University of Alberta

PRESCHOOL BEHAVIOUR PROBLEMS:

RELATIONSHIP WITH PARENT-INFANT INTERACTION AND MARITAL QUALITY

BY

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

Faculty of Nursing

Edmonton, Alberta

Fall, 1996

ISBN 0-612-18348-3

Canada

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Name of author:	Karen M. Benzies
Title of thesis:	Preschool Behaviour Problems: Relationship with Parent-Infant Interaction and Marital Quality
Degree:	Master of Nursing
Year this degree granted:	1996

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August 29, 1996

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Abstract

Preschool behaviour problems have a significant impact on family life and relationships. Although the processes are unclear, preschool behaviour problems have been linked to parent-child interaction and marital quality. The purpose of this study was to examine, separately for mothers and fathers, the relationship between parent interactions with infants at 12 months of age, marital quality at 12 months, and behaviour problems of children at 4 years of age. A longitudinal correlational design was used in a sample with 80 mothers and 74 fathers with term and preterm infants to determine the variable(s) that predicted preschool behaviour problems as measured by the Eyberg Child Behavior Inventory. Parental marital quality at 12 months, but not parent-infant interaction, predicted behaviour problems at 4 years. There were no differences between preterm and term children in the number or intensity of behaviour problems identified by parents.

ACKNOWLEDGEMENTS

I wish to acknowledge the gentle and wise tutoring of my thesis supervisor, **Dr. Margaret Harrison,** the thought provoking editorial comments of **Dr. Joyce Magill-Evans,** and the statistical expertise of **Dr. Louise Jensen.** Without guidance and support from these women, this thesis would not exist. **Dr. Linda Reutter** chaired the oral defense.

Also, I wish to acknowledge the **mothers and fathers of the Parent-Infant Project** who took time from their busy schedules with preschool children to answer questionnaires about their children's behaviours.

This research was supported in part by a studentship from the **Perinatal Research Centre, University of Alberta,** and a research grant from the **Alberta Foundation for Nursing Research** awarded to M. Harrison and J. Magill-Evans for the data collected at 12 months.

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Chapter 1

Introduction

Preschool children with behaviour problems have a significant impact on family life and relationships. Children with problem behaviours may be at increased risk for depression (Adams, Hillman, & Gaydos, 1994), poor short-term and long-term adjustments (Pless et al., 1994), child abuse (O'Keefe, 1995), language delays (Caulfield, Fischel, DeBaryshe, & Whitehurst, 1989), and future psychiatric disorders (Lerner, Inui, Trupin, & Douglas, 1985). Schraeder, Heverly, and Rappaport (1990) found that children at 4 years of age with four or more behaviour problems had significantly lower skill achievement scores than children with fewer behaviour problems. Furthermore, children with behaviour problems tend to be less responsive to therapeutic intervention as they grow older and behaviour patterns become well established (Grizenko, Sayegh, & Papineau, 1994). The ability to predict preschool behaviour problems based on an infancy assessment would facilitate early intervention to assist families with children at risk for preschool behaviour problems. Although there is potential benefit in preventing behaviour problems in terms of reduced cost for treatment and reduced stress for families, considerable controversy surrounds research in the field of preschool behaviour problems.

Traditionally, nurses have worked with families and young children and have included in their practice, education, and support for parent and child interactions. Nurses have a central role in health care with training that is appropriate to identify and intervene with childhood behaviour problems. Access to families through community health services provides nurses with an avenue for an early assessment and the potential to prevent some

behaviour problems or intervene earlier in the case of others. Nursing research is warranted in order to expand what is known about the relationship between parent-child interactions and childhood behaviour problems and to provide a basis for further interventions.

