21	0.34	0.65	1.00	
PAR1ETA6	0.42	0.22	0.23	0.18	0.13	1.00
PAR2ETA7	0.22	0.24	0.33	0.30	0.21	0.36
PAR3ETA8	0.21	0.24	0.30	0.37	0.27	0.30
PAR4ETA9	0.21	0.28	0.30	0.34	0.26	0.27
DP1ETA10	0.14	0.08	0.18	0.17	0.13	0.37
DP2ETA11	0.10	0.05	0.21	0.21	0.17	0.26
DP3ETA12	0.05	0.03	0.11	0.25	0.21	0.13
DP4ETA13	0.03	0.01	0.06	0.14	0.18	0.07
PC2ETA14	- -	- -	-0.01	-0.01	-0.01	- -
PC3ETA15	- -	- -	0.00	0.00	0.00	- -
PC4ETA16	- -	- -	0.00	0.00	0.00	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	1.00					
PAR3ETA8	0.75	1.00				
PAR4ETA9	0.64	0.86	1.00			
DP1ETA10	0.18	0.21	0.19	1.00		
DP2ETA11	0.16	0.23	0.21	0.69	1.00	
DP3ETA12	0.08	0.27	0.27	0.35	0.51	1.00
DP4ETA13	0.05	0.15	0.19	0.19	0.28	0.54
PC2ETA14	0.00	-0.01	-0.01	- -	-0.06	-0.02
PC3ETA15	0.00	0.00	0.00	- -	0.01	-0.02
PC4ETA16	0.00	0.00	0.00	- -	0.00	0.01

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
DP4ETA13	1.00			
PC2ETA14	-0.01	1.00		
PC3ETA15	0.00	-0.22	1.00	
PC4ETA16	-0.02	0.07	-0.30	1.00

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	1.00					
TEM2eta2	- -	0.72				
AGG2eta3	- -	- -	0.57			
AGG3eta4	- -	- -	- -	0.66		
AGG4eta5	- -	- -	- -	- -	0.57	
PAR1ETA6	- -	- -	- -	- -	- -	0.73
PAR2ETA7	- -	- -	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -	- -	- -
PAR4ETA9	- -	- -	- -	- -	- -	- -
DP1ETA10	0.14	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	0.84					
PAR3ETA8	- -	0.39				
PAR4ETA9	- -	- -	0.25			
DP1ETA10	- -	- -	- -	1.00		
DP2ETA11	- -	- -	- -	- -	0.52	
DP3ETA12	- -	- -	- -	- -	- -	0.74
DP4ETA13	- -	- -	- -	- -	- -	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
DP4ETA13	0.70			
PC2ETA14	- -	1.00		
PC3ETA15	- -	- -	0.95	
PC4ETA16	- -	- -	- -	0.91

Total and Indirect Effects

Total Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.52	- -	- -	- -	- -	- -
	(0.06)					
	8.70					
AGG2eta3	0.12	0.22	- -	- -	- -	0.17
	(0.02)	(0.02)				(0.10)
	7.07	9.70				1.74
AGG3eta4	0.05	0.09	0.34	- -	- -	0.16
	(0.01)	(0.01)	(0.05)			(0.08)
	5.84	6.72	6.69			2.16
AGG4eta5	0.03	0.05	0.19	0.57	- -	0.10
	(0.01)	(0.01)	(0.03)	(0.06)		(0.05)
	5.09	5.84	5.68	9.49		2.00
PAR1ETA6	0.04	- -	- -	- -	- -	- -
	(0.01)					
	4.54					
PAR2ETA7	0.05	0.04	- -	- -	- -	0.68
	(0.01)	(0.01)				(0.26)
	3.81	4.54				2.60
PAR3ETA8	0.04	0.04	- -	- -	- -	0.43
	(0.01)	(0.01)				(0.17)
	4.33	4.21				2.54
PAR4ETA9	0.04	0.05	- -	- -	- -	0.34
	(0.01)	(0.02)				(0.14)
	4.06	3.12				2.49
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

(Total Effects of ETA on ETA - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.25	- -	- -	0.09	0.12	- -
	(0.11)			(0.03)	(0.04)	
	2.35			3.10	2.77	
AGG3eta4	0.24	0.25	- -	0.08	0.09	0.09
	(0.06)	(0.09)		(0.02)	(0.02)	(0.03)
	3.76	2.69		4.60	4.17	3.11
AGG4eta5	0.15	0.17	0.03	0.05	0.07	0.07
	(0.05)	(0.08)	(0.09)	(0.01)	(0.02)	(0.02)
	3.07	2.21	0.39	4.58	4.34	3.64
PAR1ETA6	- -	- -	- -	0.07	- -	- -
				(0.02)		
				3.12		
PAR2ETA7	- -	- -	- -	0.07	0.03	- -
				(0.03)	(0.04)	
				2.64	0.89	
PAR3ETA8	0.64	- -	- -	0.07	0.07	0.08
	(0.08)			(0.02)	(0.03)	(0.03)
	7.95			4.03	2.53	3.15
PAR4ETA9	0.51	0.80	- -	0.06	0.06	0.08
	(0.07)	(0.09)		(0.02)	(0.02)	(0.02)
	6.80	9.34		4.12	2.79	3.56
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.68	- -	- -
				(0.06)		
				10.67		
DP3ETA12	- -	- -	- -	0.38	0.56	- -
				(0.06)	(0.07)	
				6.82	8.11	
DP4ETA13	- -	- -	- -	0.18	0.26	0.47
				(0.03)	(0.04)	(0.05)
				5.54	6.17	8.77
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

Total Effects of ETA on ETA - continued)

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
TEM1eta1	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -
AGG2eta3	- -	-0.06	- -	- -
		(0.06)		
		-1.01		
AGG3eta4	- -	-0.04	-0.02	- -
		(0.05)	(0.05)	
		-0.92	-0.50	
AGG4eta5	0.05	-0.03	-0.02	-0.01
	(0.03)	(0.03)	(0.04)	(0.01)
	1.55	-0.92	-0.43	-0.47
PAR1ETA6	- -	- -	- -	- -
PAR2ETA7	- -	-0.02	- -	- -
		(0.03)		
		-0.69		
PAR3ETA8	- -	-0.03	-0.02	- -
		(0.03)	(0.04)	
		-0.84	-0.51	
PAR4ETA9	0.03	-0.03	-0.02	0.00
	(0.03)	(0.03)	(0.04)	(0.01)
	0.95	-0.85	-0.46	-0.44
DP1ETA10	- -	- -	- -	- -
DP2ETA11	- -	-0.50	- -	- -
		(0.46)		
		-1.09		
DP3ETA12	- -	-0.22	-0.26	- -
		(0.28)	(0.50)	
		-0.79	-0.51	
DP4ETA13	- -	-0.12	-0.06	-0.13
		(0.14)	(0.26)	(0.27)
		-0.88	-0.21	-0.50
PC2ETA14	- -	- -	- -	- -
PC3ETA15	- -	-0.23	- -	- -
		(0.06)		
		-4.01		
PC4ETA16	- -	0.11	-0.47	- -
		(0.03)	(0.08)	
		3.26	-5.55	

Largest Eigenvalue of B*B' (Stability Index) is 0.738

Indirect Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.12	0.01	- -	- -	- -	0.17
	(0.02)	(0.00)				(0.10)
	7.07	2.14				1.74
AGG3eta4	0.05	0.09	- -	- -	- -	0.16
	(0.01)	(0.01)				(0.08)
	5.84	6.72				2.16
AGG4eta5	0.03	0.05	0.19	- -	- -	0.10
	(0.01)	(0.01)	(0.03)			(0.05)
	5.09	5.84	5.68			2.00
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	0.05	- -	- -	- -	- -	- -
	(0.01)					
	3.81					
PAR3ETA8	0.04	0.03	- -	- -	- -	0.43
	(0.01)	(0.01)				(0.17)
	4.33	3.96				2.54
PAR4ETA9	0.04	0.03	- -	- -	- -	0.34
	(0.01)	(0.01)				(0.14)
	4.06	4.27				2.49
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	- -	- -	- -	0.09	0.01	- -
				(0.03)	(0.01)	
				3.10	0.84	
AGG3eta4	0.24	- -	- -	0.08	0.09	0.02
	(0.06)			(0.02)	(0.02)	(0.01)
	3.76			4.60	4.17	2.06
AGG4eta5	0.15	0.17	- -	0.05	0.07	0.07
	(0.05)	(0.08)		(0.01)	(0.02)	(0.02)
	3.07	2.21		4.58	4.34	3.64
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	- -	- -	- -	0.07	- -	- -
				(0.03)		
				2.64		
PAR3ETA8	- -	- -	- -	0.07	0.07	- -
				(0.02)	(0.03)	
				4.03	2.53	
PAR4ETA9	0.51	- -	- -	0.06	0.06	0.08
	(0.07)			(0.02)	(0.02)	(0.02)
	6.80			4.12	2.79	3.56

(Indirect Effects of ETA on ETA - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
	PAR2ETA7	**PAR3ETA8**	**PAR4ETA9**	**DP1ETA10**	**DP2ETA11**	**DP3ETA12**
DP3ETA12	- -	- -	- -	0.38	- -	- -
				(0.06)		
				6.82		
DP4ETA13	- -	- -	- -	0.18	0.26	- -
				(0.03)	(0.04)	
				5.54	6.17	
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
TEM1eta1	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -
AGG2eta3	- -	-0.06	- -	- -
		(0.06)		
		-1.01		
AGG3eta4	- -	-0.04	-0.02	- -
		(0.05)	(0.05)	
		-0.92	-0.50	
AGG4eta5	0.00	-0.03	-0.02	-0.01
	(0.00)	(0.03)	(0.04)	(0.01)
	0.36	-0.92	-0.43	-0.47
PAR1ETA6	- -	- -	- -	- -
PAR2ETA7	- -	-0.02	- -	- -
		(0.03)		
		-0.69		
PAR3ETA8	- -	-0.03	-0.02	- -
		(0.03)	(0.04)	
		-0.84	-0.51	
PAR4ETA9	- -	-0.03	-0.02	0.00
		(0.03)	(0.04)	(0.01)
		-0.85	-0.46	-0.44
DP1ETA10	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -
DP3ETA12	- -	-0.22	- -	- -
		(0.28)		
		-0.79		
DP4ETA13	- -	-0.12	-0.06	- -
		(0.14)	(0.26)	
		-0.88	-0.21	
PC2ETA14	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -
PC4ETA16	- -	0.11	- -	- -
		(0.03)		
		3.26		

Total Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	1.00	- -	- -	- -	- -	- -
BTMSCALE	0.52	1.00	- -	- -	- -	- -
	(0.06)					
	8.70					
bbecs04	0.12	0.22	1.00	- -	- -	0.17
	(0.02)	(0.02)				(0.10)
	7.07	9.70				1.74
cbecs09	0.05	0.09	0.34	1.00	- -	0.16
	(0.01)	(0.01)	(0.05)			(0.08)
	5.84	6.72	6.69			2.16
DBECdS09	0.03	0.05	0.19	0.57	1.00	0.10
	(0.01)	(0.01)	(0.03)	(0.06)		(0.05)
	5.09	5.84	5.68	9.49		2.00
APRCS02	0.04	- -	- -	- -	- -	1.00
	(0.01)					
	4.54					
bprcs06	0.05	0.04	- -	- -	- -	0.68
	(0.01)	(0.01)				(0.26)
	3.81	4.54				2.60
cprcs06	0.04	0.04	- -	- -	- -	0.43
	(0.01)	(0.01)				(0.17)
	4.33	4.21				2.54
DPRCS06	0.04	0.05	- -	- -	- -	0.34
	(0.01)	(0.02)				(0.14)
	4.06	3.12				2.49
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -
T4T3PCTD	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	0.25	- -	- -	0.09	0.12	- -
	(0.11)			(0.03)	(0.04)	
	2.35			3.10	2.77	
cbecs09	0.24	0.25	- -	0.08	0.09	0.09
	(0.06)	(0.09)		(0.02)	(0.02)	(0.03)
	3.76	2.69		4.60	4.17	3.11
DBECdS09	0.15	0.17	0.03	0.05	0.07	0.07
	(0.05)	(0.08)	(0.09)	(0.01)	(0.02)	(0.02)
	3.07	2.21	0.39	4.58	4.34	3.64

(Total Effects of ETA on Y - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
APRCS02	- -	- -	- -	0.07	- -	- -
				(0.02)		
				3.12		
bprcs06	1.00	- -	- -	0.07	0.03	- -
				(0.03)	(0.04)	
				2.64	0.89	
cprcs06	0.64	1.00	- -	0.07	0.07	0.08
	(0.08)			(0.02)	(0.03)	(0.03)
	7.95			4.03	2.53	3.15
DPRCS06	0.51	0.80	1.00	0.06	0.06	0.08
	(0.07)	(0.09)		(0.02)	(0.02)	(0.02)
	6.80	9.34		4.12	2.79	3.56
ADPPS01	- -	- -	- -	1.00	- -	- -
bdpps01	- -	- -	- -	0.68	1.00	- -
				(0.06)		
				10.67		
cdpps01	- -	- -	- -	0.38	0.56	1.00
				(0.06)	(0.07)	
				6.82	8.11	
DDPPS01	- -	- -	- -	0.18	0.26	0.47
				(0.03)	(0.04)	(0.05)
				5.54	6.17	8.77
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -
T4T3PCTD	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
ATMSCALE	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -
bbecs04	- -	-0.06	- -	- -
		(0.06)		
		-1.01		
cbecs09	- -	-0.04	-0.02	- -
		(0.05)	(0.05)	
		-0.92	-0.50	
DBECdS09	0.05	-0.03	-0.02	-0.01
	(0.03)	(0.03)	(0.04)	(0.01)
	1.55	-0.92	-0.43	-0.47
APRCS02	- -	- -	- -	- -
bprcs06	- -	-0.02	- -	- -
		(0.03)		
		-0.69		
cprcs06	- -	-0.03	-0.02	- -
		(0.03)	(0.04)	
		-0.84	-0.51	
DPRCS06	0.03	-0.03	-0.02	0.00
	(0.03)	(0.03)	(0.04)	(0.01)
	0.95	-0.85	-0.46	-0.44

(Total Effects of ETA on Y - continued)

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
ADPPS01	- -	- -	- -	- -
bdpps01	- -	-0.50	- -	- -
		(0.46)		
		-1.09		
cdpps01	- -	-0.22	-0.26	- -
		(0.28)	(0.50)	
		-0.79	-0.51	
DDPPS01	1.00	-0.12	-0.06	-0.13
		(0.14)	(0.26)	(0.27)
		-0.88	-0.21	-0.50
T2T1PCTD	- -	1.00	- -	- -
T3T2PCTD	- -	-0.23	1.00	- -
		(0.06)		
		-4.01		
T4T3PCTD	- -	0.11	-0.47	1.00
		(0.03)	(0.08)	
		3.26	-5.55	

Indirect Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	0.52	- -	- -	- -	- -	- -
	(0.06)					
	8.70					
bbecs04	0.12	0.22	- -	- -	- -	0.17
	(0.02)	(0.02)				(0.10)
	7.07	9.70				1.74
cbecs09	0.05	0.09	0.34	- -	- -	0.16
	(0.01)	(0.01)	(0.05)			(0.08)
	5.84	6.72	6.69			2.16
DBECdS09	0.03	0.05	0.19	0.57	- -	0.10
	(0.01)	(0.01)	(0.03)	(0.06)		(0.05)
	5.09	5.84	5.68	9.49		2.00
APRCS02	0.04	- -	- -	- -	- -	- -
	(0.01)					
	4.54					
bprcs06	0.05	0.04	- -	- -	- -	0.68
	(0.01)	(0.01)				(0.26)
	3.81	4.54				2.60
cprcs06	0.04	0.04	- -	- -	- -	0.43
	(0.01)	(0.01)				(0.17)
	4.33	4.21				2.54
DPRCS06	0.04	0.05	- -	- -	- -	0.34
	(0.01)	(0.02)				(0.14)
	4.06	3.12				2.49
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -

T4T3PCTD	- -	- -	- -	- -	- -	- -

(Indirect Effects of ETA on Y - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	0.25	- -	- -	0.09	0.12	- -
	(0.11)			(0.03)	(0.04)	
	2.35			3.10	2.77	
cbecs09	0.24	0.25	- -	0.08	0.09	0.09
	(0.06)	(0.09)		(0.02)	(0.02)	(0.03)
	3.76	2.69		4.60	4.17	3.11
DBECdS09	0.15	0.17	0.03	0.05	0.07	0.07
	(0.05)	(0.08)	(0.09)	(0.01)	(0.02)	(0.02)
	3.07	2.21	0.39	4.58	4.34	3.64
APRCS02	- -	- -	- -	0.07	- -	- -
				(0.02)		
				3.12		
bprcs06	- -	- -	- -	0.07	0.03	- -
				(0.03)	(0.04)	
				2.64	0.89	
cprcs06	0.64	- -	- -	0.07	0.07	0.08
	(0.08)			(0.02)	(0.03)	(0.03)
	7.95			4.03	2.53	3.15
DPRCS06	0.51	0.80	- -	0.06	0.06	0.08
	(0.07)	(0.09)		(0.02)	(0.02)	(0.02)
	6.80	9.34		4.12	2.79	3.56
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	0.68	- -	- -
				(0.06)		
				10.67		
cdpps01	- -	- -	- -	0.38	0.56	- -
				(0.06)	(0.07)	
				6.82	8.11	
DDPPS01	- -	- -	- -	0.18	0.26	0.47
				(0.03)	(0.04)	(0.05)
				5.54	6.17	8.77
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -
T4T3PCTD	- -	- -	- -	- -	- -	- -

(Indirect Effects of ETA on Y - continued)

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
ATMSCALE	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -
bbecs04	- -	-0.06	- -	- -
		(0.06)		
		-1.01		
cbecs09	- -	-0.04	-0.02	- -
		(0.05)	(0.05)	
		-0.92	-0.50	
DBECdS09	0.05	-0.03	-0.02	-0.01
	(0.03)	(0.03)	(0.04)	(0.01)
	1.55	-0.92	-0.43	-0.47
APRCS02	- -	- -	- -	- -
bprcs06	- -	-0.02	- -	- -
		(0.03)		
		-0.69		
cprcs06	- -	-0.03	-0.02	- -
		(0.03)	(0.04)	
		-0.84	-0.51	
DPRCS06	0.03	-0.03	-0.02	0.00
	(0.03)	(0.03)	(0.04)	(0.01)
	0.95	-0.85	-0.46	-0.44
ADPPS01	- -	- -	- -	- -
bdpps01	- -	-0.50	- -	- -
		(0.46)		
		-1.09		
cdpps01	- -	-0.22	-0.26	- -
		(0.28)	(0.50)	
		-0.79	-0.51	
DDPPS01	- -	-0.12	-0.06	-0.13
		(0.14)	(0.26)	(0.27)
		-0.88	-0.21	-0.50
T2T1PCTD	- -	- -	- -	- -
T3T2PCTD	- -	-0.23	- -	- -
		(0.06)		
		-4.01		
T4T3PCTD	- -	0.11	-0.47	- -
		(0.03)	(0.08)	
		3.26	-5.55	

Standardized Total and Indirect Effects

Standardized Total Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.53	- -	- -	- -	- -	- -
AGG2eta3	0.33	0.59	- -	- -	- -	0.05
AGG3eta4	0.18	0.30	0.45	- -	- -	0.07
AGG4eta5	0.12	0.20	0.28	0.63	- -	0.05
PAR1ETA6	0.37	- -	- -	- -	- -	- -
PAR2ETA7	0.20	0.17	- -	- -	- -	0.31
PAR3ETA8	0.18	0.19	- -	- -	- -	0.22
PAR4ETA9	0.19	0.23	- -	- -	- -	0.18
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.17	- -	- -	0.13	0.17	- -
AGG3eta4	0.21	0.20	- -	0.15	0.18	0.19
AGG4eta5	0.15	0.15	0.03	0.11	0.14	0.17
PAR1ETA6	- -	- -	- -	0.32	- -	- -
PAR2ETA7	- -	- -	- -	0.15	0.07	- -
PAR3ETA8	0.71	- -	- -	0.18	0.16	0.21
PAR4ETA9	0.59	0.83	- -	0.16	0.15	0.21
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.69	- -	- -
DP3ETA12	- -	- -	- -	0.35	0.51	- -
DP4ETA13	- -	- -	- -	0.19	0.28	0.54
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
TEM1eta1	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -
AGG2eta3	- -	-0.01	- -	- -
AGG3eta4	- -	-0.01	-0.01	- -
AGG4eta5	0.09	-0.01	0.00	0.00
PAR1ETA6	- -	- -	- -	- -
PAR2ETA7	- -	0.00	- -	- -
PAR3ETA8	- -	-0.01	-0.01	- -
PAR4ETA9	0.07	-0.01	-0.01	0.00
DP1ETA10	- -	- -	- -	- -
DP2ETA11	- -	-0.06	- -	- -
DP3ETA12	- -	-0.02	-0.03	- -
DP4ETA13	- -	-0.01	-0.01	-0.03
PC2ETA14	- -	- -	- -	- -
PC3ETA15	- -	-0.22	- -	- -
PC4ETA16	- -	0.07	-0.30	- -

Standardized Indirect Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.33	0.03	- -	- -	- -	0.05
AGG3eta4	0.18	0.30	- -	- -	- -	0.07
AGG4eta5	0.12	0.20	0.28	- -	- -	0.05
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	0.20	- -	- -	- -	- -	- -
PAR3ETA8	0.18	0.12	- -	- -	- -	0.22
PAR4ETA9	0.19	0.16	- -	- -	- -	0.18
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	- -	- -	- -	0.13	0.01	- -
AGG3eta4	0.21	- -	- -	0.15	0.18	0.04
AGG4eta5	0.15	0.15	- -	0.11	0.14	0.17
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	- -	- -	- -	0.15	- -	- -
PAR3ETA8	- -	- -	- -	0.18	0.16	- -
PAR4ETA9	0.59	- -	- -	0.16	0.15	0.21
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	0.35	- -	- -
DP4ETA13	- -	- -	- -	0.19	0.28	- -
PC2ETA14	- -	- -	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -	- -	- -
PC4ETA16	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
TEM1eta1	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -
AGG2eta3	- -	-0.01	- -	- -
AGG3eta4	- -	-0.01	-0.01	- -
AGG4eta5	0.00	-0.01	0.00	0.00
PAR1ETA6	- -	- -	- -	- -
PAR2ETA7	- -	0.00	- -	- -
PAR3ETA8	- -	-0.01	-0.01	- -
PAR4ETA9	- -	-0.01	-0.01	0.00
DP1ETA10	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -
DP3ETA12	- -	-0.02	- -	- -
DP4ETA13	- -	-0.01	-0.01	- -
PC2ETA14	- -	- -	- -	- -
PC3ETA15	- -	- -	- -	- -
PC4ETA16	- -	0.07	- -	- -