The theoretical perspective in this prospective longitudinal study is derived from the Structural/Behavioral Model of development (Horowitz, 1990). The basic premise is that there are two dimensions in the development of children. One dimension involves individual organismic differences in children. These differences include biological characteristics that "constitute natural constraints on the organism (we learn to walk and we cannot learn to fly)" (p. 13). The individual organismic differences in children interact with the second dimension, the environment. Optimal development is related to an invulnerable organism and a facilitative environment whereas impaired development is associated with a vulnerable organism and a nonfacilitative environment. The Structural/Behavioral Model functions under the assumption that there are periodic reorganizations of the variables that comprise the model; individual organismic differences and the environment do not necessarily remain constant throughout the period of development. In this research, the organismic variables considered were infant gender and perinatal status (term or preterm). The environmental variables were parental-infant interaction, marital quality, and socioeconomic status of the mother and father.

Purpose of the Study

The purpose of this study was to explore the relationship between parent-infant interactions and parental marital quality at 12 months and preschool behaviour problems at 4 years. The relationships were explored using the Nursing Child Assessment Teaching Scale (NCATS) scores (Sumner & Speitz, 1994) as the measure of parent-infant interactions and the Dyadic Adjustment Scale (DAS) scores (Spanier, 1976) as the measure of marital quality. The Eyberg Child Behavior Inventory (ECBI) scores (Eyberg, 1992) were used as the measure of child behaviour problems at 4 years of age.

It was anticipated that preschool behaviour problems in children at four years of age would vary as a function of parent-infant interaction and marital quality when the child is 12 months of age. It was expected that higher quality parent-infant interactions and marital satisfaction would result in fewer reported preschool behaviour problems.

The following research questions were addressed:

1. What are the relationships between parental-infant interactions and marital quality at 12 months, infant birth status, infant gender, socioeconomic status, and preschool behaviour problems at 4 years?
2. Is there a difference between the mothers' and fathers' perceptions of their 4-year-old children's behaviours?
3. Do children born preterm have more behaviour problems at 4 years of age than their full term counterparts?
4. Is there a difference in the number of behaviour problems at four years of age between boys and girls?

Definition of Terms

Behaviour problems in childhood include aggression toward others, non-compliance, temper tantrums, disruptive and annoying behaviours, stealing, and lying as measured by the ECBI (Eyberg, 1992). Problem behaviours also include disobedience, irresponsibility, destructiveness, impertinence, negativism, distractibility, fighting, attention seeking, tantrumming, hyperactivity, irritability, and inattentiveness (Robinson, Eyberg & Ross,1980).

Marital quality refers to the perception of overall satisfaction in a dyadic relationship as measured by the DAS (Spanier, 1976).

Parent-child interaction is a reciprocal communication process in which each member of the dyad provides clear cues and contingent responses as measured by the NCATS (Sumner & Spietz, 1994).

Preterm infants are born prior to the completion of 37 weeks gestation, regardless of birth weight (Whaley & Wong, 1987).

Term infants are born between the beginning of the 38th week and the completion of 42 weeks gestation, regardless of birth weight (Whaley & Wong, 1987).

Family socioeconomic status or social class is measured by the Hollingshead Four Factor Index for Social Status (Hollingshead, 1975). The Four Factor Index is based on four factors: the number of years of formal education completed, occupation, gender, and marital status. These factors were combined to estimate socioeconomic status for each parent. The individual parent scores were then averaged to estimate family socioeconomic status.

Chapter 2

Review of the Literature

Literature from nursing, psychology, sociology, and medicine between 1982 and 1996 was reviewed for this thesis. Classical literature prior to 1982 was included in the review. First, the research related to the dependent variable of preschool behaviour problems is presented followed by literature related to the independent variables. The independent variables are categorized within the framework of the Structural/Behavioral model of development. As such, several of the variables which are thought to be linked with infant outcomes through their effect on either the organismic and environmental dimensions of development, are discussed.