Standardized Total Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	6.53	- -	- -	- -	- -	- -
BTMSCALE	3.38	6.43	- -	- -	- -	- -
bbecs04	0.80	1.44	2.43	- -	- -	0.13
cbecs09	0.34	0.56	0.83	1.86	- -	0.12
DBECdS09	0.20	0.33	0.47	1.06	1.68	0.08
APRCS02	0.28	- -	- -	- -	- -	0.75
bprcs06	0.33	0.27	- -	- -	- -	0.51
cprcs06	0.27	0.28	- -	- -	- -	0.32
DPRCS06	0.27	0.32	- -	- -	- -	0.26
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -
T4T3PCTD	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	0.41	- -	- -	0.33	0.41	- -
cbecs09	0.40	0.36	- -	0.27	0.34	0.35
DBECdS09	0.25	0.25	0.05	0.19	0.24	0.29
APRCS02	- -	- -	- -	0.24	- -	- -
bprcs06	1.65	- -	- -	0.25	0.12	- -
cprcs06	1.05	1.48	- -	0.27	0.24	0.31
DPRCS06	0.84	1.18	1.41	0.23	0.22	0.30
ADPPS01	- -	- -	- -	3.63	- -	- -
bdpps01	- -	- -	- -	2.47	3.57	- -
cdpps01	- -	- -	- -	1.38	2.00	3.91
DDPPS01	- -	- -	- -	0.65	0.93	1.83
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -
T4T3PCTD	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
ATMSCALE	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -
bbecs04	- -	-0.02	- -	- -
cbecs09	- -	-0.02	-0.01	- -
DBECdS09	0.16	-0.01	-0.01	0.00
APRCS02	- -	- -	- -	- -
bprcs06	- -	-0.01	- -	- -
cprcs06	- -	-0.01	-0.01	- -
DPRCS06	0.10	-0.01	-0.01	0.00
ADPPS01	- -	- -	- -	- -
bdpps01	- -	-0.21	- -	- -
cdpps01	- -	-0.09	-0.11	- -
DDPPS01	3.36	-0.05	-0.02	-0.09
T2T1PCTD	- -	0.41	- -	- -
T3T2PCTD	- -	-0.10	0.44	- -
T4T3PCTD	- -	0.05	-0.21	0.69

Standardized Indirect Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	3.38	- -	- -	- -	- -	- -
bbecs04	0.80	1.44	- -	- -	- -	0.13
cbecs09	0.34	0.56	0.83	- -	- -	0.12
DBECdS09	0.20	0.33	0.47	1.06	- -	0.08
APRCS02	0.28	- -	- -	- -	- -	- -
bprcs06	0.33	0.27	- -	- -	- -	0.51
cprcs06	0.27	0.28	- -	- -	- -	0.32
DPRCS06	0.27	0.32	- -	- -	- -	0.26
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -
T4T3PCTD	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	0.41	- -	- -	0.33	0.41	- -
cbecs09	0.40	0.36	- -	0.27	0.34	0.35
DBECdS09	0.25	0.25	0.05	0.19	0.24	0.29
APRCS02	- -	- -	- -	0.24	- -	- -
bprcs06	- -	- -	- -	0.25	0.12	- -
cprcs06	1.05	- -	- -	0.27	0.24	0.31
DPRCS06	0.84	1.18	- -	0.23	0.22	0.30
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	2.47	- -	- -
cdpps01	- -	- -	- -	1.38	2.00	- -
DDPPS01	- -	- -	- -	0.65	0.93	1.83
T2T1PCTD	- -	- -	- -	- -	- -	- -
T3T2PCTD	- -	- -	- -	- -	- -	- -
T4T3PCTD	- -	- -	- -	- -	- -	- -

	DP4ETA13	PC2ETA14	PC3ETA15	PC4ETA16
ATMSCALE	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -
bbecs04	- -	-0.02	- -	- -
cbecs09	- -	-0.02	-0.01	- -
DBECdS09	0.16	-0.01	-0.01	0.00
APRCS02	- -	- -	- -	- -
bprcs06	- -	-0.01	- -	- -
cprcs06	- -	-0.01	-0.01	- -
DPRCS06	0.10	-0.01	-0.01	0.00
ADPPS01	- -	- -	- -	- -
bdpps01	- -	-0.21	- -	- -
cdpps01	- -	-0.09	-0.11	- -
DDPPS01	- -	-0.05	-0.02	-0.09
T2T1PCTD	- -	- -	- -	- -
T3T2PCTD	- -	-0.10	- -	- -
T4T3PCTD	- -	0.05	-0.21	- -

Time used: 0.500 Seconds

E.4B: MODEL 4B – INCOME ADEQUACY

```
 DA NI=36 NO=355 MA=CM
 CM (SEE MODEL 1)
LA
 ATMSCALE BTMSCALE  bbecs04 cbecs09 DBECdS09 APRCS02  bprcs06 cprcs06 DPRCS06
ADPPS01  bdpps01 cdpps01 DDPPS01 C1IN1000  C2IN1000 C3IN1000 C4IN1000 AINLEVEL
BINLEVEL CINLEVEL  DINLEVEL AINHSRCa  BINHSRCa CINHSRCa DINHSRCa AINHSRCR  BINHSRCR
CINHSRCR DINHSRCR T2T1PCTD  T3T2PCTD T4T3PCTD WOWC4H10 WOWC3H10  WOWC2H10
WOWC1H10
 SE
 ATMSCALE BTMSCALE  bbecs04 cbecs09 DBECdS09 APRCS02  bprcs06 cprcs06 DPRCS06
ADPPS01 bdpps01  cdpps01 DDPPS01 C1IN1000  C2IN1000 C3IN1000 C4IN1000/
 MO  NY=17  NE=17 LY=FU,FI BE=FU,FI PS=SY,FI TE=SY,FI
 LE
 TEM1eta1 TEM2eta2 AGG2eta3  AGG3eta4 AGG4eta5 PAR1ETA6 PAR2ETA7 PAR3ETA8
PAR4ETA9 DP1ETA10 DP2ETA11 DP3ETA12 DP4ETA13 IN1ETA14 IN2ETA15  IN3ETA16 IN4ETA17
 VA 1.0 LY(1,1) LY(2,2) LY(3,3) LY(4,4) LY(5,5) LY(6,6) LY(7,7) LY(8,8) LY(9,9)
 VA 1.0 LY(10,10) LY(11,11) LY(12,12) LY(13,13) LY(14,14) LY(15,15) LY(16,16) VA 1.0 LY(17,17)
 FR BE(2,1)
 FR     BE(3,2)         BE(3,7)        BE(3,11)
 FR        BE(4,3)          BE(4,8)        BE(4,12)
 FR            BE(5,4)          BE(5,9)        BE(5,13)
 FR  BE(6,1)                        BE(6,10)
 FR      BE(7,2)    BE(7,6)            BE(7,11)
 FR      BE(8,2)        BE(8,7)            BE(8,12)
 FR      BE(9,2)            BE(9,8)            BE(9,13)
 FR                  BE(10,14)
 FR BE(11,10)            BE(11,15)
 FR    BE(12,11)              BE(12,16)
 FR      BE(13,12)                BE (13,17)
 FR                  BE(15,14)
 FR                     BE(16,15)
 FR                        BE(17,16)
 EQ BE(6,1) BE(7,2)
 EQ BE(8,2) BE(9,2)
 FR PS (1,1)
 FR  PS(2,2)
 FR    PS(3,3)
 FR      PS(4,4)
 FR        PS(5,5)
 FR          PS(6,6)
 FR            PS(7,7)
 FR              PS(8,8)
 FR               PS(9,9)
 FR PS(10,1)      PS(10,10)
 FR                PS(11,11)
 FR                  PS(12,12)
 FR                      PS(13,13)
 FR                          PS(14,14)
 FR                            PS(15,15)
 FR                             PS(16,16)
 FR                                PS(17,17)
```

VA 10.6798 TE(1,1)
VA 10.3209 TE(2,2)
VA 2.2081 TE(3,3)
VA 0.9855 TE(4,4)
VA 0.8070 TE(5,5)
VA 1.1417 TE(6,6)
VA 2.1281 TE(7,7)
VA 1.5910 TE(8,8)
VA 1.7461 TE(9,9)
VA 5.1192 TE(10,10)
VA 4.3210 TE(11,11)
VA 4.0873 TE(12,12)
VA 3.3677 TE(13,13)
VA 0.0824 TE(14,14)
VA 0.0795 TE(15,15)
VA 0.0721 TE(16,16)
VA 0.0984 TE(17,17)
PD
OU ALL

Number of Input Variables 36
Number of Y - Variables 17
Number of X - Variables 0
Number of ETA - Variables 17
Number of KSI - Variables 0
Number of Observations 355

Covariance Matrix

	ATMSCALE	**BTMSCALE**	**bbecs04**	**cbecs09**	**DBECdS09**	**APRCS02**
ATMSCALE	53.40					
BTMSCALE	21.96	51.60				
bbecs04	5.36	9.74	8.18			
cbecs09	0.38	4.28	2.48	4.48		
DBECdS09	0.71	3.31	1.33	2.09	3.67	
APRCS02	2.14	1.39	0.44	0.17	0.24	1.68
bprcs06	0.84	2.84	1.51	0.99	0.21	0.52
cprcs06	1.95	2.93	0.99	1.14	0.63	0.38
DPRCS06	2.32	2.57	1.01	0.88	0.80	0.35
ADPPS01	3.95	4.59	1.74	1.20	1.43	0.98
bdpps01	-0.38	2.37	2.00	1.11	0.80	0.60
cdpps01	-2.29	2.41	1.92	2.01	1.96	0.69
DDPPS01	-0.79	1.74	1.46	1.41	1.27	0.24
C1IN1000	0.19	-0.43	0.04	-0.01	-0.14	-0.06
C2IN1000	0.04	-0.86	-0.11	-0.06	-0.09	-0.08
C3IN1000	-0.61	-1.56	-0.23	-0.11	-0.17	-0.17
C4IN1000	-0.62	-1.38	0.02	0.09	-0.04	-0.25

(Covariance Matrix – continued)

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	4.84					
cprcs06	1.94	3.79				
DPRCS06	1.52	1.88	3.80			
ADPPS01	1.37	1.39	2.08	18.28		
bdpps01	1.17	0.31	0.80	8.50	17.28	
cdpps01	1.08	1.84	1.80	7.55	6.19	19.46
DDPPS01	1.79	1.49	1.45	6.82	4.07	6.84
C1IN1000	-0.31	-0.22	-0.20	-0.97	-0.08	-0.42
C2IN1000	-0.13	-0.18	-0.11	-0.94	-0.23	-0.57
C3IN1000	-0.29	-0.28	-0.20	-0.95	-0.52	-0.72
C4IN1000	-0.27	-0.32	-0.26	-1.07	-0.38	-0.71

	DDPPS01	C1IN1000	C2IN1000	C3IN1000	C4IN1000
DDPPS01	14.64				
C1IN1000	-0.71	1.65			
C2IN1000	-0.73	1.20	1.59		
C3IN1000	-0.74	0.93	1.19	1.44	
C4IN1000	-0.86	1.14	1.38	1.38	1.97

Parameter Specifications

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	0	0	0	0	0	0
TEM2eta2	1	0	0	0	0	0
AGG2eta3	0	2	0	0	0	0
AGG3eta4	0	0	5	0	0	0
AGG4eta5	0	0	0	8	0	0
PAR1ETA6	11	0	0	0	0	0
PAR2ETA7	0	11	0	0	0	13
PAR3ETA8	0	15	0	0	0	0
PAR4ETA9	0	15	0	0	0	0
DP1ETA10	0	0	0	0	0	0
DP2ETA11	0	0	0	0	0	0
DP3ETA12	0	0	0	0	0	0
DP4ETA13	0	0	0	0	0	0
IN1ETA14	0	0	0	0	0	0
IN2ETA15	0	0	0	0	0	0
IN3ETA16	0	0	0	0	0	0
IN4ETA17	0	0	0	0	0	0

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	0	0	0	0	0	0
TEM2eta2	0	0	0	0	0	0
AGG2eta3	3	0	0	0	4	0
AGG3eta4	0	6	0	0	0	7
AGG4eta5	0	0	9	0	0	0
PAR1ETA6	0	0	0	12	0	0
PAR2ETA7	0	0	0	0	14	0

(BETA – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR3ETA8	16	0	0	0	0	17
PAR4ETA9	0	18	0	0	0	0
DP1ETA10	0	0	0	0	0	0
DP2ETA11	0	0	0	21	0	0
DP3ETA12	0	0	0	0	23	0
DP4ETA13	0	0	0	0	0	25
IN1ETA14	0	0	0	0	0	0
IN2ETA15	0	0	0	0	0	0
IN3ETA16	0	0	0	0	0	0
IN4ETA17	0	0	0	0	0	0

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
TEM1eta1	0	0	0	0	0
TEM2eta2	0	0	0	0	0
AGG2eta3	0	0	0	0	0
AGG3eta4	0	0	0	0	0
AGG4eta5	10	0	0	0	0
PAR1ETA6	0	0	0	0	0
PAR2ETA7	0	0	0	0	0
PAR3ETA8	0	0	0	0	0
PAR4ETA9	19	0	0	0	0
DP1ETA10	0	20	0	0	0
DP2ETA11	0	0	22	0	0
DP3ETA12	0	0	0	24	0
DP4ETA13	0	0	0	0	26
IN1ETA14	0	0	0	0	0
IN2ETA15	0	27	0	0	0
IN3ETA16	0	0	28	0	0
IN4ETA17	0	0	0	29	0

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	30					
TEM2eta2	0	31				
AGG2eta3	0	0	32			
AGG3eta4	0	0	0	33		
AGG4eta5	0	0	0	0	34	
PAR1ETA6	0	0	0	0	0	35
PAR2ETA7	0	0	0	0	0	0
PAR3ETA8	0	0	0	0	0	0
PAR4ETA9	0	0	0	0	0	0
DP1ETA10	39	0	0	0	0	0
DP2ETA11	0	0	0	0	0	0
DP3ETA12	0	0	0	0	0	0
DP4ETA13	0	0	0	0	0	0
IN1ETA14	0	0	0	0	0	0
IN2ETA15	0	0	0	0	0	0
IN3ETA16	0	0	0	0	0	0
IN4ETA17	0	0	0	0	0	0

(PSI – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	36					
PAR3ETA8	0	37				
PAR4ETA9	0	0	38			
DP1ETA10	0	0	0	40		
DP2ETA11	0	0	0	0	41	
DP3ETA12	0	0	0	0	0	42
DP4ETA13	0	0	0	0	0	0
IN1ETA14	0	0	0	0	0	0
IN2ETA15	0	0	0	0	0	0
IN3ETA16	0	0	0	0	0	0
IN4ETA17	0	0	0	0	0	0

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
DP4ETA13	43				
IN1ETA14	0	44			
IN2ETA15	0	0	45		
IN3ETA16	0	0	0	46	
IN4ETA17	0	0	0	0	47

Initial Estimates (TSLS)
LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	1.00	- -	- -	- -	- -	- -
BTMSCALE	- -	1.00	- -	- -	- -	- -
bbecs04	- -	- -	1.00	- -	- -	- -
cbecs09	- -	- -	- -	1.00	- -	- -
DBECdS09	- -	- -	- -	- -	1.00	- -
APRCS02	- -	- -	- -	- -	- -	1.00
bprcs06	- -	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -	- -	- -
bprcs06	1.00	- -	- -	- -	- -	- -
cprcs06	- -	1.00	- -	- -	- -	- -

(LAMBDA-Y – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
DPRCS06	- -	- -	1.00	- -	- -	- -
ADPPS01	- -	- -	- -	1.00	- -	- -
bdpps01	- -	- -	- -	- -	1.00	- -
cdpps01	- -	- -	- -	- -	- -	1.00
DDPPS01	- -	- -	- -	- -	- -	- -
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
ATMSCALE	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -	- -
bprcs06	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -
DDPPS01	1.00	- -	- -	- -	- -
C1IN1000	- -	1.00	- -	- -	- -
C2IN1000	- -	- -	1.00	- -	- -
C3IN1000	- -	- -	- -	1.00	- -
C4IN1000	- -	- -	- -	- -	1.00

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.51	- -	- -	- -	- -	- -
AGG2eta3	- -	0.21	- -	- -	- -	- -
AGG3eta4	- -	- -	0.35	- -	- -	- -
AGG4eta5	- -	- -	- -	0.55	- -	- -
PAR1ETA6	0.04	- -	- -	- -	- -	- -
PAR2ETA7	- -	0.04	- -	- -	- -	0.81
PAR3ETA8	- -	0.01	- -	- -	- -	- -
PAR4ETA9	- -	0.01	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

(BETA – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.30	- -	- -	- -	0.09	- -
AGG3eta4	- -	0.32	- -	- -	- -	0.05
AGG4eta5	- -	- -	0.13	- -	- -	- -
PAR1ETA6	- -	- -	- -	0.06	- -	- -
PAR2ETA7	- -	- -	- -	- -	0.05	- -
PAR3ETA8	0.67	- -	- -	- -	- -	0.07
PAR4ETA9	- -	0.84	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.66	- -	- -
DP3ETA12	- -	- -	- -	- -	0.46	- -
DP4ETA13	- -	- -	- -	- -	- -	0.43
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
TEM1eta1	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -
AGG2eta3	- -	- -	- -	- -	- -
AGG3eta4	- -	- -	- -	- -	- -
AGG4eta5	0.03	- -	- -	- -	- -
PAR1ETA6	- -	- -	- -	- -	- -
PAR2ETA7	- -	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -	- -
PAR4ETA9	0.02	- -	- -	- -	- -
DP1ETA10	- -	-0.62	- -	- -	- -
DP2ETA11	- -	- -	0.26	- -	- -
DP3ETA12	- -	- -	- -	-0.35	- -
DP4ETA13	- -	- -	- -	- -	-0.30
IN1ETA14	- -	- -	- -	- -	- -
IN2ETA15	- -	0.76	- -	- -	- -
IN3ETA16	- -	- -	0.79	- -	- -
IN4ETA17	- -	- -	- -	1.01	- -

Covariance Matrix of ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	42.72					
TEM2eta2	21.96	41.28				
AGG2eta3	5.66	9.59	5.91			
AGG3eta4	2.71	4.08	2.45	3.45		
AGG4eta5	1.79	2.59	1.51	2.07	2.84	
PAR1ETA6	2.03	1.04	0.43	0.28	0.20	0.53
PAR2ETA7	2.68	2.63	1.46	1.13	0.85	0.50
PAR3ETA8	2.13	2.27	1.14	1.14	0.89	0.37
PAR4ETA9	2.05	2.39	1.08	1.01	0.85	0.32
DP1ETA10	4.07	2.09	1.58	1.12	0.81	0.97
DP2ETA11	2.70	1.39	1.80	1.31	0.94	0.64
DP3ETA12	1.25	0.64	0.84	1.50	1.19	0.31
DP4ETA13	0.54	0.28	0.37	0.66	0.76	0.14
IN1ETA14	- -	- -	-0.05	-0.06	-0.06	-0.06
IN2ETA15	- -	- -	-0.02	-0.05	-0.05	-0.05
IN3ETA16	- -	- -	-0.02	-0.05	-0.05	-0.04
IN4ETA17	- -	- -	-0.02	-0.05	-0.06	-0.04

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	2.69					
PAR3ETA8	1.86	2.09				
PAR4ETA9	1.60	1.79	1.98			
DP1ETA10	1.27	1.16	1.03	13.16		
DP2ETA11	1.17	1.22	1.08	8.55	13.03	
DP3ETA12	0.55	1.44	1.33	4.17	6.07	15.24
DP4ETA13	0.25	0.64	0.73	1.97	2.64	6.73
IN1ETA14	-0.06	-0.08	-0.07	-0.97	-0.33	-0.48
IN2ETA15	-0.04	-0.06	-0.06	-0.74	-0.10	-0.46
IN3ETA16	-0.03	-0.06	-0.06	-0.58	-0.08	-0.51
IN4ETA17	-0.03	-0.06	-0.06	-0.59	-0.08	-0.52

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
DP4ETA13	11.20				
IN1ETA14	-0.49	1.57			
IN2ETA15	-0.55	1.20	1.51		
IN3ETA16	-0.63	0.95	1.19	1.37	
IN4ETA17	-0.78	0.95	1.20	1.38	1.87

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	42.72					
TEM2eta2	- -	29.99				
AGG2eta3	- -	- -	3.29			
AGG3eta4	- -	- -	- -	2.17		
AGG4eta5	- -	- -	- -	- -	1.56	
PAR1ETA6	- -	- -	- -	- -	- -	0.38
PAR2ETA7	- -	- -	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -	- -	- -
PAR4ETA9	- -	- -	- -	- -	- -	- -
DP1ETA10	4.07	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	2.12					
PAR3ETA8	- -	0.72				
PAR4ETA9	- -	- -	0.44			
DP1ETA10	- -	- -	- -	12.56		
DP2ETA11	- -	- -	- -	- -	7.37	
DP3ETA12	- -	- -	- -	- -	- -	12.25
DP4ETA13	- -	- -	- -	- -	- -	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
DP4ETA13	8.06				
IN1ETA14	- -	1.57			
IN2ETA15	- -	- -	0.59		
IN3ETA16	- -	- -	- -	0.43	
IN4ETA17	- -	- -	- -	- -	0.48

Squared Multiple Correlations for Structural Equations

TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
- -	0.27	0.44	0.37	0.45	0.27

PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
0.21	0.66	0.78	0.05	0.43	0.20

DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
0.28	- -	0.61	0.68	0.74

THETA-EPS

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
10.68	10.32	2.21	0.99	0.81	1.14

bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
2.13	1.59	1.75	5.12	4.32	4.09