Child Behaviour Problems

Child behaviour problems are a concern for parents and society in general. A large scale epidemiological study in Britain found that 7% of a total population of 3 year olds have behaviour problems that are moderate to severe (Richman, Stevenson, & Graham, 1975). An additional 15% of this population demonstrated mild behaviour problems. Earls (1980) replicated this study with a sample of American children and found similar results. Using the Child Behavior Checklist (CBCL) Larson, Pless, and Miettinen (1988) found an aggregate incidence of 11.1% deviant behaviour syndromes in a Canadian sample of 3 year old children (N=756). Over the past two decades researchers have explored various biological and environmental factors related to childhood behaviour problems with varying results.

The relationship of behaviour problems with biological factors such as very low birth weight (McCormick, Gortmaker, & Sobol, 1990; Schraeder et al., 1990), chronic childhood illness (Pless, et al., 1994), and central nervous system injury (Adams et al., 1994) has been explored. The influence of gender on behaviour problems is widely debated with contradictory results (Earls, 1987; Koniak-Griffin & Verzemnieks, 1995). Some researchers suggest that child temperament plays a significant role in the development of problem behaviours (Koniak-Griffin & Verzemnieks, 1993; Webster-Stratton & Eyberg, 1982).

Certain environmental factors are thought to have an impact on problem behaviours. Large increases in relative risk associated with preschool problem behaviours were "consistently found among children frequently visiting the emergency department, among children whose father had a minimal care taking role, and among children whose mother lacked social support or reported emotional problems" (Larson et al., 1988, p. 283). Parental depression, illness, or intoxication were associated with reports of increased behaviour problems in children (Schaughency & Lahey, 1985). It is suggested that suboptimal parent-child interaction may influence child behaviour problems (Robinson et al., 1980). Although the direction of the relationship is unclear, marital quality has been related to preschool behaviour problems (Forehand, Brody, & Smith, 1986; Griest & Wells, 1983; Jouriles, Pfiffner, & O'Leary, 1988; Katz & Gottman, 1993; Sayger, Horne, & Glaser, 1993). Although poverty is known to be an adverse influence on child development and behaviour (Adams et al., 1994; Richman et al., 1975), poverty alone

could not be identified as an explanatory variable. Other variables affecting the ways in which children are reared must be implicated in outcomes.

Some researchers suggest that the combined effects of biological and environmental risk factors pose a double threat to children's development (Cohen, Parmalee, Sigman, & Beckwith, 1988; Escalona, 1982). These findings are consistent with the theoretical framework of the Structural/Behavioral Model which suggests that a vulnerable organism in a non-facilitative environment is at greatest risk for suboptimal cognitive, social, and emotional development.

Prematurity

As neonatal intensive care procedures have increased the survival rates for infants born preterm, much attention has been focused on research into the outcomes for these infants. Neonatal intensive care involves intense, unpatterned stimuli with a potentially cumulative effect on the preterm infant (Kopp, 1990). Preterm infants have limited resources to resist or escape from such intensive stimulation. This may lead to system disorganization with resultant biological and socio-emotional problems. Although research regarding the long term effects of perinatal complications seems to suggest that outcomes for vulnerable infants are strongly influenced by facilitative environments (Beckwith & Cohen, 1984; Sameroff & Chandler, 1975), organismic variables must be considered. Several major variables associated with preterm birth predispose these children to a greater risk for behaviour problems.

Preterm infants display more gaze aversion and inattention than their full term counterparts (Crnic, Ragozin, Greenberg, Robinson, & Basham, 1983; Magyary 1983).

On measures of parent-child interaction, preterm infants have been shown to be less alert, less active, and less responsive than full term infants during the first few months of age (Barnard, Bee, & Hammond, 1984; Tekolste & Bennett, 1986). Robinson et al. (1980) suggest that low quality parent-child interaction may lead to child behaviour problems.

The birth of a preterm infant is a potential strain on marital relationships (Macey, Harmon, & Easterbrooks, 1987). Preterm birth violates parental expectations for the infant, and may stress both financial and emotional resources. Parental sensitivity to preterm infant cues and responsiveness to preterm infant behaviours may be difficult for families who are already experiencing marital discord. Marital dissatisfaction was associated with an increased risk for child behaviour problems (Forehand et al., 1986; Griest & Wells, 1983; Jouriles et al., 1988; Katz & Gottman, 1993; Sayger et al., 1993).