DDPPS01	C1IN1000	C2IN1000	C3IN1000	C4IN1000
3.37	0.08	0.08	0.07	0.10

Behavior under Minimization Iterations

ITER	TRY	ABSCISA	SLOPE	FUNCTION
1	0	0.00000000D+00	-0.24697227D-01	0.32225311D+00
	1	0.10000000D+01	0.33785948D-03	0.31003625D+00
2	0	0.00000000D+00	-0.70094361D-03	0.31003625D+00
	1	0.10000000D+01	-0.28315265D-04	0.30967041D+00
3	0	0.00000000D+00	-0.20390341D-04	0.30967041D+00
	1	0.10000000D+01	-0.96820867D-06	0.30965973D+00
4	0	0.00000000D+00	-0.59831291D-06	0.30965973D+00
	1	0.10000000D+01	-0.45341703D-07	0.30965941D+00
5	0	0.00000000D+00	-0.20857279D-07	0.30965941D+00
	1	0.10000000D+01	-0.82313399D-09	0.30965940D+00
6	0	0.00000000D+00	-0.33919703D-09	0.30965940D+00
	1	0.10000000D+01	-0.34289749D-11	0.30965940D+00
7	0	0.00000000D+00	-0.57136552D-11	0.30965940D+00
	1	0.10000000D+01	-0.23824608D-12	0.30965940D+00

Number of Iterations = 7

LISREL Estimates (Maximum Likelihood)

LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	1.00	- -	- -	- -	- -	- -
BTMSCALE	- -	1.00	- -	- -	- -	- -
bbecs04	- -	- -	1.00	- -	- -	- -
cbecs09	- -	- -	- -	1.00	- -	- -
DBECdS09	- -	- -	- -	- -	1.00	- -
APRCS02	- -	- -	- -	- -	- -	1.00
bprcs06	- -	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

(LAMBDA-Y - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -	- -	- -
bprcs06	1.00	- -	- -	- -	- -	- -
cprcs06	- -	1.00	- -	- -	- -	- -
DPRCS06	- -	- -	1.00	- -	- -	- -
ADPPS01	- -	- -	- -	1.00	- -	- -
bdpps01	- -	- -	- -	- -	1.00	- -
cdpps01	- -	- -	- -	- -	- -	1.00
DDPPS01	- -	- -	- -	- -	- -	- -
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
ATMSCALE	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -	- -
bprcs06	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -
DDPPS01	1.00	- -	- -	- -	- -
C1IN1000	- -	1.00	- -	- -	- -
C2IN1000	- -	- -	1.00	- -	- -
C3IN1000	- -	- -	- -	1.00	- -
C4IN1000	- -	- -	- -	- -	1.00

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.52 (0.06) 8.69	- -	- -	- -	- -	- -
AGG2eta3	- -	0.21 (0.02) 8.90	- -	- -	- -	- -
AGG3eta4	- -	- -	0.34 (0.05) 6.70	- -	- -	- -
AGG4eta5	- -	- -	- -	0.57 (0.06) 9.50	- -	- -
PAR1ETA6	0.04 (0.01) 4.53	- -	- -	- -	- -	- -
PAR2ETA7	- -	0.04 (0.01) 4.53	- -	- -	- -	0.68 (0.26) 2.63
PAR3ETA8	- -	0.02 (0.01) 1.65	- -	- -	- -	- -
PAR4ETA9	- -	0.02 (0.01) 1.65	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

(BETA - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.25	- -	- -	- -	0.11	- -
	(0.11)				(0.04)	
	2.35				2.56	
AGG3eta4	- -	0.25	- -	- -	- -	0.07
		(0.09)				(0.03)
		2.69				2.32
AGG4eta5	- -	- -	0.03	- -	- -	- -
			(0.09)			
			0.39			
PAR1ETA6	- -	- -	- -	0.07	- -	- -
				(0.02)		
				3.16		
PAR2ETA7	- -	- -	- -	- -	0.03	- -
					(0.04)	
					0.90	
PAR3ETA8	0.64	- -	- -	- -	- -	0.08
	(0.08)					(0.03)
	7.95					3.15
PAR4ETA9	- -	0.80	- -	- -	- -	- -
		(0.09)				
		9.34				
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.68	- -	- -
				(0.07)		
				10.51		
DP3ETA12	- -	- -	- -	- -	0.54	- -
					(0.07)	
					7.88	
DP4ETA13	- -	- -	- -	- -	- -	0.45
						(0.05)
						8.46
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

(BETA - continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
TEM1eta1	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -
AGG2eta3	- -	- -	- -	- -	- -
AGG3eta4	- -	- -	- -	- -	- -
AGG4eta5	0.05 (0.03) 1.49	- -	- -	- -	- -
PAR1ETA6	- -	- -	- -	- -	- -
PAR2ETA7	- -	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -	- -
PAR4ETA9	0.03 (0.03) 0.95	- -	- -	- -	- -
DP1ETA10	- -	-0.59 (0.18) -3.30	- -	- -	- -
DP2ETA11	- -	- -	0.25 (0.16) 1.52	- -	- -
DP3ETA12	- -	- -	- -	-0.36 (0.19) -1.90	- -
DP4ETA13	- -	- -	- -	- -	-0.29 (0.14) -2.12
IN1ETA14	- -	- -	- -	- -	- -
IN2ETA15	- -	0.76 (0.04) 20.74	- -	- -	- -
IN3ETA16	- -	- -	0.80 (0.03) 25.04	- -	- -
IN4ETA17	- -	- -	- -	1.02 (0.04) 28.05	- -

Covariance Matrix of ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	42.65					
TEM2eta2	22.09	41.33				
AGG2eta3	5.56	9.56	5.93			
AGG3eta4	2.47	3.87	2.35	3.44		
AGG4eta5	1.50	2.31	1.40	2.03	2.82	
PAR1ETA6	2.04	1.06	0.41	0.25	0.16	0.56
PAR2ETA7	2.42	2.52	1.31	0.93	0.59	0.45
PAR3ETA8	1.99	2.32	1.07	1.01	0.67	0.34
PAR4ETA9	1.95	2.51	1.02	0.89	0.61	0.29
DP1ETA10	3.44	1.78	1.60	1.17	0.81	1.02
DP2ETA11	2.35	1.22	1.87	1.41	0.98	0.69
DP3ETA12	1.27	0.66	1.02	1.79	1.39	0.39
DP4ETA13	0.57	0.30	0.46	0.83	1.01	0.19
IN1ETA14	- -	- -	-0.05	-0.07	-0.07	-0.06
IN2ETA15	- -	- -	-0.02	-0.06	-0.06	-0.05
IN3ETA16	- -	- -	-0.02	-0.06	-0.06	-0.04
IN4ETA17	- -	- -	-0.02	-0.06	-0.07	-0.04

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	2.71					
PAR3ETA8	1.82	2.18				
PAR4ETA9	1.49	1.79	2.00			
DP1ETA10	1.08	1.12	0.99	13.24		
DP2ETA11	0.96	1.19	1.06	8.87	12.79	
DP3ETA12	0.53	1.57	1.46	5.00	6.95	15.21
DP4ETA13	0.25	0.73	0.92	2.43	3.17	7.04
IN1ETA14	-0.05	-0.08	-0.08	-0.93	-0.34	-0.53
IN2ETA15	-0.04	-0.06	-0.07	-0.71	-0.11	-0.49
IN3ETA16	-0.03	-0.06	-0.07	-0.57	-0.09	-0.54
IN4ETA17	-0.03	-0.06	-0.07	-0.58	-0.09	-0.55

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
DP4ETA13	11.20				
IN1ETA14	-0.53	1.57			
IN2ETA15	-0.59	1.20	1.51		
IN3ETA16	-0.65	0.96	1.21	1.37	
IN4ETA17	-0.80	0.98	1.24	1.40	1.87

PSI

	TEM1eta1	**TEM2eta2**	**AGG2eta3**	**AGG3eta4**	**AGG4eta5**	**PAR1ETA6**
TEM1eta1	42.65 (4.01) 10.65					
TEM2eta2	- -	29.89 (3.21) 9.31				
AGG2eta3	- -	- -	3.36 (0.45) 7.40			
AGG3eta4	- -	- -	- -	2.27 (0.26) 8.62		
AGG4eta5	- -	- -	- -	- -	1.59 (0.20) 7.83	
PAR1ETA6	- -	- -	- -	- -	- -	0.41 (0.11) 3.56
PAR2ETA7	- -	- -	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -	- -	- -
PAR4ETA9	- -	- -	- -	- -	- -	- -
DP1ETA10	3.44 (1.60) 2.16	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

(PSI - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	2.26 (0.35) 6.52					
PAR3ETA8	- -	0.86 (0.22) 3.97				
PAR4ETA9	- -	- -	0.50 (0.22) 2.26			
DP1ETA10	- -	- -	- -	12.68 (1.34) 9.48		
DP2ETA11	- -	- -	- -	- -	6.76 (0.99) 6.83	
DP3ETA12	- -	- -	- -	- -	- -	11.26 (1.23) 9.19
DP4ETA13	- -	- -	- -	- -	- -	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
DP4ETA13	7.79 (0.90) 8.68				
IN1ETA14	- -	1.57 (0.12) 12.66			
IN2ETA15	- -	- -	0.59 (0.05) 11.04		
IN3ETA16	- -	- -	- -	0.40 (0.04) 10.40	
IN4ETA17	- -	- -	- -	- -	0.44 (0.05) 9.65

Squared Multiple Correlations for Structural Equations

TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
- -	0.28	0.43	0.34	0.43	0.28

PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
0.17	0.61	0.75	0.04	0.47	0.26

DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
0.30	- -	0.61	0.71	0.77

THETA-EPS

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
10.68	10.32	2.21	0.99	0.81	1.14

bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
2.13	1.59	1.75	5.12	4.32	4.09

DDPPS01	C1IN1000	C2IN1000	C3IN1000	C4IN1000
3.37	0.08	0.08	0.07	0.10

Squared Multiple Correlations for Y - Variables

ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
0.80	0.80	0.73	0.78	0.78	0.33

bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
0.56	0.58	0.53	0.72	0.75	0.79

DDPPS01	C1IN1000	C2IN1000	C3IN1000	C4IN1000
0.77	0.95	0.95	0.95	0.95

Goodness of Fit Statistics

Degrees of Freedom = 106
Minimum Fit Function Chi-Square = 219.24 (P = 0.00)
Normal Theory Weighted Least Squares Chi-Square = 210.72 (P = 0.00)
Estimated Non-centrality Parameter (NCP) = 104.72
90 Percent Confidence Interval for NCP = (67.25 ; 149.98)

Minimum Fit Function Value = 0.62
Population Discrepancy Function Value (F0) = 0.30
90 Percent Confidence Interval for F0 = (0.19 ; 0.42)
Root Mean Square Error of Approximation (RMSEA) = 0.053
90 Percent Confidence Interval for RMSEA = (0.042 ; 0.063)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.32

Expected Cross-Validation Index (ECVI) = 0.86
90 Percent Confidence Interval for ECVI = (0.75 ; 0.99)
ECVI for Saturated Model = 0.86
ECVI for Independence Model = 7.91

Chi-Square for Independence Model with 136 Degrees of Freedom = 2765.96
Independence AIC = 2799.96
Model AIC = 304.72
Saturated AIC = 306.00
Independence CAIC = 2882.78
Model CAIC = 533.71
Saturated CAIC = 1051.43

Normed Fit Index (NFI) = 0.92
Non-Normed Fit Index (NNFI) = 0.94
Parsimony Normed Fit Index (PNFI) = 0.72
Comparative Fit Index (CFI) = 0.96
Incremental Fit Index (IFI) = 0.96
Relative Fit Index (RFI) = 0.90

Critical N (CN) = 231.55

Root Mean Square Residual (RMR) = 0.77
Standardized RMR = 0.059
Goodness of Fit Index (GFI) = 0.94
Adjusted Goodness of Fit Index (AGFI) = 0.91
Parsimony Goodness of Fit Index (PGFI) = 0.65

Fitted Covariance Matrix

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	53.33					
BTMSCALE	22.09	51.65				
bbecs04	5.56	9.56	8.14			
cbecs09	2.47	3.87	2.35	4.43		
DBECdS09	1.50	2.31	1.40	2.03	3.63	
APRCS02	2.04	1.06	0.41	0.25	0.16	1.70
bprcs06	2.42	2.52	1.31	0.93	0.59	0.45
cprcs06	1.99	2.32	1.07	1.01	0.67	0.34
DPRCS06	1.95	2.51	1.02	0.89	0.61	0.29
ADPPS01	3.44	1.78	1.60	1.17	0.81	1.02
bdpps01	2.35	1.22	1.87	1.41	0.98	0.69
cdpps01	1.27	0.66	1.02	1.79	1.39	0.39
DDPPS01	0.57	0.30	0.46	0.83	1.01	0.19
C1IN1000	- -	- -	-0.05	-0.07	-0.07	-0.06
C2IN1000	- -	- -	-0.02	-0.06	-0.06	-0.05
C3IN1000	- -	- -	-0.02	-0.06	-0.06	-0.04
C4IN1000	- -	- -	-0.02	-0.06	-0.07	-0.04

(Fitted Covariance Matrix – continued)

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	4.84					
cprcs06	1.82	3.77				
DPRCS06	1.49	1.79	3.75			
ADPPS01	1.08	1.12	0.99	18.36		
bdpps01	0.96	1.19	1.06	8.87	17.11	
cdpps01	0.53	1.57	1.46	5.00	6.95	19.30
DDPPS01	0.25	0.73	0.92	2.43	3.17	7.04
C1IN1000	-0.05	-0.08	-0.08	-0.93	-0.34	-0.53
C2IN1000	-0.04	-0.06	-0.07	-0.71	-0.11	-0.49
C3IN1000	-0.03	-0.06	-0.07	-0.57	-0.09	-0.54
C4IN1000	-0.03	-0.06	-0.07	-0.58	-0.09	-0.55

	DDPPS01	C1IN1000	C2IN1000	C3IN1000	C4IN1000
DDPPS01	14.57				
C1IN1000	-0.53	1.65			
C2IN1000	-0.59	1.20	1.59		
C3IN1000	-0.65	0.96	1.21	1.44	
C4IN1000	-0.80	0.98	1.24	1.40	1.97

Fitted Residuals

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	0.07					
BTMSCALE	-0.13	-0.05				
bbecs04	-0.20	0.18	0.04			
cbecs09	-2.09	0.41	0.13	0.05		
DBECdS09	-0.79	1.00	-0.07	0.06	0.04	
APRCS02	0.10	0.33	0.03	-0.08	0.08	-0.02
bprcs06	-1.58	0.32	0.20	0.06	-0.38	0.07
cprcs06	-0.04	0.61	-0.08	0.13	-0.04	0.04
DPRCS06	0.37	0.06	-0.01	-0.01	0.19	0.06
ADPPS01	0.51	2.81	0.14	0.03	0.62	-0.04
bdpps01	-2.73	1.15	0.13	-0.30	-0.18	-0.09
cdpps01	-3.56	1.75	0.90	0.22	0.57	0.30
DDPPS01	-1.36	1.44	1.00	0.58	0.26	0.05
C1IN1000	0.19	-0.43	0.09	0.06	-0.07	0.00
C2IN1000	0.04	-0.86	-0.09	0.00	-0.03	-0.03
C3IN1000	-0.61	-1.56	-0.21	-0.05	-0.11	-0.13
C4IN1000	-0.62	-1.38	0.04	0.15	0.03	-0.21

(Fitted Residuals – continued)

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	0.00					
cprcs06	0.12	0.02				
DPRCS06	0.03	0.09	0.05			
ADPPS01	0.29	0.27	1.09	-0.08		
bdpps01	0.21	-0.88	-0.26	-0.37	0.17	
cdpps01	0.55	0.27	0.34	2.55	-0.76	0.16
DDPPS01	1.54	0.76	0.53	4.39	0.90	-0.20
C1IN1000	-0.26	-0.14	-0.12	-0.04	0.26	0.11
C2IN1000	-0.09	-0.12	-0.04	-0.23	-0.12	-0.08
C3IN1000	-0.26	-0.22	-0.13	-0.38	-0.43	-0.18
C4IN1000	-0.24	-0.26	-0.19	-0.49	-0.29	-0.16

	DDPPS01	C1IN1000	C2IN1000	C3IN1000	C4IN1000
DDPPS01	0.07				
C1IN1000	-0.18	0.00			
C2IN1000	-0.14	0.00	0.00		
C3IN1000	-0.09	-0.03	-0.02	0.00	
C4IN1000	-0.06	0.16	0.14	-0.02	0.00

Summary Statistics for Fitted Residuals

Smallest Fitted Residual = -3.56
Median Fitted Residual = 0.00
Largest Fitted Residual = 4.39

Stemleaf Plot

```
 - 3|6
 - 3|
 - 2|7
 - 2|1
 - 1|66
 - 1|44
 - 0|9988665
 -
0|44444333333222222222222111111111111111111111000000000000000000000000000000+05
  0|11111111111111111111111222222222333333333344
  0|5556666899
  1|00124
  1|58
  2|
  2|58
  3|
  3|
  4|4
```

Standardized Residuals

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	0.52					
BTMSCALE	-0.39	-0.31				
bbecs04	-0.26	0.81	0.72			
cbecs09	-3.00	0.73	1.43	1.51		
DBECdS09	-1.17	1.65	-0.35	1.88	2.30	
APRCS02	0.35	0.76	0.16	-0.59	0.63	-0.97
bprcs06	-2.60	0.49	1.26	0.36	-2.26	0.83
cprcs06	-0.07	1.09	-0.41	1.32	-0.34	0.42
DPRCS06	0.61	0.22	-0.04	-0.06	1.89	0.53
ADPPS01	1.02	2.00	0.29	0.08	1.56	-0.53
bdpps01	-2.33	0.79	0.44	-0.85	-0.51	-0.43
cdpps01	-2.24	1.06	1.55	1.11	1.89	1.09
DDPPS01	-0.94	0.99	1.79	1.61	1.51	0.21
C1IN1000	0.38	-0.88	0.47	0.45	-0.57	0.02
C2IN1000	0.08	-1.79	-0.47	-0.02	-0.23	-0.38
C3IN1000	-1.31	-3.41	-1.18	-0.40	-0.90	-1.62
C4IN1000	-1.14	-2.57	0.18	0.97	0.24	-2.20

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	-0.05					
cprcs06	1.64	0.33				
DPRCS06	0.24	1.55	2.21			
ADPPS01	0.82	0.76	2.87	-1.39		
bdpps01	1.09	-3.07	-0.78	-2.95	2.62	
cdpps01	1.22	1.22	1.14	3.94	-3.78	2.99
DDPPS01	3.58	2.24	2.85	5.83	1.43	-1.75
C1IN1000	-1.73	-1.11	-0.96	-0.66	1.93	0.51
C2IN1000	-0.64	-0.93	-0.34	-1.24	-1.19	-0.51
C3IN1000	-1.88	-1.82	-1.11	-1.84	-2.65	-2.31
C4IN1000	-1.47	-1.81	-1.33	-1.86	-1.28	-0.90

(Standardized Residuals – continued)

	DDPPS01	C1IN1000	C2IN1000	C3IN1000	C4IN1000
DDPPS01	1.80				
C1IN1000	-0.90	1.44			
C2IN1000	-0.89	-0.03	-0.25		
C3IN1000	-0.81	-1.08	-4.33	5.92	
C4IN1000	-0.88	3.47	5.70	-5.90	0.17

Summary Statistics for Standardized Residuals

Smallest Standardized Residual = -5.90
Median Standardized Residual = 0.02
Largest Standardized Residual = 5.92

Stemleaf Plot

```
 - 5|9
 - 4|3
 - 3|8410
 - 2|966633322
 - 1|99888887654333222211110 0
 - 0|99999999988766655554444433333221100000
   0|11222222223334444455555667788888 8
   1|000111111223344455556666889999
   2|0223699
   3|0569
   4|
   5|789
```

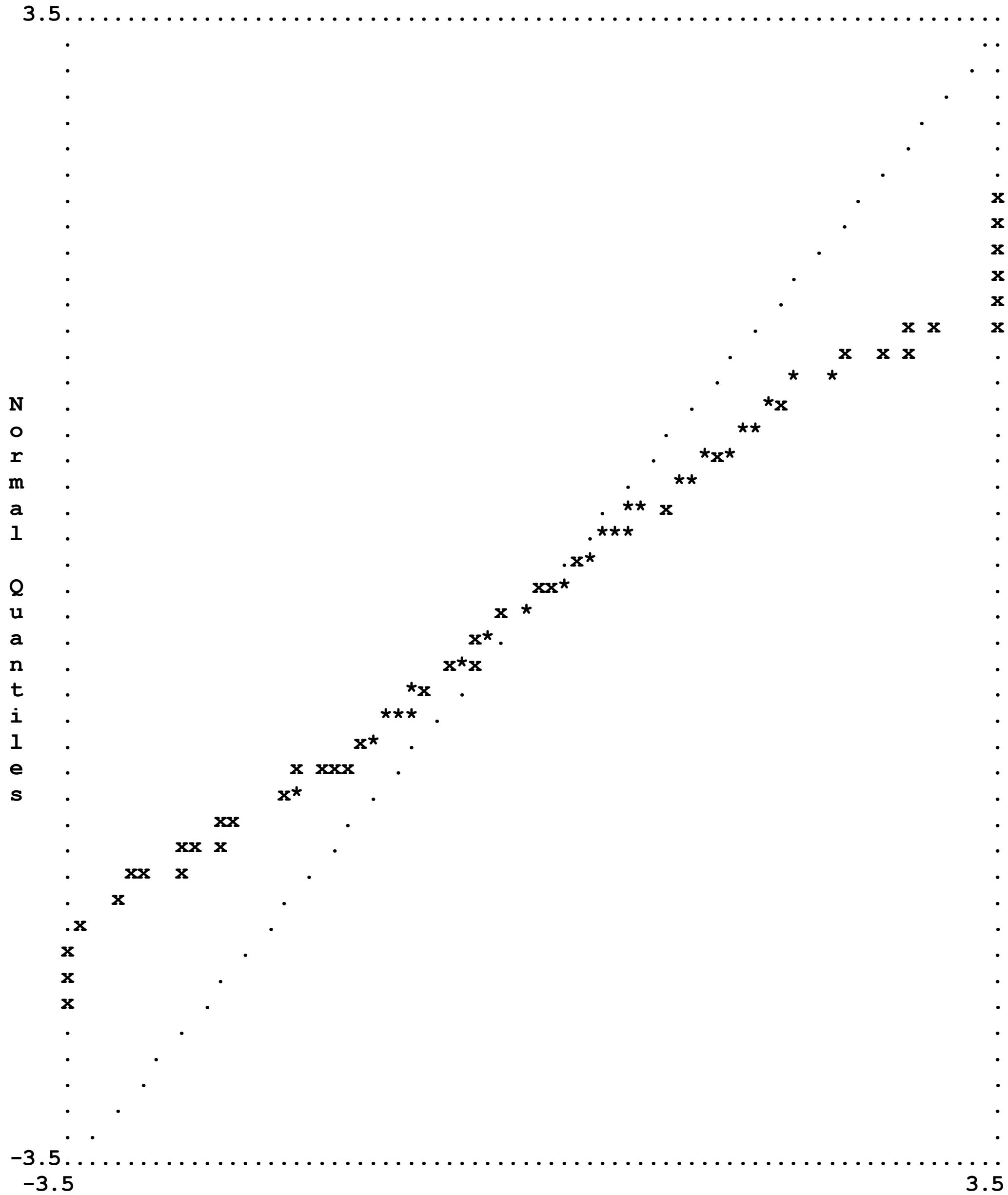
Largest Negative Standardized Residuals

Residual for	**cbecs09**	and	**ATMSCALE**	**-3.00**
Residual for	**bprcs06**	and	**ATMSCALE**	**-2.60**
Residual for	**bdpps01**	and	**cprcs06**	**-3.07**
Residual for	**bdpps01**	and	**ADPPS01**	**-2.95**
Residual for	**cdpps01**	and	**bdpps01**	**-3.78**
Residual for	**C3IN1000**	and	**BTMSCALE**	**-3.41**
Residual for	**C3IN1000**	and	**bdpps01**	**-2.65**
Residual for	**C3IN1000**	and	**C2IN1000**	**-4.33**
Residual for	**C4IN1000**	and	**C3IN1000**	**-5.90**