An increased incidence of learning disabilities is associated with preterm birth (Cohen et al., 1988; Massey, 1994; McCormick et al., 1990; Schraeder, Heverly, O'Brien, & McEvoy-Shields, 1992). Children with a poor sense of academic competence and performance are more likely to have behavioral problems (Thompson, Lampripon, Johnson, & Eckstein, 1990).

Some researchers have noted an increased incidence of language deficiencies and delays in early childhood associated with preterm birth (e.g., Cohen et al., 1988). Children with language disorders have significantly more behaviour problems than children who do not have language disorders (Beitchman, Nair, Clegg, Ferguson, & Patel, 1986). In addition, parents of language delayed children experience higher levels of stress and

marital discord than observed in the population at large (Chaffee, Cunningham, Secord-Gilbert, Elbard, & Richards, 1991).

In summary, infants born prematurely are at higher risk for behaviour problems related to less responsive parent-infant interactions and increased marital discord. Also, children born preterm are at greater risk than their term counterparts for learning disabilities and language problems which are associated with behaviour problems.

Gender

Some researchers suggest that gender differences in behaviour problems exist in the preschool population (Earls, 1987; Richman et al., 1975) but what these differences are and when they become evident is unclear. On the other hand, in a sample of healthy two year olds no gender differences in behaviour problems were found (Koniak-Griffin & Verzemnieks, 1995). As well, in a sample of preterm infants gender was not a significant discriminator of behaviour problems (Brandt, Magyary, Hammond, & Barnard, 1992).

Preschool behaviour problems in boys are predictive of poor social competence at school entry (Earls, 1987). For 3 year old boys, high activity level, low adaptability, and high intensity emotional expression were found to be correlated with behaviour problems. Home environment characteristics such as marital discord and maternal depression were significantly related to behaviour problems in boys (Earls). Often, boys are punished more severely by parents for aggressive behaviours. Negative interaction with the parents may lead to increased aggression and increased behaviour problems. Behaviour problems in boys tend to be related to aggression and remain stable throughout childhood (Richman et al.,1975). Earls found no evidence to support the link between preschool behaviour

problems and school entry social competence in girls. In a study of preterm infants by Beckwith and Cohen (1984), mothers were found to interact more positively with their girl infants. Perhaps increased socialization experiences related to positive mother-infant interaction for girls may enhance cognitive and social competence and may buffer the effect of environmental variables associated with the development of behaviour problems.

Parent-Infant Interactions

The quality of parent-infant interactions has long been considered a window into the parent-infant relationship and a potent predictor of the child's development (Gross, Conrad, Fogg, Willis, & Garvey, 1993; Sumner & Speitz, 1994). According to the Child Health Assessment Interaction Model developed by Barnard (Sumner & Speitz), parents and their children mutually regulate each other's behaviour in the course of interaction. The caregiver and infant learn to adapt, modify and change their behaviours in response to the other. A suboptimal interaction pattern may result from either the parent or the infant being partially or totally unavailable in the interaction.

The emphasis on observations of mother-infant interaction developed as a result of studies that revealed different patterns of interactions with mothers of term infants versus mothers of preterm infants (Leifer, Leiderman, Barnett, & Williams, 1972). The results of this study, and subsequent findings that increased marital stress and increased risk of child abuse were associated with preterm infants (Hunter, Kilstrom, ACSW, Kraybill, & Loda, 1978), led to an increased interest in assessing parent-child interaction. The original hypothesis that emerged was that measures of interaction would lead to early interventions with mothers to reduce child abuse and neglect.