Largest Positive Standardized Residuals

Residual for	**ADPPS01**	and	**DPRCS06**	**2.87**
Residual for	**bdpps01**	and	**bdpps01**	**2.62**
Residual for	**cdpps01**	and	**ADPPS01**	**3.94**
Residual for	**cdpps01**	and	**cdpps01**	**2.99**
Residual for	**DDPPS01**	and	**bprcs06**	**3.58**
Residual for	**DDPPS01**	and	**DPRCS06**	**2.85**
Residual for	**DDPPS01**	and	**ADPPS01**	**5.83**
Residual for	**C3IN1000**	and	**C3IN1000**	**5.92**
Residual for	**C4IN1000**	and	**C1IN1000**	**3.47**
Residual for	**C4IN1000**	and	**C2IN1000**	**5.70**

Qplot of Standardized Residuals



Modification Indices and Expected Change

Modification Indices for LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.03	1.76	1.56	11.26	5.73	1.79
BTMSCALE	0.05	0.03	2.36	4.11	5.78	2.53
bbecs04	0.91	0.02	- -	0.22	0.53	0.08
cbecs09	5.88	0.38	0.30	- -	0.22	3.94
DBECdS09	0.19	1.17	0.30	- -	- -	0.32
APRCS02	0.39	0.17	0.04	0.01	0.47	0.03
bprcs06	6.23	0.04	0.95	0.00	3.22	0.19
cprcs06	0.74	0.40	0.25	0.30	0.02	0.00
DPRCS06	1.93	0.51	0.13	0.04	1.68	1.33
ADPPS01	5.52	2.29	0.18	1.16	3.92	1.09
bdpps01	2.07	0.21	0.31	2.28	3.15	2.87
cdpps01	1.74	0.02	0.48	0.26	1.30	0.29
DDPPS01	0.01	0.11	2.52	2.49	0.37	2.16
C1IN1000	0.59	1.30	1.93	0.50	0.03	0.44
C2IN1000	2.11	0.83	0.03	0.02	0.56	2.95
C3IN1000	4.00	8.49	8.17	5.22	4.17	2.37
C4IN1000	0.07	0.28	4.22	5.72	3.66	1.86

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	4.34	2.39	1.14	3.86	10.05	13.36
BTMSCALE	2.23	2.54	1.46	4.78	3.90	2.65
bbecs04	1.44	0.13	0.06	0.31	0.51	1.45
cbecs09	1.77	5.97	0.00	1.79	0.51	1.97
DBECdS09	10.98	5.97	- -	0.84	0.02	1.97
APRCS02	0.71	0.35	0.14	0.83	0.02	0.66
bprcs06	0.03	1.09	0.46	0.65	5.18	1.90
cprcs06	0.69	0.43	0.49	1.51	5.88	0.20
DPRCS06	0.12	5.97	0.43	3.12	0.33	0.16
ADPPS01	0.88	6.24	10.77	- -	2.12	22.04
bdpps01	3.94	13.96	12.77	16.01	- -	21.85
cdpps01	0.00	0.16	0.10	0.65	2.23	- -
DDPPS01	11.11	6.70	5.30	18.47	6.78	2.01
C1IN1000	1.42	0.46	0.41	2.41	5.16	1.67
C2IN1000	4.44	2.96	2.91	0.07	0.04	0.00
C3IN1000	3.22	2.05	1.68	0.65	4.21	0.81
C4IN1000	0.00	0.09	0.18	0.28	0.33	0.02

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
ATMSCALE	6.03	0.81	0.93	0.28	0.10
BTMSCALE	1.01	1.93	4.57	9.40	8.32
bbecs04	0.54	0.81	0.21	0.60	1.79
cbecs09	0.07	0.79	0.37	1.04	2.35
DBECdS09	- -	0.57	0.04	0.19	0.01
APRCS02	0.28	0.02	0.07	0.94	2.32
bprcs06	7.20	1.98	0.19	0.77	0.44
cprcs06	0.23	0.22	0.46	0.65	0.99
DPRCS06	- -	0.06	0.08	0.06	0.02

(Modification Indices for LAMBDA-Y – continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
ADPPS01	32.92	2.08	1.40	0.61	0.77
bdpps01	4.16	2.61	0.01	2.75	0.36
cdpps01	6.87	0.22	0.01	0.00	0.06
DDPPS01	- -	0.90	0.31	0.01	0.03
C1IN1000	0.05	- -	2.07	0.39	1.02
C2IN1000	0.01	0.02	- -	0.13	10.51
C3IN1000	0.01	16.29	35.11	- -	34.98
C4IN1000	0.05	22.29	34.26	0.03	- -

Expected Change for LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.09	-0.38	-0.29	-0.76	-0.57	-1.84
BTMSCALE	0.03	-0.09	0.64	0.47	0.55	1.25
bbecs04	0.03	-0.01	- -	0.07	-0.08	0.09
cbecs09	-0.04	-0.01	0.05	- -	0.10	-0.41
DBECdS09	0.01	0.02	-0.03	- -	- -	0.11
APRCS02	0.01	0.01	0.01	0.00	0.03	-0.09
bprcs06	-0.05	0.00	0.07	0.00	-0.13	-0.15
cprcs06	0.01	0.01	-0.02	0.04	-0.01	0.01
DPRCS06	0.02	-0.02	-0.02	-0.01	0.09	0.24
ADPPS01	0.11	0.06	0.04	0.13	0.26	0.68
bdpps01	-0.05	-0.01	-0.06	-0.18	-0.23	-0.72
cdpps01	-0.04	0.00	0.07	0.08	0.18	0.22
DDPPS01	0.00	0.01	0.14	0.18	0.10	0.54
C1IN1000	0.01	0.01	0.03	0.02	0.00	0.06
C2IN1000	0.01	0.01	0.00	0.00	0.02	0.12
C3IN1000	-0.01	-0.01	-0.04	-0.04	-0.04	-0.09
C4IN1000	0.00	0.00	0.04	0.06	0.05	-0.11

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	-0.64	-0.49	-0.36	-0.39	-0.48	-0.38
BTMSCALE	0.48	0.56	0.50	0.23	0.22	0.15
bbecs04	0.61	-0.08	-0.05	-0.03	0.08	0.06
cbecs09	0.19	1.15	-0.01	-0.04	-0.02	-0.08
DBECdS09	-0.39	-0.66	- -	0.03	0.00	0.05
APRCS02	0.07	0.04	0.03	-0.08	0.00	0.02
bprcs06	0.09	0.30	0.15	0.04	0.12	0.05
cprcs06	0.17	1.18	0.23	-0.04	-0.08	-0.02
DPRCS06	-0.06	19.88	-1.18	0.05	0.02	0.01
ADPPS01	0.15	0.42	0.59	- -	0.54	0.33
bdpps01	-0.38	-0.70	-0.69	-0.81	- -	-0.47
cdpps01	0.01	0.08	0.07	0.07	-0.22	- -
DDPPS01	0.46	0.41	0.42	0.28	0.19	-0.90
C1IN1000	-0.04	-0.02	-0.02	0.03	0.04	0.02
C2IN1000	0.05	0.05	0.05	0.00	0.00	0.00
C3IN1000	-0.04	-0.03	-0.03	-0.01	-0.02	-0.01
C4IN1000	0.00	-0.01	-0.01	-0.01	0.01	0.00

(Expected Change for LAMBDA-Y – continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
ATMSCALE	-0.29	0.25	0.28	0.16	0.08
BTMSCALE	0.11	-0.36	-0.56	-0.84	-0.68
bbecs04	0.03	0.09	0.05	0.08	0.13
cbecs09	0.01	0.07	0.05	0.08	0.10
DBECdS09	- -	-0.05	-0.01	-0.03	-0.01
APRCS02	-0.01	0.01	-0.01	-0.06	-0.08
bprcs06	0.10	-0.12	-0.04	-0.08	-0.05
cprcs06	0.02	-0.03	-0.05	-0.06	-0.06
DPRCS06	- -	-0.02	0.02	0.02	-0.01
ADPPS01	0.40	-0.51	-0.35	-0.19	-0.16
bdpps01	-0.15	0.38	-0.05	-0.53	-0.13
cdpps01	-0.44	0.10	0.04	0.00	-0.08
DDPPS01	- -	-0.18	-0.13	-0.04	0.21
C1IN1000	0.00	- -	-0.75	-0.05	0.05
C2IN1000	0.00	0.01	- -	0.04	0.17
C3IN1000	0.00	-0.15	-0.41	- -	-0.48
C4IN1000	0.00	0.22	0.42	-0.22	- -

Standardized Expected Change for LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.61	-2.42	-0.69	-1.41	-0.96	-1.38
BTMSCALE	0.18	-0.60	1.55	0.88	0.93	0.94
bbecs04	0.17	-0.07	- -	0.14	-0.14	0.07
cbecs09	-0.27	-0.08	0.13	- -	0.17	-0.31
DBECdS09	0.04	0.12	-0.07	- -	- -	0.08
APRCS02	0.07	0.03	0.02	0.01	0.05	-0.07
bprcs06	-0.36	-0.03	0.17	-0.01	-0.23	-0.11
cprcs06	0.09	0.06	-0.06	0.07	-0.02	0.00
DPRCS06	0.16	-0.13	-0.05	-0.02	0.16	0.18
ADPPS01	0.74	0.36	0.10	0.24	0.44	0.51
bdpps01	-0.30	-0.09	-0.14	-0.34	-0.38	-0.54
cdpps01	-0.29	0.03	0.16	0.15	0.30	0.17
DDPPS01	-0.02	0.07	0.33	0.34	0.17	0.40
C1IN1000	0.04	0.06	0.07	0.04	-0.01	0.05
C2IN1000	0.06	0.03	0.01	0.01	0.03	0.09
C3IN1000	-0.07	-0.09	-0.10	-0.08	-0.07	-0.07
C4IN1000	-0.01	0.02	0.10	0.11	0.09	-0.08

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	-1.06	-0.72	-0.51	-1.43	-1.71	-1.50
BTMSCALE	0.79	0.83	0.70	0.85	0.78	0.59
bbecs04	1.01	-0.12	-0.07	-0.12	0.30	0.22
cbecs09	0.32	1.70	-0.01	-0.15	-0.09	-0.32
DBECdS09	-0.64	-0.97	- -	0.10	0.02	0.18
APRCS02	0.12	0.06	0.04	-0.30	0.02	0.07
bprcs06	0.15	0.45	0.22	0.13	0.44	0.21
cprcs06	0.28	1.75	0.32	-0.13	-0.28	-0.08
DPRCS06	-0.09	29.36	-1.67	0.19	0.06	0.06

(Standardized Expected Change for LAMBDA-Y – continued)

ADPPS01	0.25	0.62	0.83	- -	1.93	1.27
bdpps01	-0.62	-1.04	-0.97	-2.96	- -	-1.82
cdpps01	0.01	0.12	0.10	0.27	-0.78	- -
DDPPS01	0.76	0.61	0.60	1.00	0.67	-3.49
C1IN1000	-0.07	-0.04	-0.04	0.11	0.14	0.07
C2IN1000	0.09	0.07	0.07	0.01	0.01	0.00
C3IN1000	-0.06	-0.05	-0.05	-0.03	-0.07	-0.03
C4IN1000	0.00	-0.01	-0.02	-0.03	0.03	0.01

	DP4ETA13	**IN1ETA14**	**IN2ETA15**	**IN3ETA16**	**IN4ETA17**
ATMSCALE	-0.97	0.32	0.34	0.19	0.11
BTMSCALE	0.36	-0.45	-0.69	-0.98	-0.93
bbecs04	0.11	0.12	0.06	0.10	0.17
cbecs09	0.04	0.08	0.06	0.09	0.14
DBECdS09	- -	-0.07	-0.02	-0.04	-0.01
APRCS02	-0.04	0.01	-0.02	-0.07	-0.10
bprcs06	0.34	-0.15	-0.05	-0.09	-0.07
cprcs06	0.06	-0.04	-0.06	-0.07	-0.09
DPRCS06	- -	-0.02	0.03	0.02	-0.01
ADPPS01	1.34	-0.64	-0.43	-0.22	-0.22
bdpps01	-0.50	0.48	-0.06	-0.62	-0.17
cdpps01	-1.49	0.12	0.04	0.00	-0.11
DDPPS01	- -	-0.22	-0.16	-0.04	0.29
C1IN1000	0.01	- -	-0.92	-0.06	0.07
C2IN1000	0.00	0.01	- -	0.04	0.23
C3IN1000	0.00	-0.18	-0.51	- -	-0.66
C4IN1000	0.01	0.27	0.51	-0.26	- -

Modification Indices for BETA

	TEM1eta1	**TEM2eta2**	**AGG2eta3**	**AGG3eta4**	**AGG4eta5**	**PAR1ETA6**
TEM1eta1	- -	3.27	1.23	7.95	2.32	0.03
TEM2eta2	- -	- -	1.89	7.94	6.31	2.33
AGG2eta3	0.06	- -	- -	0.22	0.51	0.38
AGG3eta4	5.76	0.02	- -	- -	0.22	3.26
AGG4eta5	0.19	1.17	0.30	- -	- -	0.32
PAR1ETA6	0.03	0.28	0.09	0.05	0.03	0.03
PAR2ETA7	2.50	0.03	0.12	0.24	4.30	- -
PAR3ETA8	2.32	0.43	0.88	0.23	1.21	0.36
PAR4ETA9	1.98	0.43	0.15	0.04	1.68	1.38
DP1ETA10	- -	3.27	1.02	0.59	2.15	0.27
DP2ETA11	5.48	0.07	0.06	0.96	1.95	1.42
DP3ETA12	2.20	0.18	2.08	3.77	4.46	1.76
DP4ETA13	0.00	0.16	2.35	2.46	0.49	2.52
IN1ETA14	0.03	0.67	0.01	0.04	0.22	0.10
IN2ETA15	0.68	3.77	2.50	0.43	0.00	1.15
IN3ETA16	7.43	10.80	3.67	0.72	0.90	11.76
IN4ETA17	0.07	0.26	3.83	5.27	3.55	2.16

(Modification Indices for BETA – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	3.64	1.07	0.46	0.03	5.90	5.14
TEM2eta2	2.11	2.47	1.57	4.10	3.60	6.09
AGG2eta3	- -	0.13	0.06	1.44	- -	1.45
AGG3eta4	1.44	- -	0.00	0.73	0.51	- -
AGG4eta5	10.98	5.97	- -	0.84	0.02	1.97
PAR1ETA6	0.81	0.64	0.36	- -	0.02	1.89
PAR2ETA7	0.03	1.14	1.08	0.83	- -	2.69
PAR3ETA8	- -	0.43	0.44	0.00	5.18	- -
PAR4ETA9	0.25	- -	0.43	3.24	0.33	0.20
DP1ETA10	0.95	2.26	6.14	- -	5.21	29.61
DP2ETA11	1.19	11.20	10.94	- -	- -	19.03
DP3ETA12	2.97	4.49	3.40	20.56	- -	- -
DP4ETA13	9.89	6.37	5.29	20.47	7.15	- -
IN1ETA14	2.65	1.96	1.93	0.03	3.40	0.15
IN2ETA15	0.06	0.02	0.00	2.37	4.65	1.38
IN3ETA16	6.74	5.64	5.21	3.85	4.96	1.17
IN4ETA17	0.04	0.21	0.31	0.64	0.19	0.02

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
TEM1eta1	1.92	0.03	0.05	1.96	1.81
TEM2eta2	3.89	1.33	4.05	8.05	4.59
AGG2eta3	0.71	1.30	0.51	1.36	4.36
AGG3eta4	0.07	0.23	0.29	0.69	2.54
AGG4eta5	- -	0.57	0.04	0.19	0.01
PAR1ETA6	0.60	0.35	0.24	1.85	3.36
PAR2ETA7	10.48	2.78	0.34	1.04	0.76
PAR3ETA8	0.29	0.31	0.12	0.19	0.58
PAR4ETA9	- -	0.07	0.08	0.06	0.02
DP1ETA10	36.57	- -	2.07	4.25	2.62
DP2ETA11	6.75	3.49	- -	2.24	0.05
DP3ETA12	6.95	0.02	0.05	- -	0.01
DP4ETA13	- -	1.14	0.32	0.03	- -
IN1ETA14	0.92	- -	- -	0.06	11.67
IN2ETA15	0.03	- -	- -	0.06	0.12
IN3ETA16	0.02	0.06	- -	- -	35.07
IN4ETA17	0.05	23.13	35.07	- -	- -

Expected Change for BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	-1.06	-0.37	-0.82	-0.44	-0.40
TEM2eta2	- -	- -	0.54	0.83	0.70	1.32
AGG2eta3	-0.01	- -	- -	0.07	-0.09	-0.21
AGG3eta4	-0.04	0.00	- -	- -	0.10	-0.41
AGG4eta5	0.01	0.02	-0.03	- -	- -	0.11
PAR1ETA6	0.00	0.01	0.01	0.01	0.01	-0.09
PAR2ETA7	-0.04	0.00	0.04	0.06	-0.25	- -
PAR3ETA8	0.03	0.01	-0.05	0.04	0.10	0.13
PAR4ETA9	0.02	-0.01	-0.02	-0.01	0.09	0.24
DP1ETA10	- -	0.09	0.16	0.13	0.25	-1.38
DP2ETA11	-0.08	-0.01	0.03	-0.14	-0.20	-0.54
DP3ETA12	-0.05	0.02	0.15	0.39	0.43	0.61
DP4ETA13	0.00	0.01	0.13	0.18	0.12	0.58
IN1ETA14	0.00	-0.01	0.00	0.01	-0.02	-0.05
IN2ETA15	-0.01	-0.01	-0.03	-0.02	0.00	-0.10
IN3ETA16	-0.02	-0.02	-0.03	-0.02	-0.02	-0.26
IN4ETA17	0.00	0.00	0.04	0.06	0.05	-0.12

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	-0.94	-0.48	-0.34	-0.10	-0.49	-0.27
TEM2eta2	0.46	0.57	0.55	0.22	0.21	0.24
AGG2eta3	- -	-0.08	-0.05	-0.08	- -	0.06
AGG3eta4	-0.21	- -	-0.01	-0.03	-0.03	- -
AGG4eta5	-0.39	-0.66	- -	0.03	0.00	0.05
PAR1ETA6	0.08	0.06	0.05	- -	0.00	0.03
PAR2ETA7	0.09	0.33	0.28	0.06	- -	0.06
PAR3ETA8	- -	1.18	0.24	0.00	-0.08	- -
PAR4ETA9	-0.08	- -	-1.18	0.05	0.02	0.02
DP1ETA10	0.30	0.43	0.70	- -	1.24	0.69
DP2ETA11	-0.24	-0.75	-0.75	- -	- -	-0.45
DP3ETA12	0.29	0.49	0.47	0.53	- -	- -
DP4ETA13	0.43	0.40	0.42	0.29	0.19	- -
IN1ETA14	-0.09	-0.08	-0.09	0.03	0.11	0.01
IN2ETA15	0.01	0.00	0.00	-0.02	-0.04	-0.02
IN3ETA16	-0.07	-0.07	-0.07	-0.02	-0.03	-0.01
IN4ETA17	-0.01	-0.01	-0.02	-0.01	0.01	0.00

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
TEM1eta1	-0.18	0.06	-0.07	-0.47	-0.39
TEM2eta2	0.23	-0.32	-0.57	-0.85	-0.55
AGG2eta3	0.04	0.12	0.08	0.13	0.20
AGG3eta4	0.01	0.04	0.04	0.07	0.12
AGG4eta5	- -	-0.05	-0.01	-0.03	-0.01
PAR1ETA6	0.02	-0.03	-0.03	-0.08	-0.09
PAR2ETA7	0.12	-0.14	-0.05	-0.09	-0.07
PAR3ETA8	0.02	-0.04	-0.02	-0.03	-0.05
PAR4ETA9	- -	-0.02	0.02	0.02	-0.01

(Expected Change for BETA – continued)

DP1ETA10	0.57	- -	-0.45	-0.54	-0.33
DP2ETA11	-0.22	0.50	- -	-0.50	-0.05
DP3ETA12	-0.50	-0.03	-0.08	- -	-0.03
DP4ETA13	- -	-0.20	-0.13	-0.06	- -
IN1ETA14	-0.03	- -	- -	-0.05	0.42
IN2ETA15	0.00	- -	- -	0.03	0.02
IN3ETA16	0.00	-0.01	- -	- -	-0.48
IN4ETA17	0.00	0.22	0.42	- -	- -