Robinson et al. (1980) suggest that conduct problem behaviour is a manifestation of the interaction between the parent and child. Koniak-Griffin, Ludington-Hoe, and Verzemnieks (1995) found a significant negative correlation between mother-infant interaction and child behaviour problems suggesting that children with fewer behaviour problems are more likely to have mothers who show higher quality parent-infant interaction. If either the mother or the child are partially or totally unavailable in the interaction, negative, insensitive, and unresponsive patterns of interaction result. The mother-child dyad adopts an interaction pattern that may lead to "acting out" and conduct problem behaviours in the child. It remains unclear how father-infant interaction with boys and girls affects child behaviours.

Marital Quality

Low marital quality has been related to child behaviour problems although the processes relating the two are unclear (O'Keefe, 1995; Peterson & Zill, 1986). Disruption in parenting practices that are a result of parental involvement in their own conflict, as well as negative reinforcement of aggressive behaviours may lead to childhood behaviour problems (Wilson & Gottman, 1995). Some suggest that the specific way in which conflict is resolved in the marital dyad contributes differentially to behaviour problems in children (Katz & Gottman, 1993). Children of couples who engage openly in marital conflict but do not resolve the conflict in a positive way are at greater risk for behaviour problems.

Because most measures of child behaviour problems are based on parent report, researchers seem to agree that it is the parental perception of behaviour and perhaps not actual behaviour that is being measured (Schaughency & Lahey, 1985). Some researchers

have found that parental perceptions of behaviour problems may be more a function of parental distress than of the child's actual problem behaviours (Forehand et al., 1986). Thus, factors relating to parental distress, such as marital dissatisfaction, are often associated with child behaviour problems. Parents who are experiencing conflict in the marital dyad may be less tolerant of their child's behaviour and respond more punitively. Conversely, parents living with a child who is engaging in aversive behaviours may receive less positive reinforcement for their parenting behaviours. This may lead to decreased marital satisfaction. Whether suboptimal patterns of interaction within the family related to marital discord predispose children to behaviour problems, or whether child behaviour problems cause parental distress leading to marital dissatisfaction remains unclear.

Socioeconomic Status

Another impetus that emerged from research in the early 1970s was the repeatedly observed link between adverse environments and poor outcomes for children. Social risk conditions have been found to place preschool children at a greater risk for behavioral problems (Adams et al., 1994). As a group, mothers from low socioeconomic backgrounds are more negative and respond less consistently in interactions with their infants (Beckwith & Cohen, 1984). Additionally, low socioeconomic status is often associated with language-delayed children without any accompanying handicap such as mental retardation or hearing impairment (Petersen & Sherrod, 1982). Koniak-Griffin and Verzemnieks (1995) found moderate (r = -.45) correlations between home environment, as measured using the HOME Inventory (Bradley & Caldwell, 1977), and child behaviour problems as measured using the ECBI. In a homogeneous sample of middle class families

Koniak-Griffin and Verzemnieks found that optimal home environment, is associated with fewer problem behaviours. Thus, some researchers consider socioeconomic status as a variable that influences behaviour problems. In contrast, Brandt et al. (1992) found a stronger relationship between family stress levels and behaviour problems than between family socioeconomic status and behaviour problems.

Maternal versus Paternal Perceptions and Expectations of Behaviours

Parents are usually the most important source of information about their preschool children's behaviours. Parent reports of child behaviour problems reflect personal perceptions and expectations of those behaviours. Kazdin (1988), in a critique of the diagnosis of childhood disorders, found that maternal perceptions of child behaviour are related to maternal variables such as anxiety and depression, marital discord, expectations for child behaviour, self-esteem, stressors, and social support. Others have also found increased reports of child behaviour problems associated with maternal depression and parenting stress (Eyberg, Boggs, & Rodriquez, 1992; Forehand & Brody, 1985). Webster-Stratton (1988) found significant differences between mothers' and fathers' reports of child behaviour problems. She also found that fathers' perceptions of behaviour problems were relatively unaffected by personal adjustment, whereas mothers' personal adjustment scores were significantly correlated with an increased frequency of child behaviour problems. Similar results were described by Schaughency and Lahey (1985). Interestingly, Koniak-Griffin and Verzemnieks (1995) found a stronger correlation between fathers' and mothers' reports of problem behaviours when mothers were employed outside the home. McNeil, Eyberg, Eisenstadt, Newcomb, and Funderbunk (1991) report that mothers'

scores are significantly correlated with teachers' scores. In a study of interparental agreement on child behaviour problems, Christensen, Margolin, and Sullaway (1992) found no differences in levels of interparent agreement for boys and girls.