Standardized Expected Change for BETA

	TEM1eta1	**TEM2eta2**	**AGG2eta3**	**AGG3eta4**	**AGG4eta5**	**PAR1ETA6**
TEM1eta1	- -	-0.03	-0.02	-0.07	-0.04	-0.08
TEM2eta2	- -	- -	0.03	0.07	0.07	0.27
AGG2eta3	0.00	- -	- -	0.02	-0.02	-0.11
AGG3eta4	0.00	0.00	- -	- -	0.03	-0.29
AGG4eta5	0.00	0.00	-0.01	- -	- -	0.09
PAR1ETA6	0.00	0.00	0.01	0.01	0.01	-0.17
PAR2ETA7	0.00	0.00	0.01	0.02	-0.09	- -
PAR3ETA8	0.00	0.00	-0.01	0.01	0.04	0.12
PAR4ETA9	0.00	0.00	-0.01	0.00	0.04	0.23
DP1ETA10	- -	0.00	0.02	0.02	0.04	-0.51
DP2ETA11	0.00	0.00	0.00	-0.02	-0.03	-0.20
DP3ETA12	0.00	0.00	0.02	0.05	0.07	0.21
DP4ETA13	0.00	0.00	0.02	0.03	0.02	0.23
IN1ETA14	0.00	0.00	0.00	0.00	-0.01	-0.05
IN2ETA15	0.00	0.00	-0.01	-0.01	0.00	-0.10
IN3ETA16	0.00	0.00	-0.01	-0.01	-0.01	-0.29
IN4ETA17	0.00	0.00	0.01	0.02	0.02	-0.12

	PAR2ETA7	**PAR3ETA8**	**PAR4ETA9**	**DP1ETA10**	**DP2ETA11**	**DP3ETA12**
TEM1eta1	-0.09	-0.05	-0.04	0.00	-0.02	-0.01
TEM2eta2	0.04	0.06	0.06	0.01	0.01	0.01
AGG2eta3	- -	-0.02	-0.01	-0.01	- -	0.01
AGG3eta4	-0.07	- -	0.00	0.00	0.00	- -
AGG4eta5	-0.14	-0.27	- -	0.00	0.00	0.01
PAR1ETA6	0.06	0.06	0.04	- -	0.00	0.01
PAR2ETA7	0.03	0.14	0.12	0.01	- -	0.01
PAR3ETA8	- -	0.54	0.12	0.00	-0.02	- -
PAR4ETA9	-0.04	- -	-0.59	0.01	0.00	0.00
DP1ETA10	0.05	0.08	0.14	- -	0.10	0.05
DP2ETA11	-0.04	-0.14	-0.15	- -	- -	-0.03
DP3ETA12	0.05	0.08	0.09	0.04	- -	- -
DP4ETA13	0.08	0.08	0.09	0.02	0.02	- -
IN1ETA14	-0.04	-0.04	-0.05	0.01	0.02	0.00
IN2ETA15	0.00	0.00	0.00	-0.01	-0.01	0.00
IN3ETA16	-0.04	-0.04	-0.05	-0.01	-0.01	0.00
IN4ETA17	0.00	-0.01	-0.01	0.00	0.00	0.00

(Standardized Expected Change for BETA – continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
TEM1eta1	-0.01	0.01	-0.01	-0.06	-0.04
TEM2eta2	0.01	-0.04	-0.07	-0.11	-0.06
AGG2eta3	0.00	0.04	0.03	0.05	0.06
AGG3eta4	0.00	0.02	0.02	0.03	0.05
AGG4eta5	- -	-0.03	-0.01	-0.02	0.00
PAR1ETA6	0.01	-0.03	-0.03	-0.09	-0.09
PAR2ETA7	0.02	-0.07	-0.03	-0.05	-0.03
PAR3ETA8	0.00	-0.02	-0.01	-0.02	-0.02
PAR4ETA9	- -	-0.01	0.01	0.01	-0.01
DP1ETA10	0.05	- -	-0.10	-0.13	-0.07
DP2ETA11	-0.02	0.11	- -	-0.12	-0.01
DP3ETA12	-0.04	-0.01	-0.02	- -	-0.01
DP4ETA13	- -	-0.05	-0.03	-0.02	- -
IN1ETA14	-0.01	- -	- -	-0.04	0.25
IN2ETA15	0.00	- -	- -	0.02	0.01
IN3ETA16	0.00	-0.01	- -	- -	-0.30
IN4ETA17	0.00	0.13	0.25	- -	- -

Modification Indices for PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -					
TEM2eta2	3.27	- -				
AGG2eta3	0.02	0.06	- -			
AGG3eta4	5.29	3.97	0.07	- -		
AGG4eta5	0.11	1.02	1.59	0.19	- -	
PAR1ETA6	0.01	0.33	0.02	0.08	0.01	- -
PAR2ETA7	2.47	0.97	0.38	0.03	14.23	0.77
PAR3ETA8	2.39	0.36	0.88	1.38	1.11	0.09
PAR4ETA9	1.29	3.13	0.05	0.01	4.47	0.23
DP1ETA10	- -	3.27	0.55	0.14	0.47	0.27
DP2ETA11	5.66	1.35	1.15	0.03	0.59	0.05
DP3ETA12	3.53	2.28	1.93	0.89	1.94	1.65
DP4ETA13	0.31	0.24	0.52	0.29	1.87	0.04
IN1ETA14	0.03	1.33	1.30	0.23	0.57	0.35
IN2ETA15	0.38	3.62	0.08	0.08	0.45	0.00
IN3ETA16	6.14	5.49	1.33	0.59	0.31	3.65
IN4ETA17	0.08	0.67	6.31	4.13	0.41	2.26

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	- -					
PAR3ETA8	0.02	- -				
PAR4ETA9	0.98	0.12	- -			
DP1ETA10	0.24	0.12	2.53	- -		
DP2ETA11	0.62	11.05	1.32	9.20	- -	
DP3ETA12	2.26	4.32	0.02	24.25	20.76	- -
DP4ETA13	8.41	0.17	0.23	19.75	1.29	7.21
IN1ETA14	2.78	0.31	0.07	- -	3.49	0.02
IN2ETA15	1.48	0.02	0.66	2.07	3.49	0.00
IN3ETA16	1.18	0.09	0.00	2.64	2.24	0.05
IN4ETA17	0.00	0.77	0.72	0.00	1.37	0.01

(Modification Indices for PSI – continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
DP4ETA13	- -				
IN1ETA14	1.14	- -			
IN2ETA15	0.36	- -	- -		
IN3ETA16	0.31	0.06	0.06	- -	
IN4ETA17	0.03	23.13	0.07	35.07	- -

Expected Change for PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -					
TEM2eta2	-31.76	- -				
AGG2eta3	-0.18	0.39	- -			
AGG3eta4	-1.79	1.62	0.10	- -		
AGG4eta5	0.21	0.61	-0.30	0.15	- -	
PAR1ETA6	-0.12	0.24	-0.02	-0.03	-0.01	- -
PAR2ETA7	-1.69	0.77	0.69	-0.06	-0.97	0.20
PAR3ETA8	1.12	-0.47	-0.21	0.27	0.20	-0.04
PAR4ETA9	0.84	-1.46	-0.05	-0.02	0.36	-0.06
DP1ETA10	- -	2.56	-0.65	-0.17	0.25	-0.56
DP2ETA11	-3.30	1.41	0.75	-0.07	-0.25	0.05
DP3ETA12	-2.86	2.06	0.73	0.75	0.59	0.33
DP4ETA13	-0.73	0.57	0.32	0.18	-0.76	-0.04
IN1ETA14	0.09	-0.51	0.19	0.06	-0.08	-0.05
IN2ETA15	-0.20	-0.55	-0.03	0.02	0.05	0.00
IN3ETA16	-0.67	-0.57	0.11	0.05	-0.03	-0.09
IN4ETA17	-0.08	0.22	0.25	0.15	0.04	-0.07

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	- -					
PAR3ETA8	-0.09	- -				
PAR4ETA9	-0.34	0.08	- -			
DP1ETA10	0.37	-0.14	0.60	- -		
DP2ETA11	-0.50	-1.15	-0.38	11.61	- -	
DP3ETA12	0.67	1.46	0.06	7.18	-5.30	- -
DP4ETA13	1.05	0.12	-0.28	3.67	-0.85	-4.01
IN1ETA14	-0.23	-0.06	-0.03	- -	0.78	-0.05
IN2ETA15	0.11	0.01	0.06	-0.27	-0.39	-0.01
IN3ETA16	-0.08	-0.02	0.00	-0.25	-0.20	0.04
IN4ETA17	0.00	-0.06	-0.06	0.01	0.17	-0.01

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
DP4ETA13	- -				
IN1ETA14	-0.31	- -			
IN2ETA15	0.11	- -	- -		
IN3ETA16	0.09	-0.02	0.01	- -	
IN4ETA17	0.03	0.35	0.01	-0.21	- -

Standardized Expected Change for PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -					
TEM2eta2	-0.76	- -				
AGG2eta3	-0.01	0.02	- -			
AGG3eta4	-0.15	0.14	0.02	- -		
AGG4eta5	0.02	0.06	-0.07	0.05	- -	
PAR1ETA6	-0.02	0.05	-0.01	-0.03	-0.01	- -
PAR2ETA7	-0.16	0.07	0.17	-0.02	-0.35	0.16
PAR3ETA8	0.12	-0.05	-0.06	0.10	0.08	-0.03
PAR4ETA9	0.09	-0.16	-0.01	-0.01	0.15	-0.05
DP1ETA10	- -	0.11	-0.07	-0.02	0.04	-0.21
DP2ETA11	-0.14	0.06	0.09	-0.01	-0.04	0.02
DP3ETA12	-0.11	0.08	0.08	0.10	0.09	0.11
DP4ETA13	-0.03	0.03	0.04	0.03	-0.13	-0.02
IN1ETA14	0.01	-0.06	0.06	0.03	-0.04	-0.05
IN2ETA15	-0.02	-0.07	-0.01	0.01	0.02	0.00
IN3ETA16	-0.09	-0.08	0.04	0.02	-0.02	-0.10
IN4ETA17	-0.01	0.02	0.08	0.06	0.02	-0.07

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	- -					
PAR3ETA8	-0.03	- -				
PAR4ETA9	-0.15	0.04	- -			
DP1ETA10	0.06	-0.03	0.12	- -		
DP2ETA11	-0.08	-0.22	-0.07	0.89	- -	
DP3ETA12	0.10	0.25	0.01	0.51	-0.38	- -
DP4ETA13	0.19	0.02	-0.06	0.30	-0.07	-0.31
IN1ETA14	-0.11	-0.03	-0.02	- -	0.17	-0.01
IN2ETA15	0.05	0.01	0.03	-0.06	-0.09	0.00
IN3ETA16	-0.04	-0.01	0.00	-0.06	-0.05	0.01
IN4ETA17	0.00	-0.03	-0.03	0.00	0.03	0.00

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
DP4ETA13	- -				
IN1ETA14	-0.07	- -			
IN2ETA15	0.03	- -	- -		
IN3ETA16	0.02	-0.01	0.01	- -	
IN4ETA17	0.01	0.21	0.01	-0.13	- -

Modification Indices for THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	1.27					
BTMSCALE	0.17	0.14				
bbecs04	1.04	0.50	0.07			
cbecs09	5.24	0.06	1.20	0.19		
DBECdS09	0.03	2.57	1.36	0.19	- -	
APRCS02	0.18	0.07	0.01	0.63	0.98	0.77
bprcs06	7.34	0.53	2.09	1.05	8.09	0.76
cprcs06	0.59	0.30	1.38	1.86	0.47	0.00
DPRCS06	2.60	1.68	0.01	1.57	4.47	0.07
ADPPS01	2.28	0.58	0.61	0.61	1.22	0.42
bdpps01	1.58	0.51	0.07	0.04	0.82	0.01
cdpps01	4.47	0.12	1.11	0.85	1.57	2.08
DDPPS01	0.62	0.16	0.34	1.11	2.49	2.30
C1IN1000	0.02	0.48	0.76	0.37	0.87	0.26
C2IN1000	0.78	0.21	0.83	0.76	0.89	0.39
C3IN1000	0.12	2.77	0.22	0.09	0.71	0.00
C4IN1000	0.14	0.23	2.50	2.40	0.35	2.81

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	0.24					
cprcs06	1.15	0.51				
DPRCS06	0.37	0.16	4.47			
ADPPS01	0.58	0.02	4.51	3.00		
bdpps01	2.20	5.02	1.00	7.71	19.81	
cdpps01	0.65	0.33	0.03	2.91	6.73	2.94
DDPPS01	7.20	0.30	0.55	16.04	0.22	8.58
C1IN1000	2.98	0.00	0.34	0.10	2.76	0.38
C2IN1000	2.40	0.00	0.40	0.04	0.01	0.01
C3IN1000	0.96	0.03	0.43	0.31	4.03	0.02
C4IN1000	0.16	0.42	0.77	0.04	0.55	0.13

	DDPPS01	C1IN1000	C2IN1000	C3IN1000	C4IN1000
DDPPS01	2.50				
C1IN1000	0.12	2.07			
C2IN1000	0.00	0.02	0.06		
C3IN1000	0.05	3.70	9.18	35.05	
C4IN1000	0.03	4.51	13.70	34.46	0.03

Expected Change for THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	14.36					
BTMSCALE	-1.47	-2.59				
bbecs04	0.84	-0.89	-0.30			
cbecs09	-1.33	0.14	0.31	-0.26		
DBECdS09	-0.10	0.82	-0.24	0.15	- -	
APRCS02	0.25	0.11	-0.01	-0.09	0.11	-0.29
bprcs06	-1.88	0.51	0.45	0.18	-0.48	0.13
cprcs06	0.42	0.28	-0.25	0.23	-0.10	0.00
DPRCS06	0.92	-0.87	-0.02	-0.20	0.36	-0.03
ADPPS01	2.40	0.87	-0.36	-0.25	0.34	-0.21
bdpps01	-1.49	0.79	0.14	0.06	-0.26	0.02
cdpps01	-2.68	0.41	0.50	-0.40	0.41	0.35
DDPPS01	-0.93	-0.43	0.25	0.35	-0.88	-0.34
C1IN1000	0.04	0.19	0.09	0.05	-0.07	0.03
C2IN1000	0.20	0.09	-0.07	-0.05	0.05	0.03
C3IN1000	-0.06	-0.29	-0.03	-0.01	-0.04	0.00
C4IN1000	-0.10	-0.12	0.15	0.11	0.04	-0.09

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	-0.37					
cprcs06	0.25	-0.20				
DPRCS06	-0.12	0.09	-10.94			
ADPPS01	-0.29	0.05	0.67	-6.44		
bdpps01	0.60	-0.65	-0.30	-3.49	8.94	
cdpps01	-0.33	0.22	0.06	1.24	-2.29	4.74
DDPPS01	0.95	0.17	-0.43	2.62	-0.29	-3.89
C1IN1000	-0.15	-0.01	-0.04	-0.06	0.26	0.10
C2IN1000	0.10	0.00	0.04	-0.03	0.01	-0.01
C3IN1000	-0.06	0.01	0.03	0.06	-0.20	0.01
C4IN1000	0.03	-0.04	-0.06	-0.03	0.10	-0.06

	DDPPS01	C1IN1000	C2IN1000	C3IN1000	C4IN1000
DDPPS01	16.43				
C1IN1000	-0.05	0.58			
C2IN1000	0.00	0.01	-0.01		
C3IN1000	0.02	-0.05	-0.07	0.21	
C4IN1000	0.03	0.07	0.10	-0.21	0.09

Maximum Modification Index is 36.57 for Element (10,13) of BETA

Covariance Matrix of Parameter Estimates

	BE 2_1	BE 3_2	BE 3_7	BE 3_11	BE 4_3	BE 4_8
BE 2_1	0.00					
BE 3_2	0.00	0.00				
BE 3_7	0.00	0.00	0.01			
BE 3_11	0.00	0.00	0.00	0.00		
BE 4_3	0.00	0.00	0.00	0.00	0.00	
BE 4_8	0.00	0.00	0.00	0.00	0.00	0.01
BE 4_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 5_4	0.00	0.00	0.00	0.00	0.00	0.00
BE 5_9	0.00	0.00	0.00	0.00	0.00	0.00
BE 5_13	0.00	0.00	0.00	0.00	0.00	0.00
BE 6_1	0.00	0.00	0.00	0.00	0.00	0.00
BE 6_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 7_6	0.00	0.00	0.00	0.00	0.00	0.00
BE 7_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_2	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_7	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 9_8	0.00	0.00	0.00	0.00	0.00	0.00
BE 9_13	0.00	0.00	0.00	0.00	0.00	0.00
BE 10_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_16	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_17	0.00	0.00	0.00	0.00	0.00	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 17_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	-0.04	0.00	0.00	0.00	0.00	0.00
PS 2_2	-0.03	-0.01	0.01	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 17_17	0.00	0.00	0.00	0.00	0.00	0.00

(Covariance Matrix of Parameter Estimates – continued)

	BE 4_12	BE 5_4	BE 5_9	BE 5_13	BE 6_1	BE 6_10
BE 4_12	0.00					
BE 5_4	0.00	0.00				
BE 5_9	0.00	0.00	0.01			
BE 5_13	0.00	0.00	0.00	0.00		
BE 6_1	0.00	0.00	0.00	0.00	0.00	
BE 6_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 7_6	0.00	0.00	0.00	0.00	0.00	0.00
BE 7_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_2	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_7	0.00	0.00	0.00	0.00	0.00	0.00
BE 8_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 9_8	0.00	0.00	0.00	0.00	0.00	0.00
BE 9_13	0.00	0.00	0.00	0.00	0.00	0.00
BE 10_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_16	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_17	0.00	0.00	0.00	0.00	0.00	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 17_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 2_2	0.00	0.00	0.00	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 17_17	0.00	0.00	0.00	0.00	0.00	0.00

(Covariance Matrix of Parameter Estimates – continued)

	BE 7_6	BE 7_11	BE 8_2	BE 8_7	BE 8_12	BE 9_8
BE 7_6	0.07					
BE 7_11	0.00	0.00				
BE 8_2	0.00	0.00	0.00			
BE 8_7	0.00	0.00	0.00	0.01		
BE 8_12	0.00	0.00	0.00	0.00	0.00	
BE 9_8	0.00	0.00	0.00	0.00	0.00	0.01
BE 9_13	0.00	0.00	0.00	0.00	0.00	0.00
BE 10_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_10	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_16	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_17	0.00	0.00	0.00	0.00	0.00	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 17_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	0.01	0.00	0.00	0.00	0.00	0.00
PS 2_2	0.01	0.00	0.00	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	-0.01	0.00	0.00	0.00	0.00	0.00
PS 7_7	-0.02	0.00	0.00	-0.01	0.00	0.00
PS 8_8	0.00	0.00	0.00	-0.01	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	-0.01
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 17_17	0.00	0.00	0.00	0.00	0.00	0.00

(Covariance Matrix of Parameter Estimates – continued)

	BE 9_13	BE 10_14	BE 11_10	BE 11_15	BE 12_11	BE 12_16
BE 9_13	0.00					
BE 10_14	0.00	0.03				
BE 11_10	0.00	0.00	0.00			
BE 11_15	0.00	-0.01	0.00	0.03		
BE 12_11	0.00	0.00	0.00	0.00	0.00	
BE 12_16	0.00	0.00	0.00	0.00	0.00	0.04
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_17	0.00	0.00	0.00	0.00	0.00	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 17_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 2_2	0.00	0.00	0.00	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	-0.03	-0.01	0.00	0.00
PS 11_11	0.00	0.00	-0.02	-0.01	-0.01	0.00
PS 12_12	0.00	0.00	0.00	0.00	-0.01	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 17_17	0.00	0.00	0.00	0.00	0.00	0.00

	BE 13_12	BE 13_17	BE 15_14	BE 16_15	BE 17_16	PS 1_1
BE 13_12	0.00					
BE 13_17	0.00	0.02				
BE 15_14	0.00	0.00	0.00			
BE 16_15	0.00	0.00	0.00	0.00		
BE 17_16	0.00	0.00	0.00	0.00	0.00	
PS 1_1	0.00	0.00	0.00	0.00	0.00	16.05
PS 2_2	0.00	0.00	0.00	0.00	0.00	0.18
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	0.00	0.00	1.03
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.07
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	-0.01	0.00	0.00	0.00	0.00	0.00
PS 13_13	-0.01	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 17_17	0.00	0.00	0.00	0.00	0.00	0.00

(Covariance Matrix of Parameter Estimates – continued)

	PS 2_2	**PS 3_3**	**PS 4_4**	**PS 5_5**	**PS 6_6**	**PS 7_7**
PS 2_2	10.30					
PS 3_3	0.01	0.21				
PS 4_4	0.00	0.00	0.07			
PS 5_5	0.00	0.00	0.00	0.04		
PS 6_6	0.00	0.00	0.00	0.00	0.01	
PS 7_7	-0.01	0.00	0.00	0.00	0.00	0.12
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.01
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.02	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 17_17	0.00	0.00	0.00	0.00	0.00	0.00

	PS 8_8	**PS 9_9**	**PS 10_1**	**PS 10_10**	**PS 11_11**	**PS 12_12**
PS 8_8	0.05					
PS 9_9	0.00	0.05				
PS 10_1	0.00	0.00	2.55			
PS 10_10	0.00	0.00	0.35	1.79		
PS 11_11	0.00	0.00	0.02	0.06	0.98	
PS 12_12	0.00	0.00	0.00	0.00	0.00	1.50
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.01
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 17_17	0.00	0.00	0.00	0.00	0.00	0.00

	PS 13_13	**PS 14_14**	**PS 15_15**	**PS 16_16**	**PS 17_17**
PS 13_13	0.80				
PS 14_14	0.00	0.02			
PS 15_15	0.00	0.00	0.00		
PS 16_16	0.00	0.00	0.00	0.00	
PS 17_17	0.00	0.00	0.00	0.00	0.00

Correlation Matrix of Parameter Estimates

	BE 2_1	BE 3_2	BE 3_7	BE 3_11	BE 4_3	BE 4_8
BE 2_1	1.00					
BE 3_2	-0.07	1.00				
BE 3_7	-0.01	-0.30	1.00			
BE 3_11	-0.01	0.00	-0.20	1.00		
BE 4_3	0.00	-0.09	0.00	-0.02	1.00	
BE 4_8	0.00	0.03	-0.13	0.02	-0.36	1.00
BE 4_12	0.00	0.00	0.05	-0.09	-0.01	-0.30
BE 5_4	0.00	0.00	0.00	0.00	-0.08	0.03
BE 5_9	0.00	0.00	0.00	0.00	0.03	-0.15
BE 5_13	0.00	0.00	0.00	0.00	0.01	0.04
BE 6_1	0.01	-0.02	-0.05	0.01	-0.01	0.00
BE 6_10	0.00	0.00	0.01	0.00	0.00	0.00
BE 7_6	-0.02	-0.02	0.01	0.00	0.00	0.00
BE 7_11	0.01	0.02	-0.04	-0.05	0.00	0.00
BE 8_2	-0.02	0.07	-0.05	0.00	-0.01	-0.01
BE 8_7	0.00	-0.01	0.07	0.00	-0.01	-0.06
BE 8_12	0.00	0.00	0.00	0.05	0.01	-0.02
BE 9_8	0.00	-0.01	0.01	0.00	0.01	0.07
BE 9_13	0.00	0.00	0.00	0.00	0.00	-0.01
BE 10_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_10	0.00	0.00	0.00	-0.03	0.00	0.00
BE 11_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	0.02	-0.01	0.00
BE 12_16	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_17	0.00	0.00	0.00	0.00	0.00	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 17_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	-0.16	0.00	0.00	0.00	0.00	0.00
PS 2_2	-0.15	-0.15	0.02	0.01	0.00	0.00
PS 3_3	0.01	-0.12	-0.06	-0.03	-0.16	0.06
PS 4_4	0.00	0.01	0.00	0.01	-0.12	-0.04
PS 5_5	0.00	0.00	0.00	0.00	0.02	-0.01
PS 6_6	0.01	0.01	0.00	0.00	0.00	0.00
PS 7_7	0.01	0.03	-0.10	0.02	0.01	0.00
PS 8_8	0.00	0.00	0.01	-0.01	0.03	-0.07
PS 9_9	0.00	0.00	-0.01	0.00	-0.01	0.01
PS 10_1	-0.02	0.00	0.00	-0.01	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.01	-0.04	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.01	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 17_17	0.00	0.00	0.00	0.00	0.00	0.00

(Correlation Matrix of Parameter Estimates – continued)

	BE 4_12	BE 5_4	BE 5_9	BE 5_13	BE 6_1	BE 6_10
BE 4_12	1.00					
BE 5_4	-0.02	1.00				
BE 5_9	0.03	-0.42	1.00			
BE 5_13	-0.11	-0.07	-0.19	1.00		
BE 6_1	0.00	0.00	0.00	0.00	1.00	
BE 6_10	0.00	0.00	0.00	0.00	-0.13	1.00
BE 7_6	0.00	0.00	0.00	0.00	-0.30	-0.03
BE 7_11	0.00	0.00	0.00	0.00	0.11	-0.20
BE 8_2	0.00	0.00	0.00	0.00	-0.16	0.02
BE 8_7	0.02	0.00	0.00	0.00	-0.01	0.00
BE 8_12	-0.08	0.00	0.00	0.00	0.00	0.00
BE 9_8	-0.01	0.00	-0.02	0.00	0.02	0.00
BE 9_13	0.05	0.00	-0.01	-0.01	0.00	0.00
BE 10_14	0.00	0.00	0.00	0.00	0.00	0.01
BE 11_10	0.00	0.00	0.00	0.00	0.00	0.05
BE 11_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	-0.02	0.00	0.00	0.00	0.00	0.00
BE 12_16	0.00	0.00	0.00	0.00	0.00	0.00
BE 13_12	0.02	0.00	0.00	-0.02	0.00	0.00
BE 13_17	0.00	0.00	0.00	0.00	0.00	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 17_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	0.00	0.00	0.00	0.00	-0.06	0.00
PS 2_2	0.00	0.00	0.00	0.00	-0.01	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	-0.01	-0.21	0.09	0.02	0.00	0.00
PS 5_5	0.01	-0.22	0.07	-0.01	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.05	-0.06
PS 7_7	0.00	0.00	0.00	0.00	0.07	0.01
PS 8_8	0.02	0.00	0.00	0.00	-0.01	0.00
PS 9_9	-0.01	0.00	0.00	0.00	-0.01	0.00
PS 10_1	0.00	0.00	0.00	0.00	-0.05	-0.05
PS 10_10	0.00	0.00	0.00	0.00	0.00	-0.09
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	-0.04	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	-0.03	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 17_17	0.00	0.00	0.00	0.00	0.00	0.00

(Correlation Matrix of Parameter Estimates – continued)

	BE 7_6	BE 7_11	BE 8_2	BE 8_7	BE 8_12	BE 9_8
BE 7_6	1.00					
BE 7_11	-0.41	1.00				
BE 8_2	-0.03	0.02	1.00			
BE 8_7	-0.09	-0.01	-0.23	1.00		
BE 8_12	0.02	-0.19	0.02	-0.10	1.00	
BE 9_8	0.01	-0.01	-0.22	-0.21	-0.06	1.00
BE 9_13	0.00	0.01	0.03	0.05	-0.24	-0.19
BE 10_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 11_10	0.00	-0.02	0.00	0.00	0.00	0.00
BE 11_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 12_11	0.00	0.00	0.00	-0.01	-0.02	0.00
BE 12_16	0.00	0.00	0.00	0.00	0.01	0.00
BE 13_12	0.00	0.00	0.00	0.00	0.02	0.00
BE 13_17	0.00	0.00	0.00	0.00	0.00	0.00
BE 15_14	0.00	0.00	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.00	0.00	0.00
BE 17_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 1_1	0.01	0.00	0.01	0.00	0.00	0.00
PS 2_2	0.01	0.00	-0.04	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	-0.30	0.14	0.03	0.00	0.00	0.00
PS 7_7	-0.24	0.10	0.14	-0.41	0.05	-0.02
PS 8_8	0.04	0.02	0.16	-0.38	0.01	-0.23
PS 9_9	0.00	0.00	0.06	0.08	0.03	-0.37
PS 10_1	0.00	0.00	0.01	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.01	-0.01	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.01	0.00	0.01	-0.06	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 17_17	0.00	0.00	0.00	0.00	0.00	0.00

(Correlation Matrix of Parameter Estimates – continued)

	BE 9_13	BE 10_14	BE 11_10	BE 11_15	BE 12_11	BE 12_16
BE 9_13	1.00					
BE 10_14	0.00	1.00				
BE 11_10	0.00	0.02	1.00			
BE 11_15	0.00	-0.18	0.19	1.00		
BE 12_11	0.00	0.00	-0.10	-0.02	1.00	
BE 12_16	0.00	0.00	0.00	-0.14	0.02	1.00
BE 13_12	-0.02	0.00	0.00	0.00	-0.06	0.00
BE 13_17	0.00	0.00	0.00	0.00	-0.01	-0.12
BE 15_14	0.00	-0.01	0.00	0.00	0.00	0.00
BE 16_15	0.00	0.00	0.00	0.01	0.00	0.01
BE 17_16	0.00	0.00	0.00	0.00	0.00	-0.01
PS 1_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 2_2	0.00	0.00	0.00	0.00	0.00	0.00
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	0.00
PS 8_8	0.05	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.05	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	-0.04	-0.01	0.00	0.00
PS 10_10	0.00	0.00	-0.31	-0.06	0.00	0.00
PS 11_11	0.00	-0.01	-0.29	-0.06	-0.13	0.00
PS 12_12	0.00	0.00	0.02	0.00	-0.16	0.00
PS 13_13	-0.01	0.00	0.00	0.00	0.01	0.00
PS 14_14	0.00	0.01	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	-0.01	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.01
PS 17_17	0.00	0.00	0.00	0.00	0.00	0.00

	BE 13_12	BE 13_17	BE 15_14	BE 16_15	BE 17_16	PS 1_1
BE 13_12	1.00					
BE 13_17	0.12	1.00				
BE 15_14	0.00	0.00	1.00			
BE 16_15	0.00	0.00	-0.08	1.00		
BE 17_16	0.00	0.01	0.00	-0.11	1.00	
PS 1_1	0.00	0.00	0.00	0.00	0.00	1.00
PS 2_2	0.00	0.00	0.00	0.00	0.00	0.01
PS 3_3	0.00	0.00	0.00	0.00	0.00	0.00
PS 4_4	0.00	0.00	0.00	0.00	0.00	0.00
PS 5_5	0.00	0.00	0.00	0.00	0.00	0.00
PS 6_6	0.00	0.00	0.00	0.00	0.00	0.00
PS 7_7	0.00	0.00	0.00	0.00	0.00	0.00
PS 8_8	0.00	0.00	0.00	0.00	0.00	0.00
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.16
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.01
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	-0.15	-0.02	0.00	0.00	0.00	0.00
PS 13_13	-0.16	-0.01	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	-0.08	0.00	0.00	0.00
PS 15_15	0.00	0.00	-0.07	-0.09	0.00	0.00
PS 16_16	0.00	0.00	0.01	-0.08	-0.09	0.00
PS 17_17	0.00	0.01	0.00	0.01	-0.10	0.00

(Correlation Matrix of Parameter Estimates – continued)

	PS 2_2	PS 3_3	PS 4_4	PS 5_5	PS 6_6	PS 7_7
PS 2_2	1.00					
PS 3_3	0.01	1.00				
PS 4_4	0.00	0.00	1.00			
PS 5_5	0.00	0.00	0.01	1.00		
PS 6_6	0.00	0.00	0.00	0.00	1.00	
PS 7_7	-0.01	0.00	0.00	0.00	0.02	1.00
PS 8_8	0.00	-0.01	0.00	0.00	0.00	0.09
PS 9_9	0.00	0.00	0.00	0.00	0.00	0.01
PS 10_1	0.00	0.00	0.00	0.00	0.00	0.00
PS 10_10	0.00	0.00	0.00	0.00	0.00	0.00
PS 11_11	0.00	0.00	0.00	0.00	0.00	0.00
PS 12_12	0.00	0.00	0.00	0.00	0.00	0.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.00
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 17_17	0.00	0.00	0.00	0.00	0.00	0.00

	PS 8_8	PS 9_9	PS 10_1	PS 10_10	PS 11_11	PS 12_12
PS 8_8	1.00					
PS 9_9	-0.05	1.00				
PS 10_1	0.00	0.00	1.00			
PS 10_10	0.00	0.00	0.17	1.00		
PS 11_11	0.00	0.00	0.01	0.05	1.00	
PS 12_12	0.00	0.00	0.00	0.00	0.00	1.00
PS 13_13	0.00	0.00	0.00	0.00	0.00	0.01
PS 14_14	0.00	0.00	0.00	0.00	0.00	0.00
PS 15_15	0.00	0.00	0.00	0.00	0.00	0.00
PS 16_16	0.00	0.00	0.00	0.00	0.00	0.00
PS 17_17	0.00	0.00	0.00	0.00	0.00	0.00

	PS 13_13	PS 14_14	PS 15_15	PS 16_16	PS 17_17
PS 13_13	1.00				
PS 14_14	0.00	1.00			
PS 15_15	0.00	0.00	1.00		
PS 16_16	0.00	0.00	0.00	1.00	
PS 17_17	0.00	0.00	0.00	-0.01	1.00

Covariances

Y - ETA

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
TEM1eta1	42.65	22.09	5.56	2.47	1.50	2.04
TEM2eta2	22.09	41.33	9.56	3.87	2.31	1.06
AGG2eta3	5.56	9.56	5.93	2.35	1.40	0.41
AGG3eta4	2.47	3.87	2.35	3.44	2.03	0.25
AGG4eta5	1.50	2.31	1.40	2.03	2.82	0.16
PAR1ETA6	2.04	1.06	0.41	0.25	0.16	0.56
PAR2ETA7	2.42	2.52	1.31	0.93	0.59	0.45
PAR3ETA8	1.99	2.32	1.07	1.01	0.67	0.34
PAR4ETA9	1.95	2.51	1.02	0.89	0.61	0.29
DP1ETA10	3.44	1.78	1.60	1.17	0.81	1.02
DP2ETA11	2.35	1.22	1.87	1.41	0.98	0.69
DP3ETA12	1.27	0.66	1.02	1.79	1.39	0.39
DP4ETA13	0.57	0.30	0.46	0.83	1.01	0.19
IN1ETA14	- -	- -	-0.05	-0.07	-0.07	-0.06
IN2ETA15	- -	- -	-0.02	-0.06	-0.06	-0.05
IN3ETA16	- -	- -	-0.02	-0.06	-0.06	-0.04
IN4ETA17	- -	- -	-0.02	-0.06	-0.07	-0.04

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
TEM1eta1	2.42	1.99	1.95	3.44	2.35	1.27
TEM2eta2	2.52	2.32	2.51	1.78	1.22	0.66
AGG2eta3	1.31	1.07	1.02	1.60	1.87	1.02
AGG3eta4	0.93	1.01	0.89	1.17	1.41	1.79
AGG4eta5	0.59	0.67	0.61	0.81	0.98	1.39
PAR1ETA6	0.45	0.34	0.29	1.02	0.69	0.39
PAR2ETA7	2.71	1.82	1.49	1.08	0.96	0.53
PAR3ETA8	1.82	2.18	1.79	1.12	1.19	1.57
PAR4ETA9	1.49	1.79	2.00	0.99	1.06	1.46
DP1ETA10	1.08	1.12	0.99	13.24	8.87	5.00
DP2ETA11	0.96	1.19	1.06	8.87	12.79	6.95
DP3ETA12	0.53	1.57	1.46	5.00	6.95	15.21
DP4ETA13	0.25	0.73	0.92	2.43	3.17	7.04
IN1ETA14	-0.05	-0.08	-0.08	-0.93	-0.34	-0.53
IN2ETA15	-0.04	-0.06	-0.07	-0.71	-0.11	-0.49
IN3ETA16	-0.03	-0.06	-0.07	-0.57	-0.09	-0.54
IN4ETA17	-0.03	-0.06	-0.07	-0.58	-0.09	-0.55

(Y – ETA – continued)

	DDPPS01	C1IN1000	C2IN1000	C3IN1000	C4IN1000
TEM1eta1	0.57	- -	- -	- -	- -
TEM2eta2	0.30	- -	- -	- -	- -
AGG2eta3	0.46	-0.05	-0.02	-0.02	-0.02
AGG3eta4	0.83	-0.07	-0.06	-0.06	-0.06
AGG4eta5	1.01	-0.07	-0.06	-0.06	-0.07
PAR1ETA6	0.19	-0.06	-0.05	-0.04	-0.04
PAR2ETA7	0.25	-0.05	-0.04	-0.03	-0.03
PAR3ETA8	0.73	-0.08	-0.06	-0.06	-0.06
PAR4ETA9	0.92	-0.08	-0.07	-0.07	-0.07
DP1ETA10	2.43	-0.93	-0.71	-0.57	-0.58
DP2ETA11	3.17	-0.34	-0.11	-0.09	-0.09
DP3ETA12	7.04	-0.53	-0.49	-0.54	-0.55
DP4ETA13	11.20	-0.53	-0.59	-0.65	-0.80
IN1ETA14	-0.53	1.57	1.20	0.96	0.98
IN2ETA15	-0.59	1.20	1.51	1.21	1.24
IN3ETA16	-0.65	0.96	1.21	1.37	1.40
IN4ETA17	-0.80	0.98	1.24	1.40	1.87

First Order Derivatives

LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	0.00	0.01	0.02	0.04	0.03	0.00
BTMSCALE	0.00	0.00	-0.01	-0.02	-0.03	-0.01
bbecs04	-0.10	0.01	0.00	-0.01	0.02	0.00
cbecs09	0.41	0.09	-0.02	0.00	-0.01	0.03
DBECdS09	-0.08	-0.18	0.03	0.00	0.00	-0.01
APRCS02	-0.10	-0.09	-0.02	-0.01	-0.04	0.00
bprcs06	0.32	0.02	-0.04	0.00	0.07	0.00
cprcs06	-0.16	-0.11	0.03	-0.02	0.01	0.00
DPRCS06	-0.22	0.07	0.02	0.01	-0.05	-0.02
ADPPS01	-0.14	-0.12	-0.01	-0.03	-0.04	0.00
bdpps01	0.13	0.04	0.02	0.04	0.04	0.01
cdpps01	0.11	-0.01	-0.02	-0.01	-0.02	0.00
DDPPS01	0.01	-0.03	-0.05	-0.04	-0.01	-0.01
C1IN1000	-0.28	-0.41	-0.18	-0.07	0.01	-0.02
C2IN1000	-0.70	-0.44	-0.03	-0.02	-0.09	-0.07
C3IN1000	1.13	1.63	0.59	0.36	0.29	0.07
C4IN1000	0.11	-0.21	-0.30	-0.27	-0.20	0.05

(LAMBDA-Y – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	0.02	0.01	0.01	0.03	0.06	0.10
BTMSCALE	-0.01	-0.01	-0.01	-0.06	-0.05	-0.05
bbecs04	-0.01	0.00	0.00	0.03	-0.02	-0.07
cbecs09	-0.03	-0.01	0.00	0.12	0.06	0.07
DBECdS09	0.08	0.03	0.00	-0.09	-0.01	-0.12
APRCS02	-0.03	-0.02	-0.01	0.03	-0.01	-0.11
bprcs06	0.00	-0.01	-0.01	-0.05	-0.12	-0.10
cprcs06	-0.01	0.00	-0.01	0.12	0.21	0.03
DPRCS06	0.01	0.00	0.00	-0.17	-0.05	-0.03
ADPPS01	-0.02	-0.04	-0.05	0.00	-0.01	-0.19
bdpps01	0.03	0.06	0.05	0.06	0.00	0.13
cdpps01	0.00	-0.01	0.00	-0.03	0.03	0.00
DDPPS01	-0.07	-0.05	-0.04	-0.19	-0.10	0.01
C1IN1000	0.10	0.05	0.05	-0.23	-0.38	-0.27
C2IN1000	-0.23	-0.18	-0.16	-0.07	-0.05	-0.02
C3IN1000	0.23	0.17	0.14	0.24	0.62	0.28
C4IN1000	0.00	0.03	0.03	0.11	-0.12	-0.04

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
ATMSCALE	0.06	-0.01	-0.01	0.00	0.00
BTMSCALE	-0.03	0.02	0.02	0.03	0.03
bbecs04	-0.05	-0.02	-0.01	-0.02	-0.04
cbecs09	-0.02	-0.03	-0.02	-0.04	-0.06
DBECdS09	0.00	0.03	0.01	0.02	0.00
APRCS02	0.06	-0.01	0.01	0.05	0.09
bprcs06	-0.20	0.05	0.01	0.03	0.02
cprcs06	-0.04	0.02	0.03	0.03	0.04
DPRCS06	0.00	0.01	-0.01	-0.01	0.01
ADPPS01	-0.23	0.01	0.01	0.01	0.01
bdpps01	0.08	-0.02	0.00	0.01	0.01
cdpps01	0.04	-0.01	0.00	0.00	0.00
DDPPS01	0.00	0.01	0.01	0.00	0.00
C1IN1000	-0.04	0.00	0.01	0.02	-0.05
C2IN1000	0.03	-0.01	0.00	-0.01	-0.18
C3IN1000	0.03	0.31	0.24	0.00	0.21
C4IN1000	-0.04	-0.29	-0.23	0.00	0.00

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	0.00	0.01	0.01	0.03	0.01	0.00
TEM2eta2	0.00	0.00	-0.01	-0.03	-0.03	0.00
AGG2eta3	0.02	0.00	0.00	-0.01	0.02	0.01
AGG3eta4	0.36	-0.02	0.00	0.00	-0.01	0.02
AGG4eta5	-0.08	-0.18	0.03	0.00	0.00	-0.01
PAR1ETA6	0.02	-0.11	-0.02	-0.01	-0.01	0.00
PAR2ETA7	0.17	-0.02	-0.01	-0.01	0.05	0.00
PAR3ETA8	-0.25	-0.06	0.05	-0.02	-0.04	-0.01
PAR4ETA9	-0.23	0.06	0.02	0.01	-0.05	-0.02
DP1ETA10	0.00	-0.11	-0.02	-0.01	-0.02	0.00
DP2ETA11	0.20	0.02	-0.01	0.02	0.03	0.01
DP3ETA12	0.12	-0.03	-0.04	-0.03	-0.03	-0.01
DP4ETA13	0.00	-0.04	-0.05	-0.04	-0.01	-0.01
IN1ETA14	-0.04	0.20	-0.01	-0.01	0.03	0.01
IN2ETA15	0.31	0.71	0.21	0.07	0.00	0.03
IN3ETA16	1.20	1.43	0.31	0.11	0.11	0.13
IN4ETA17	0.11	-0.20	-0.29	-0.26	-0.19	0.05

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	0.01	0.01	0.00	0.00	0.03	0.05
TEM2eta2	-0.01	-0.01	-0.01	-0.05	-0.05	-0.07
AGG2eta3	0.00	0.00	0.00	0.05	0.00	-0.07
AGG3eta4	0.02	0.00	0.00	0.07	0.05	0.00
AGG4eta5	0.08	0.03	0.00	-0.09	-0.01	-0.12
PAR1ETA6	-0.03	-0.03	-0.02	0.00	-0.01	-0.19
PAR2ETA7	0.00	-0.01	-0.01	-0.04	0.00	-0.12
PAR3ETA8	0.00	0.00	-0.01	0.00	0.18	0.00
PAR4ETA9	0.01	0.00	0.00	-0.17	-0.05	-0.04
DP1ETA10	-0.01	-0.01	-0.02	0.00	-0.01	-0.12
DP2ETA11	0.01	0.04	0.04	0.00	0.00	0.12
DP3ETA12	-0.03	-0.03	-0.02	-0.11	0.00	0.00
DP4ETA13	-0.06	-0.05	-0.04	-0.20	-0.10	0.00
IN1ETA14	0.09	0.07	0.06	0.00	-0.09	-0.04
IN2ETA15	-0.02	0.01	0.00	0.30	0.38	0.21
IN3ETA16	0.26	0.22	0.20	0.46	0.53	0.25
IN4ETA17	0.02	0.04	0.04	0.17	-0.09	-0.04

(BETA – continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
TEM1eta1	0.03	0.00	0.00	0.01	0.01
TEM2eta2	-0.05	0.01	0.02	0.03	0.02
AGG2eta3	-0.05	-0.03	-0.02	-0.03	-0.06
AGG3eta4	-0.02	-0.02	-0.02	-0.03	-0.06
AGG4eta5	0.00	0.03	0.01	0.02	0.00
PAR1ETA6	-0.10	0.03	0.03	0.07	0.11
PAR2ETA7	-0.24	0.05	0.02	0.03	0.03
PAR3ETA8	-0.04	0.02	0.01	0.02	0.03
PAR4ETA9	0.00	0.01	-0.01	-0.01	0.01
DP1ETA10	-0.18	0.00	0.01	0.02	0.02
DP2ETA11	0.09	-0.02	0.00	0.01	0.00
DP3ETA12	0.04	0.00	0.00	0.00	0.00
DP4ETA13	0.00	0.02	0.01	0.00	0.00
IN1ETA14	0.09	0.00	0.00	0.00	-0.08
IN2ETA15	0.03	0.00	0.00	-0.01	-0.01
IN3ETA16	-0.03	0.01	0.00	0.00	0.21
IN4ETA17	-0.04	-0.29	-0.23	0.00	0.00

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	0.00					
TEM2eta2	0.00	0.00				
AGG2eta3	0.00	0.00	0.00			
AGG3eta4	0.01	-0.01	0.00	0.00		
AGG4eta5	0.00	0.00	0.01	0.00	0.00	
PAR1ETA6	0.00	0.00	0.00	0.01	0.00	0.00
PAR2ETA7	0.00	0.00	0.00	0.00	0.04	-0.01
PAR3ETA8	-0.01	0.00	0.01	-0.01	-0.02	0.01
PAR4ETA9	0.00	0.01	0.00	0.00	-0.03	0.01
DP1ETA10	0.00	0.00	0.00	0.00	-0.01	0.00
DP2ETA11	0.00	0.00	0.00	0.00	0.01	0.00
DP3ETA12	0.00	0.00	-0.01	0.00	-0.01	-0.01
DP4ETA13	0.00	0.00	0.00	0.00	0.01	0.00
IN1ETA14	0.00	0.01	-0.02	-0.01	0.02	0.02
IN2ETA15	0.01	0.02	0.01	-0.01	-0.03	0.00
IN3ETA16	0.03	0.03	-0.04	-0.03	0.03	0.12
IN4ETA17	0.00	-0.01	-0.07	-0.08	-0.03	0.09

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	0.00					
PAR3ETA8	0.00	0.00				
PAR4ETA9	0.01	0.00	0.00			
DP1ETA10	0.00	0.00	-0.01	0.00		
DP2ETA11	0.00	0.03	0.01	0.00	0.00	
DP3ETA12	-0.01	-0.01	0.00	-0.01	0.01	0.00
DP4ETA13	-0.02	0.00	0.00	-0.02	0.00	0.01
IN1ETA14	0.03	0.01	0.01	0.00	-0.01	0.00
IN2ETA15	-0.04	-0.01	-0.03	0.02	0.03	0.00
IN3ETA16	0.04	0.01	0.00	0.03	0.03	0.00
IN4ETA17	0.00	0.04	0.04	0.00	-0.02	0.00

(PSI – continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
DP4ETA13	0.00				
IN1ETA14	0.01	0.00			
IN2ETA15	-0.01	0.00	0.00		
IN3ETA16	-0.01	0.01	-0.02	0.00	
IN4ETA17	0.00	-0.19	-0.02	0.47	0.00

THETA-EPS

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
ATMSCALE	0.00					
BTMSCALE	0.00	0.00				
bbecs04	0.00	0.00	0.00			
cbecs09	0.01	0.00	-0.01	0.00		
DBECdS09	0.00	-0.01	0.02	0.00	0.00	
APRCS02	0.00	0.00	0.00	0.02	-0.03	0.01
bprcs06	0.01	0.00	-0.01	-0.02	0.05	-0.02
cprcs06	0.00	0.00	0.02	-0.02	0.01	0.00
DPRCS06	-0.01	0.01	0.00	0.02	-0.03	0.01
ADPPS01	0.00	0.00	0.00	0.01	-0.01	0.01
bdpps01	0.00	0.00	0.00	0.00	0.01	0.00
cdpps01	0.00	0.00	-0.01	0.01	-0.01	-0.02
DDPPS01	0.00	0.00	0.00	-0.01	0.01	0.02
C1IN1000	0.00	-0.01	-0.02	-0.02	0.04	-0.03
C2IN1000	-0.01	-0.01	0.03	0.04	-0.05	-0.04
C3IN1000	0.01	0.03	0.02	0.02	0.05	0.00
C4IN1000	0.00	0.01	-0.05	-0.06	-0.02	0.09

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
bprcs06	0.00					
cprcs06	-0.01	0.01				
DPRCS06	0.01	-0.01	0.00			
ADPPS01	0.01	0.00	-0.02	0.00		
bdpps01	-0.01	0.02	0.01	0.01	-0.01	
cdpps01	0.01	0.00	0.00	-0.01	0.01	0.00
DDPPS01	-0.02	0.00	0.00	-0.02	0.00	0.01
C1IN1000	0.06	0.00	0.02	0.00	-0.03	-0.01
C2IN1000	-0.07	0.00	-0.03	0.00	0.00	0.00
C3IN1000	0.05	-0.01	-0.04	-0.01	0.06	0.00
C4IN1000	-0.01	0.03	0.04	0.00	-0.02	0.01

	DDPPS01	C1IN1000	C2IN1000	C3IN1000	C4IN1000
DDPPS01	0.00				
C1IN1000	0.01	-0.01			
C2IN1000	0.00	-0.01	0.01		
C3IN1000	-0.01	0.21	0.37	-0.48	
C4IN1000	0.00	-0.17	-0.39	0.47	0.00

Factor Scores Regressions
ETA

	ATMSCALE	BTMSCALE	bbecs04	cbecs09	DBECdS09	APRCS02
TEM1eta1	0.74	0.09	0.04	0.01	0.00	0.21
TEM2eta2	0.09	0.70	0.26	0.06	0.01	0.00
AGG2eta3	0.01	0.06	0.60	0.13	0.03	0.01
AGG3eta4	0.00	0.01	0.06	0.65	0.15	0.00
AGG4eta5	0.00	0.00	0.01	0.13	0.69	0.00
PAR1ETA6	0.02	0.00	0.00	0.00	0.00	0.27
PAR2ETA7	0.01	0.00	0.03	0.03	0.01	0.07
PAR3ETA8	0.00	0.00	0.01	0.04	0.01	0.03
PAR4ETA9	0.00	0.01	0.01	0.02	0.02	0.02
DP1ETA10	0.01	0.00	0.01	0.01	0.00	0.13
DP2ETA11	0.00	-0.01	0.04	0.02	0.01	0.03
DP3ETA12	0.00	0.00	-0.01	0.06	0.02	0.00
DP4ETA13	0.00	0.00	0.00	-0.01	0.04	0.00
IN1ETA14	0.00	0.00	0.00	0.00	0.00	0.00
IN2ETA15	0.00	0.00	0.00	0.00	0.00	0.00
IN3ETA16	0.00	0.00	0.00	0.00	0.00	0.00
IN4ETA17	0.00	0.00	0.00	0.00	0.00	0.00

	bprcs06	cprcs06	DPRCS06	ADPPS01	bdpps01	cdpps01
TEM1eta1	0.03	0.02	0.02	0.02	0.00	0.00
TEM2eta2	0.00	0.02	0.06	-0.01	-0.02	-0.01
AGG2eta3	0.04	0.01	0.01	0.01	0.02	-0.01
AGG3eta4	0.01	0.03	0.01	0.00	0.00	0.01
AGG4eta5	0.00	0.01	0.01	0.00	0.00	0.00
PAR1ETA6	0.04	0.02	0.01	0.03	0.01	0.00
PAR2ETA7	0.42	0.20	0.11	0.01	0.01	-0.02
PAR3ETA8	0.15	0.37	0.21	0.00	0.00	0.02
PAR4ETA9	0.09	0.23	0.35	0.00	0.00	0.02
DP1ETA10	0.02	0.01	0.01	0.61	0.18	0.02
DP2ETA11	0.01	0.01	0.01	0.15	0.62	0.09
DP3ETA12	-0.03	0.06	0.04	0.02	0.08	0.70
DP4ETA13	-0.01	0.00	0.03	0.00	0.01	0.09
IN1ETA14	0.00	0.00	0.00	0.00	0.00	0.00
IN2ETA15	0.00	0.00	0.00	0.00	0.00	0.00
IN3ETA16	0.00	0.00	0.00	0.00	0.00	0.00
IN4ETA17	0.00	0.00	0.00	0.00	0.00	0.00

(ETA – continued)

	DDPPS01	C1IN1000	C2IN1000	C3IN1000	C4IN1000
TEM1eta1	0.00	0.02	0.00	0.00	0.00
TEM2eta2	0.00	0.00	0.00	0.00	0.00
AGG2eta3	0.00	0.00	0.00	0.00	0.00
AGG3eta4	0.00	0.00	0.00	0.00	0.00
AGG4eta5	0.01	0.00	0.00	0.00	0.00
PAR1ETA6	0.00	-0.01	0.00	0.00	0.00
PAR2ETA7	-0.01	0.00	0.00	0.00	0.00
PAR3ETA8	0.00	0.00	0.00	0.00	0.00
PAR4ETA9	0.02	0.00	0.00	0.00	0.00
DP1ETA10	0.00	-0.14	-0.05	0.00	0.00
DP2ETA11	0.01	-0.03	0.06	0.03	0.01
DP3ETA12	0.11	0.00	0.00	-0.06	0.02
DP4ETA13	0.71	0.00	0.00	-0.02	-0.07
IN1ETA14	0.00	0.89	0.07	0.01	0.00
IN2ETA15	0.00	0.07	0.81	0.10	0.01
IN3ETA16	0.00	0.01	0.09	0.77	0.10
IN4ETA17	0.00	0.00	0.02	0.15	0.83

Standardized Solution

LAMBDA-Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	6.53	- -	- -	- -	- -	- -
BTMSCALE	- -	6.43	- -	- -	- -	- -
bbecs04	- -	- -	2.43	- -	- -	- -
cbecs09	- -	- -	- -	1.86	- -	- -
DBECdS09	- -	- -	- -	- -	1.68	- -
APRCS02	- -	- -	- -	- -	- -	0.75
bprcs06	- -	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

(LAMBDA-Y – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -	- -	- -
bprcs06	1.65	- -	- -	- -	- -	- -
cprcs06	- -	1.48	- -	- -	- -	- -
DPRCS06	- -	- -	1.41	- -	- -	- -
ADPPS01	- -	- -	- -	3.64	- -	- -
bdpps01	- -	- -	- -	- -	3.58	- -
cdpps01	- -	- -	- -	- -	- -	3.90
DDPPS01	- -	- -	- -	- -	- -	- -
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
ATMSCALE	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -
bbecs04	- -	- -	- -	- -	- -
cbecs09	- -	- -	- -	- -	- -
DBECdS09	- -	- -	- -	- -	- -
APRCS02	- -	- -	- -	- -	- -
bprcs06	- -	- -	- -	- -	- -
cprcs06	- -	- -	- -	- -	- -
DPRCS06	- -	- -	- -	- -	- -
ADPPS01	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -
DDPPS01	3.35	- -	- -	- -	- -
C1IN1000	- -	1.25	- -	- -	- -
C2IN1000	- -	- -	1.23	- -	- -
C3IN1000	- -	- -	- -	1.17	- -
C4IN1000	- -	- -	- -	- -	1.37

BETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.53	- -	- -	- -	- -	- -
AGG2eta3	- -	0.56	- -	- -	- -	- -
AGG3eta4	- -	- -	0.45	- -	- -	- -
AGG4eta5	- -	- -	- -	0.63	- -	- -
PAR1ETA6	0.37	- -	- -	- -	- -	- -
PAR2ETA7	- -	0.17	- -	- -	- -	0.31
PAR3ETA8	- -	0.07	- -	- -	- -	- -
PAR4ETA9	- -	0.07	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.17	- -	- -	- -	0.16	- -
AGG3eta4	- -	0.20	- -	- -	- -	0.15
AGG4eta5	- -	- -	0.03	- -	- -	- -
PAR1ETA6	- -	- -	- -	0.32	- -	- -
PAR2ETA7	- -	- -	- -	- -	0.07	- -
PAR3ETA8	0.71	- -	- -	- -	- -	0.21
PAR4ETA9	- -	0.83	- -	- -	- -	- -
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.70	- -	- -
DP3ETA12	- -	- -	- -	- -	0.50	- -
DP4ETA13	- -	- -	- -	- -	- -	0.53
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

(BETA – continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
TEM1eta1	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -
AGG2eta3	- -	- -	- -	- -	- -
AGG3eta4	- -	- -	- -	- -	- -
AGG4eta5	0.09	- -	- -	- -	- -
PAR1ETA6	- -	- -	- -	- -	- -
PAR2ETA7	- -	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -	- -
PAR4ETA9	0.07	- -	- -	- -	- -
DP1ETA10	- -	-0.20	- -	- -	- -
DP2ETA11	- -	- -	0.08	- -	- -
DP3ETA12	- -	- -	- -	-0.11	- -
DP4ETA13	- -	- -	- -	- -	-0.12
IN1ETA14	- -	- -	- -	- -	- -
IN2ETA15	- -	0.78	- -	- -	- -
IN3ETA16	- -	- -	0.84	- -	- -
IN4ETA17	- -	- -	- -	0.87	- -

Correlation Matrix of ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	1.00					
TEM2eta2	0.53	1.00				
AGG2eta3	0.35	0.61	1.00			
AGG3eta4	0.20	0.32	0.52	1.00		
AGG4eta5	0.14	0.21	0.34	0.65	1.00	
PAR1ETA6	0.42	0.22	0.23	0.18	0.13	1.00
PAR2ETA7	0.22	0.24	0.33	0.30	0.21	0.37
PAR3ETA8	0.21	0.24	0.30	0.37	0.27	0.30
PAR4ETA9	0.21	0.28	0.30	0.34	0.26	0.27
DP1ETA10	0.14	0.08	0.18	0.17	0.13	0.38
DP2ETA11	0.10	0.05	0.21	0.21	0.16	0.26
DP3ETA12	0.05	0.03	0.11	0.25	0.21	0.13
DP4ETA13	0.03	0.01	0.06	0.13	0.18	0.07
IN1ETA14	- -	- -	-0.02	-0.03	-0.03	-0.07
IN2ETA15	- -	- -	-0.01	-0.02	-0.03	-0.05
IN3ETA16	- -	- -	-0.01	-0.03	-0.03	-0.04
IN4ETA17	- -	- -	-0.01	-0.02	-0.03	-0.04

(Correlation Matrix of ETA – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	1.00					
PAR3ETA8	0.75	1.00				
PAR4ETA9	0.64	0.86	1.00			
DP1ETA10	0.18	0.21	0.19	1.00		
DP2ETA11	0.16	0.23	0.21	0.68	1.00	
DP3ETA12	0.08	0.27	0.27	0.35	0.50	1.00
DP4ETA13	0.05	0.15	0.19	0.20	0.26	0.54
IN1ETA14	-0.03	-0.04	-0.04	-0.20	-0.08	-0.11
IN2ETA15	-0.02	-0.03	-0.04	-0.16	-0.03	-0.10
IN3ETA16	-0.02	-0.04	-0.04	-0.13	-0.02	-0.12
IN4ETA17	-0.01	-0.03	-0.04	-0.12	-0.02	-0.10

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
DP4ETA13	1.00				
IN1ETA14	-0.13	1.00			
IN2ETA15	-0.14	0.78	1.00		
IN3ETA16	-0.17	0.66	0.84	1.00	
IN4ETA17	-0.17	0.57	0.74	0.87	1.00

PSI

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	1.00					
TEM2eta2	- -	0.72				
AGG2eta3	- -	- -	0.57			
AGG3eta4	- -	- -	- -	0.66		
AGG4eta5	- -	- -	- -	- -	0.57	
PAR1ETA6	- -	- -	- -	- -	- -	0.72
PAR2ETA7	- -	- -	- -	- -	- -	- -
PAR3ETA8	- -	- -	- -	- -	- -	- -
PAR4ETA9	- -	- -	- -	- -	- -	- -
DP1ETA10	0.14	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
PAR2ETA7	0.83					
PAR3ETA8	- -	0.39				
PAR4ETA9	- -	- -	0.25			
DP1ETA10	- -	- -	- -	0.96		
DP2ETA11	- -	- -	- -	- -	0.53	
DP3ETA12	- -	- -	- -	- -	- -	0.74
DP4ETA13	- -	- -	- -	- -	- -	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

(PSI – continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
DP4ETA13	0.70				
IN1ETA14	- -	1.00			
IN2ETA15	- -	- -	0.39		
IN3ETA16	- -	- -	- -	0.29	
IN4ETA17	- -	- -	- -	- -	0.23

Total and Indirect Effects

Total Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.52	- -	- -	- -	- -	- -
	(0.06)					
	8.69					
AGG2eta3	0.12	0.22	- -	- -	- -	0.17
	(0.02)	(0.02)				(0.10)
	7.07	9.71				1.74
AGG3eta4	0.05	0.09	0.34	- -	- -	0.16
	(0.01)	(0.01)	(0.05)			(0.08)
	5.84	6.72	6.70			2.17
AGG4eta5	0.03	0.05	0.19	0.57	- -	0.11
	(0.01)	(0.01)	(0.03)	(0.06)		(0.05)
	5.10	5.84	5.69	9.50		2.01
PAR1ETA6	0.04	- -	- -	- -	- -	- -
	(0.01)					
	4.53					
PAR2ETA7	0.05	0.04	- -	- -	- -	0.68
	(0.01)	(0.01)				(0.26)
	3.82	4.53				2.63
PAR3ETA8	0.04	0.04	- -	- -	- -	0.44
	(0.01)	(0.01)				(0.17)
	4.33	4.19				2.57
PAR4ETA9	0.04	0.05	- -	- -	- -	0.35
	(0.01)	(0.02)				(0.14)
	4.06	3.10				2.52
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

(Total Effects of ETA on ETA - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.25	- -	- -	0.09	0.12	- -
	(0.11)			(0.03)	(0.04)	
	2.35			3.10	2.76	
AGG3eta4	0.24	0.25	- -	0.07	0.09	0.09
	(0.06)	(0.09)		(0.02)	(0.02)	(0.03)
	3.75	2.69		4.58	4.15	3.10
AGG4eta5	0.15	0.17	0.03	0.05	0.07	0.07
	(0.05)	(0.08)	(0.09)	(0.01)	(0.02)	(0.02)
	3.06	2.21	0.39	4.56	4.32	3.64
PAR1ETA6	- -	- -	- -	0.07	- -	- -
				(0.02)		
				3.16		
PAR2ETA7	- -	- -	- -	0.07	0.03	- -
				(0.03)	(0.04)	
				2.66	0.90	
PAR3ETA8	0.64	- -	- -	0.07	0.07	0.08
	(0.08)			(0.02)	(0.03)	(0.03)
	7.95			4.01	2.49	3.15
PAR4ETA9	0.51	0.80	- -	0.06	0.06	0.08
	(0.07)	(0.09)		(0.02)	(0.02)	(0.02)
	6.81	9.34		4.09	2.74	3.56
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.68	- -	- -
				(0.07)		
				10.51		
DP3ETA12	- -	- -	- -	0.37	0.54	- -
				(0.06)	(0.07)	
				6.64	7.88	
DP4ETA13	- -	- -	- -	0.17	0.24	0.45
				(0.03)	(0.04)	(0.05)
				5.37	5.96	8.46
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

(Total Effects of ETA on ETA - continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
TEM1eta1	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -
AGG2eta3	- -	-0.03	0.03	- -	- -
		(0.02)	(0.02)		
		-1.47	1.33		
AGG3eta4	- -	-0.05	0.00	-0.03	- -
		(0.02)	(0.02)	(0.02)	
		-2.23	-0.12	-1.62	
AGG4eta5	0.05	-0.04	-0.02	-0.04	-0.01
	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)
	1.54	-2.46	-0.89	-1.98	-1.25
PAR1ETA6	- -	-0.04	- -	- -	- -
		(0.02)			
		-2.30			
PAR2ETA7	- -	-0.03	0.01	- -	- -
		(0.02)	(0.01)		
		-2.00	0.77		
PAR3ETA8	- -	-0.05	-0.01	-0.03	- -
		(0.02)	(0.02)	(0.02)	
		-2.51	-0.40	-1.63	
PAR4ETA9	0.03	-0.05	-0.01	-0.04	-0.01
	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)
	0.95	-2.57	-0.82	-1.80	-0.87
DP1ETA10	- -	-0.59	- -	- -	- -
		(0.18)			
		-3.30			
DP2ETA11	- -	-0.22	0.25	- -	- -
		(0.16)	(0.16)		
		-1.38	1.52		
DP3ETA12	- -	-0.34	-0.15	-0.36	- -
		(0.14)	(0.17)	(0.19)	
		-2.46	-0.92	-1.90	
DP4ETA13	- -	-0.34	-0.31	-0.46	-0.29
		(0.10)	(0.13)	(0.16)	(0.14)
		-3.28	-2.39	-2.96	-2.12
IN1ETA14	- -	- -	- -	- -	- -
IN2ETA15	- -	0.76	- -	- -	- -
		(0.04)			
		20.74			
IN3ETA16	- -	0.61	0.80	- -	- -
		(0.04)	(0.03)		
		16.66	25.04		
IN4ETA17	- -	0.63	0.82	1.02	- -
		(0.04)	(0.04)	(0.04)	
		14.79	19.76	28.05	

Largest Eigenvalue of B*B' (Stability Index) is 1.216

Indirect Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.12	0.01	- -	- -	- -	0.17
	(0.02)	(0.00)				(0.10)
	7.07	2.14				1.74
AGG3eta4	0.05	0.09	- -	- -	- -	0.16
	(0.01)	(0.01)				(0.08)
	5.84	6.72				2.17
AGG4eta5	0.03	0.05	0.19	- -	- -	0.11
	(0.01)	(0.01)	(0.03)			(0.05)
	5.10	5.84	5.69			2.01
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	0.05	- -	- -	- -	- -	- -
	(0.01)					
	3.82					
PAR3ETA8	0.04	0.03	- -	- -	- -	0.44
	(0.01)	(0.01)				(0.17)
	4.33	3.95				2.57
PAR4ETA9	0.04	0.03	- -	- -	- -	0.35
	(0.01)	(0.01)				(0.14)
	4.06	4.26				2.52
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

(Indirect Effects of ETA on ETA - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	- -	- -	- -	0.09	0.01	- -
				(0.03)	(0.01)	
				3.10	0.85	
AGG3eta4	0.24	- -	- -	0.07	0.09	0.02
	(0.06)			(0.02)	(0.02)	(0.01)
	3.75			4.58	4.15	2.06
AGG4eta5	0.15	0.17	- -	0.05	0.07	0.07
	(0.05)	(0.08)		(0.01)	(0.02)	(0.02)
	3.06	2.21		4.56	4.32	3.64
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	- -	- -	- -	0.07	- -	- -
				(0.03)		
				2.66		
PAR3ETA8	- -	- -	- -	0.07	0.07	- -
				(0.02)	(0.03)	
				4.01	2.49	
PAR4ETA9	0.51	- -	- -	0.06	0.06	0.08
	(0.07)			(0.02)	(0.02)	(0.02)
	6.81			4.09	2.74	3.56
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	0.37	- -	- -
				(0.06)		
				6.64		
DP4ETA13	- -	- -	- -	0.17	0.24	- -
				(0.03)	(0.04)	
				5.37	5.96	
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

(Indirect Effects of ETA on ETA - continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
TEM1eta1	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -
AGG2eta3	- -	-0.03	0.03	- -	- -
		(0.02)	(0.02)		
		-1.47	1.33		
AGG3eta4	- -	-0.05	0.00	-0.03	- -
		(0.02)	(0.02)	(0.02)	
		-2.23	-0.12	-1.62	
AGG4eta5	0.00	-0.04	-0.02	-0.04	-0.01
	(0.00)	(0.02)	(0.02)	(0.02)	(0.01)
	0.36	-2.46	-0.89	-1.98	-1.25
PAR1ETA6	- -	-0.04	- -	- -	- -
		(0.02)			
		-2.30			
PAR2ETA7	- -	-0.03	0.01	- -	- -
		(0.02)	(0.01)		
		-2.00	0.77		
PAR3ETA8	- -	-0.05	-0.01	-0.03	- -
		(0.02)	(0.02)	(0.02)	
		-2.51	-0.40	-1.63	
PAR4ETA9	- -	-0.05	-0.01	-0.04	-0.01
		(0.02)	(0.02)	(0.02)	(0.01)
		-2.57	-0.82	-1.80	-0.87
DP1ETA10	- -	- -	- -	- -	- -
DP2ETA11	- -	-0.22	- -	- -	- -
		(0.16)			
		-1.38			
DP3ETA12	- -	-0.34	-0.15	- -	- -
		(0.14)	(0.17)		
		-2.46	-0.92		
DP4ETA13	- -	-0.34	-0.31	-0.46	- -
		(0.10)	(0.13)	(0.16)	
		-3.28	-2.39	-2.96	
IN1ETA14	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -
IN3ETA16	- -	0.61	- -	- -	- -
		(0.04)			
		16.66			
IN4ETA17	- -	0.63	0.82	- -	- -
		(0.04)	(0.04)		
		14.79	19.76		

Total Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	1.00	- -	- -	- -	- -	- -
BTMSCALE	0.52	1.00	- -	- -	- -	- -
	(0.06)					
	8.69					
bbecs04	0.12	0.22	1.00	- -	- -	0.17
	(0.02)	(0.02)				(0.10)
	7.07	9.71				1.74
cbecs09	0.05	0.09	0.34	1.00	- -	0.16
	(0.01)	(0.01)	(0.05)			(0.08)
	5.84	6.72	6.70			2.17
DBECdS09	0.03	0.05	0.19	0.57	1.00	0.11
	(0.01)	(0.01)	(0.03)	(0.06)		(0.05)
	5.10	5.84	5.69	9.50		2.01
APRCS02	0.04	- -	- -	- -	- -	1.00
	(0.01)					
	4.53					
bprcs06	0.05	0.04	- -	- -	- -	0.68
	(0.01)	(0.01)				(0.26)
	3.82	4.53				2.63
cprcs06	0.04	0.04	- -	- -	- -	0.44
	(0.01)	(0.01)				(0.17)
	4.33	4.19				2.57
DPRCS06	0.04	0.05	- -	- -	- -	0.35
	(0.01)	(0.02)				(0.14)
	4.06	3.10				2.52
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

(Total Effects of ETA on Y - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	0.25	- -	- -	0.09	0.12	- -
	(0.11)			(0.03)	(0.04)	
	2.35			3.10	2.76	
cbecs09	0.24	0.25	- -	0.07	0.09	0.09
	(0.06)	(0.09)		(0.02)	(0.02)	(0.03)
	3.75	2.69		4.58	4.15	3.10
DBECdS09	0.15	0.17	0.03	0.05	0.07	0.07
	(0.05)	(0.08)	(0.09)	(0.01)	(0.02)	(0.02)
	3.06	2.21	0.39	4.56	4.32	3.64
APRCS02	- -	- -	- -	0.07	- -	- -
				(0.02)		
				3.16		
bprcs06	1.00	- -	- -	0.07	0.03	- -
				(0.03)	(0.04)	
				2.66	0.90	
cprcs06	0.64	1.00	- -	0.07	0.07	0.08
	(0.08)			(0.02)	(0.03)	(0.03)
	7.95			4.01	2.49	3.15
DPRCS06	0.51	0.80	1.00	0.06	0.06	0.08
	(0.07)	(0.09)		(0.02)	(0.02)	(0.02)
	6.81	9.34		4.09	2.74	3.56
ADPPS01	- -	- -	- -	1.00	- -	- -
bdpps01	- -	- -	- -	0.68	1.00	- -
				(0.07)		
				10.51		
cdpps01	- -	- -	- -	0.37	0.54	1.00
				(0.06)	(0.07)	
				6.64	7.88	
DDPPS01	- -	- -	- -	0.17	0.24	0.45
				(0.03)	(0.04)	(0.05)
				5.37	5.96	8.46
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

(Total Effects of ETA on Y - continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
ATMSCALE	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -
bbecs04	- -	-0.03	0.03	- -	- -
		(0.02)	(0.02)		
		-1.47	1.33		
cbecs09	- -	-0.05	0.00	-0.03	- -
		(0.02)	(0.02)	(0.02)	
		-2.23	-0.12	-1.62	
DBECdS09	0.05	-0.04	-0.02	-0.04	-0.01
	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)
	1.54	-2.46	-0.89	-1.98	-1.25
APRCS02	- -	-0.04	- -	- -	- -
		(0.02)			
		-2.30			
bprcs06	- -	-0.03	0.01	- -	- -
		(0.02)	(0.01)		
		-2.00	0.77		
cprcs06	- -	-0.05	-0.01	-0.03	- -
		(0.02)	(0.02)	(0.02)	
		-2.51	-0.40	-1.63	
DPRCS06	0.03	-0.05	-0.01	-0.04	-0.01
	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)
	0.95	-2.57	-0.82	-1.80	-0.87
ADPPS01	- -	-0.59	- -	- -	- -
		(0.18)			
		-3.30			
bdpps01	- -	-0.22	0.25	- -	- -
		(0.16)	(0.16)		
		-1.38	1.52		
cdpps01	- -	-0.34	-0.15	-0.36	- -
		(0.14)	(0.17)	(0.19)	
		-2.46	-0.92	-1.90	
DDPPS01	1.00	-0.34	-0.31	-0.46	-0.29
		(0.10)	(0.13)	(0.16)	(0.14)
		-3.28	-2.39	-2.96	-2.12
C1IN1000	- -	1.00	- -	- -	- -
C2IN1000	- -	0.76	1.00	- -	- -
		(0.04)			
		20.74			
C3IN1000	- -	0.61	0.80	1.00	- -
		(0.04)	(0.03)		
		16.66	25.04		
C4IN1000	- -	0.63	0.82	1.02	1.00
		(0.04)	(0.04)	(0.04)	
		14.79	19.76	28.05	

Indirect Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	0.52 (0.06) 8.69	- -	- -	- -	- -	- -
bbecs04	0.12 (0.02) 7.07	0.22 (0.02) 9.71	- -	- -	- -	0.17 (0.10) 1.74
cbecs09	0.05 (0.01) 5.84	0.09 (0.01) 6.72	0.34 (0.05) 6.70	- -	- -	0.16 (0.08) 2.17
DBECdS09	0.03 (0.01) 5.10	0.05 (0.01) 5.84	0.19 (0.03) 5.69	0.57 (0.06) 9.50	- -	0.11 (0.05) 2.01
APRCS02	0.04 (0.01) 4.53	- -	- -	- -	- -	- -
bprcs06	0.05 (0.01) 3.82	0.04 (0.01) 4.53	- -	- -	- -	0.68 (0.26) 2.63
cprcs06	0.04 (0.01) 4.33	0.04 (0.01) 4.19	- -	- -	- -	0.44 (0.17) 2.57
DPRCS06	0.04 (0.01) 4.06	0.05 (0.02) 3.10	- -	- -	- -	0.35 (0.14) 2.52
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

(Indirect Effects of ETA on Y - continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	0.25	- -	- -	0.09	0.12	- -
	(0.11)			(0.03)	(0.04)	
	2.35			3.10	2.76	
cbecs09	0.24	0.25	- -	0.07	0.09	0.09
	(0.06)	(0.09)		(0.02)	(0.02)	(0.03)
	3.75	2.69		4.58	4.15	3.10
DBECdS09	0.15	0.17	0.03	0.05	0.07	0.07
	(0.05)	(0.08)	(0.09)	(0.01)	(0.02)	(0.02)
	3.06	2.21	0.39	4.56	4.32	3.64
APRCS02	- -	- -	- -	0.07	- -	- -
				(0.02)		
				3.16		
bprcs06	- -	- -	- -	0.07	0.03	- -
				(0.03)	(0.04)	
				2.66	0.90	
cprcs06	0.64	- -	- -	0.07	0.07	0.08
	(0.08)			(0.02)	(0.03)	(0.03)
	7.95			4.01	2.49	3.15
DPRCS06	0.51	0.80	- -	0.06	0.06	0.08
	(0.07)	(0.09)		(0.02)	(0.02)	(0.02)
	6.81	9.34		4.09	2.74	3.56
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	0.68	- -	- -
				(0.07)		
				10.51		
cdpps01	- -	- -	- -	0.37	0.54	- -
				(0.06)	(0.07)	
				6.64	7.88	
DDPPS01	- -	- -	- -	0.17	0.24	0.45
				(0.03)	(0.04)	(0.05)
				5.37	5.96	8.46
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

(Indirect Effects of ETA on Y - continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
ATMSCALE	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -
bbecs04	- -	-0.03	0.03	- -	- -
		(0.02)	(0.02)		
		-1.47	1.33		
cbecs09	- -	-0.05	0.00	-0.03	- -
		(0.02)	(0.02)	(0.02)	
		-2.23	-0.12	-1.62	
DBECdS09	0.05	-0.04	-0.02	-0.04	-0.01
	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)
	1.54	-2.46	-0.89	-1.98	-1.25
APRCS02	- -	-0.04	- -	- -	- -
		(0.02)			
		-2.30			
bprcs06	- -	-0.03	0.01	- -	- -
		(0.02)	(0.01)		
		-2.00	0.77		
cprcs06	- -	-0.05	-0.01	-0.03	- -
		(0.02)	(0.02)	(0.02)	
		-2.51	-0.40	-1.63	
DPRCS06	0.03	-0.05	-0.01	-0.04	-0.01
	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)
	0.95	-2.57	-0.82	-1.80	-0.87
ADPPS01	- -	-0.59	- -	- -	- -
		(0.18)			
		-3.30			
bdpps01	- -	-0.22	0.25	- -	- -
		(0.16)	(0.16)		
		-1.38	1.52		
cdpps01	- -	-0.34	-0.15	-0.36	- -
		(0.14)	(0.17)	(0.19)	
		-2.46	-0.92	-1.90	
DDPPS01	- -	-0.34	-0.31	-0.46	-0.29
		(0.10)	(0.13)	(0.16)	(0.14)
		-3.28	-2.39	-2.96	-2.12
C1IN1000	- -	- -	- -	- -	- -
C2IN1000	- -	0.76	- -	- -	- -
		(0.04)			
		20.74			
C3IN1000	- -	0.61	0.80	- -	- -
		(0.04)	(0.03)		
		16.66	25.04		
C4IN1000	- -	0.63	0.82	1.02	- -
		(0.04)	(0.04)	(0.04)	
		14.79	19.76	28.05	

Standardized Total and Indirect Effects

Standardized Total Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	0.53	- -	- -	- -	- -	- -
AGG2eta3	0.33	0.59	- -	- -	- -	0.05
AGG3eta4	0.18	0.30	0.45	- -	- -	0.07
AGG4eta5	0.12	0.20	0.28	0.63	- -	0.05
PAR1ETA6	0.37	- -	- -	- -	- -	- -
PAR2ETA7	0.20	0.17	- -	- -	- -	0.31
PAR3ETA8	0.18	0.19	- -	- -	- -	0.22
PAR4ETA9	0.19	0.23	- -	- -	- -	0.18
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.17	- -	- -	0.14	0.17	- -
AGG3eta4	0.21	0.20	- -	0.15	0.18	0.19
AGG4eta5	0.15	0.15	0.03	0.11	0.14	0.17
PAR1ETA6	- -	- -	- -	0.32	- -	- -
PAR2ETA7	- -	- -	- -	0.15	0.07	- -
PAR3ETA8	0.71	- -	- -	0.18	0.16	0.21
PAR4ETA9	0.59	0.83	- -	0.16	0.15	0.21
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	0.70	- -	- -
DP3ETA12	- -	- -	- -	0.34	0.50	- -
DP4ETA13	- -	- -	- -	0.18	0.26	0.53
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

(Standardized Total Effects of ETA on ETA – continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
TEM1eta1	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -
AGG2eta3	- -	-0.02	0.01	- -	- -
AGG3eta4	- -	-0.03	0.00	-0.02	- -
AGG4eta5	0.09	-0.03	-0.01	-0.03	-0.01
PAR1ETA6	- -	-0.07	- -	- -	- -
PAR2ETA7	- -	-0.03	0.01	- -	- -
PAR3ETA8	- -	-0.04	-0.01	-0.02	- -
PAR4ETA9	0.07	-0.04	-0.01	-0.03	-0.01
DP1ETA10	- -	-0.20	- -	- -	- -
DP2ETA11	- -	-0.08	0.08	- -	- -
DP3ETA12	- -	-0.11	-0.05	-0.11	- -
DP4ETA13	- -	-0.13	-0.11	-0.16	-0.12
IN1ETA14	- -	- -	- -	- -	- -
IN2ETA15	- -	0.78	- -	- -	- -
IN3ETA16	- -	0.66	0.84	- -	- -
IN4ETA17	- -	0.57	0.74	0.87	- -

Standardized Indirect Effects of ETA on ETA

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	0.33	0.03	- -	- -	- -	0.05
AGG3eta4	0.18	0.30	- -	- -	- -	0.07
AGG4eta5	0.12	0.20	0.28	- -	- -	0.05
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	0.20	- -	- -	- -	- -	- -
PAR3ETA8	0.18	0.12	- -	- -	- -	0.22
PAR4ETA9	0.19	0.16	- -	- -	- -	0.18
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	- -	- -	- -
DP4ETA13	- -	- -	- -	- -	- -	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

(Standardized Indirect Effects of ETA on ETA – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
TEM1eta1	- -	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -	- -
AGG2eta3	- -	- -	- -	0.14	0.01	- -
AGG3eta4	0.21	- -	- -	0.15	0.18	0.04
AGG4eta5	0.15	0.15	- -	0.11	0.14	0.17
PAR1ETA6	- -	- -	- -	- -	- -	- -
PAR2ETA7	- -	- -	- -	0.15	- -	- -
PAR3ETA8	- -	- -	- -	0.18	0.16	- -
PAR4ETA9	0.59	- -	- -	0.16	0.15	0.21
DP1ETA10	- -	- -	- -	- -	- -	- -
DP2ETA11	- -	- -	- -	- -	- -	- -
DP3ETA12	- -	- -	- -	0.34	- -	- -
DP4ETA13	- -	- -	- -	0.18	0.26	- -
IN1ETA14	- -	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -	- -
IN3ETA16	- -	- -	- -	- -	- -	- -
IN4ETA17	- -	- -	- -	- -	- -	- -

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
TEM1eta1	- -	- -	- -	- -	- -
TEM2eta2	- -	- -	- -	- -	- -
AGG2eta3	- -	-0.02	0.01	- -	- -
AGG3eta4	- -	-0.03	0.00	-0.02	- -
AGG4eta5	0.00	-0.03	-0.01	-0.03	-0.01
PAR1ETA6	- -	-0.07	- -	- -	- -
PAR2ETA7	- -	-0.03	0.01	- -	- -
PAR3ETA8	- -	-0.04	-0.01	-0.02	- -
PAR4ETA9	- -	-0.04	-0.01	-0.03	-0.01
DP1ETA10	- -	- -	- -	- -	- -
DP2ETA11	- -	-0.08	- -	- -	- -
DP3ETA12	- -	-0.11	-0.05	- -	- -
DP4ETA13	- -	-0.13	-0.11	-0.16	- -
IN1ETA14	- -	- -	- -	- -	- -
IN2ETA15	- -	- -	- -	- -	- -
IN3ETA16	- -	0.66	- -	- -	- -
IN4ETA17	- -	0.57	0.74	- -	- -

Standardized Total Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	6.53	- -	- -	- -	- -	- -
BTMSCALE	3.38	6.43	- -	- -	- -	- -
bbecs04	0.80	1.44	2.43	- -	- -	0.13
cbecs09	0.34	0.56	0.83	1.86	- -	0.12
DBECdS09	0.20	0.33	0.47	1.06	1.68	0.08
APRCS02	0.28	- -	- -	- -	- -	0.75
bprcs06	0.33	0.27	- -	- -	- -	0.51
cprcs06	0.27	0.28	- -	- -	- -	0.33
DPRCS06	0.27	0.32	- -	- -	- -	0.26
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	0.41	- -	- -	0.33	0.41	- -
cbecs09	0.40	0.36	- -	0.27	0.33	0.35
DBECdS09	0.25	0.25	0.05	0.19	0.24	0.29
APRCS02	- -	- -	- -	0.24	- -	- -
bprcs06	1.65	- -	- -	0.25	0.12	- -
cprcs06	1.05	1.48	- -	0.27	0.23	0.31
DPRCS06	0.84	1.18	1.41	0.23	0.21	0.30
ADPPS01	- -	- -	- -	3.64	- -	- -
bdpps01	- -	- -	- -	2.49	3.58	- -
cdpps01	- -	- -	- -	1.34	1.93	3.90
DDPPS01	- -	- -	- -	0.61	0.87	1.76
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

(Standardized Total Effects of ETA on Y – continued)

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
ATMSCALE	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -
bbecs04	- -	-0.04	0.04	- -	- -
cbecs09	- -	-0.06	0.00	-0.04	- -
DBECdS09	0.15	-0.05	-0.02	-0.05	-0.02
APRCS02	- -	-0.05	- -	- -	- -
bprcs06	- -	-0.04	0.01	- -	- -
cprcs06	- -	-0.06	-0.01	-0.03	- -
DPRCS06	0.10	-0.06	-0.02	-0.04	-0.01
ADPPS01	- -	-0.75	- -	- -	- -
bdpps01	- -	-0.27	0.30	- -	- -
cdpps01	- -	-0.42	-0.19	-0.42	- -
DDPPS01	3.35	-0.42	-0.38	-0.54	-0.40
C1IN1000	- -	1.25	- -	- -	- -
C2IN1000	- -	0.96	1.23	- -	- -
C3IN1000	- -	0.77	0.98	1.17	- -
C4IN1000	- -	0.78	1.01	1.20	1.37

Standardized Indirect Effects of ETA on Y

	TEM1eta1	TEM2eta2	AGG2eta3	AGG3eta4	AGG4eta5	PAR1ETA6
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	3.38	- -	- -	- -	- -	- -
bbecs04	0.80	1.44	- -	- -	- -	0.13
cbecs09	0.34	0.56	0.83	- -	- -	0.12
DBECdS09	0.20	0.33	0.47	1.06	- -	0.08
APRCS02	0.28	- -	- -	- -	- -	- -
bprcs06	0.33	0.27	- -	- -	- -	0.51
cprcs06	0.27	0.28	- -	- -	- -	0.33
DPRCS06	0.27	0.32	- -	- -	- -	0.26
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	- -	- -	- -
cdpps01	- -	- -	- -	- -	- -	- -
DDPPS01	- -	- -	- -	- -	- -	- -
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

(Standardized Indirect Effects of ETA on Y – continued)

	PAR2ETA7	PAR3ETA8	PAR4ETA9	DP1ETA10	DP2ETA11	DP3ETA12
ATMSCALE	- -	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -	- -
bbecs04	0.41	- -	- -	0.33	0.41	- -
cbecs09	0.40	0.36	- -	0.27	0.33	0.35
DBECdS09	0.25	0.25	0.05	0.19	0.24	0.29
APRCS02	- -	- -	- -	0.24	- -	- -
bprcs06	- -	- -	- -	0.25	0.12	- -
cprcs06	1.05	- -	- -	0.27	0.23	0.31
DPRCS06	0.84	1.18	- -	0.23	0.21	0.30
ADPPS01	- -	- -	- -	- -	- -	- -
bdpps01	- -	- -	- -	2.49	- -	- -
cdpps01	- -	- -	- -	1.34	1.93	- -
DDPPS01	- -	- -	- -	0.61	0.87	1.76
C1IN1000	- -	- -	- -	- -	- -	- -
C2IN1000	- -	- -	- -	- -	- -	- -
C3IN1000	- -	- -	- -	- -	- -	- -
C4IN1000	- -	- -	- -	- -	- -	- -

	DP4ETA13	IN1ETA14	IN2ETA15	IN3ETA16	IN4ETA17
ATMSCALE	- -	- -	- -	- -	- -
BTMSCALE	- -	- -	- -	- -	- -
bbecs04	- -	-0.04	0.04	- -	- -
cbecs09	- -	-0.06	0.00	-0.04	- -
DBECdS09	0.15	-0.05	-0.02	-0.05	-0.02
APRCS02	- -	-0.05	- -	- -	- -
bprcs06	- -	-0.04	0.01	- -	- -
cprcs06	- -	-0.06	-0.01	-0.03	- -
DPRCS06	0.10	-0.06	-0.02	-0.04	-0.01
ADPPS01	- -	-0.75	- -	- -	- -
bdpps01	- -	-0.27	0.30	- -	- -
cdpps01	- -	-0.42	-0.19	-0.42	- -
DDPPS01	- -	-0.42	-0.38	-0.54	-0.40
C1IN1000	- -	- -	- -	- -	- -
C2IN1000	- -	0.96	- -	- -	- -
C3IN1000	- -	0.77	0.98	- -	- -
C4IN1000	- -	0.78	1.01	1.20	- -