Various interpretations for the differences in mother and father reports of behaviour are suggested. First, Schaughency and Lahey (1985) suggest that parents have a lower tolerance for child misbehaviour when they are anxious, depressed, or distressed. When their threshold for misbehaviour is lowered, parents may have a tendency to label child behaviour as deviant. It is also plausible to assume that parenting a child with behaviour problems may produce depression in the parent. Mothers are usually more involved in child care and may actually be more aware and sensitive to their children's problem behaviour. "Parents in distressed families evidenced even greater discrepancies in report of child behaviour than did parents in nondistressed families" (Christensen et al., 1992, p. 424.) These authors also argue that marital conflict adds to the level of parental discrepancy in reports of child behaviour. Further research is required to understand the discrepancies in these research reports.

Summary of the Literature Review

The complex interplay of variables thought to influence preschool child behaviour problems is poorly understood. The perspective of the Structural/Behavioral Model provides an understanding of how organismic and environmental factors might interact to influence child development and potential behaviour problems. The model suggests that organismic variables such as preterm birth, gender, and physical illness combine with environmental factors such as socioeconomic status, parent-infant interaction, and marital

quality. However, previous research studies indicate that the role of these variables is unclear. In addition, studies have used a variety of different instruments to measure preschool behaviour problems and no consistent definition of behaviour problems has been used. Further research is needed to increase the understanding of the variables and the relationships associated with preschool behaviour problems.

Chapter 3

Method

A longitudinal correlational design was used to examine the relationship between measures of parent-infant interaction and marital quality when the infant was 12 months of age and mother and father reports of behaviour problems on the ECBI Intensity and Problem scores (Eyberg, 1992) when the child was 4 years of age. A longitudinal design was chosen because it allows the researcher to measure the variable(s) at different points to determine which are most predictive of child behaviour problems.

Sample

The families for this study were recruited from the Parent-Infant Project, an interdisciplinary, prospective longitudinal study of mother and father interactions with term and preterm infants (Harrison & Magill-Evans, in press). The original sample consisted of 57 families with a healthy term infant and 57 families with a healthy preterm infant, matched at birth by infant gender and hospital of birth. Each term infant, who served as a comparison for a preterm infant, was born within one week of the expected date of birth of the preterm infant. The infants were recruited between July 1991 and May 1992 from three large urban hospitals in Western Canada.

Criteria for inclusion of preterm infants were as follows: gestational age 30 to 36 weeks as assessed by the Dubowitz Scale, birth weight greater than 1500 grams, and healthy at discharge with no major congenital anomalies. Multiple births were excluded from the sample as well as infants born to mothers with a history of confirmed or

suspected substance abuse. Parents of infants included in the study were required to read and speak English, be married or cohabiting, and live within one hour's drive of the city.

At 12 months, 54 term families and 49 preterm families remained in the Parent-Infant Project. At four years, 51 term families and 48 preterm families remained in the Project. Of the four families who were lost between 12 months and 4 years, two families were unable to complete home visits at 18 months or 4 years due to conflicting schedules or maternal illness, and two had moved out of province. As data collection for this study does not entail personal contact, the Eyberg Child Behavior Inventory and a demographic questionnaire were sent to these four families giving a total sample for this study of 54 families of term infants and 49 families of preterm infants. Both parents in each family were invited to participate, although data from one parent was included in the study if only one parent chose to participate. Eighty-two mothers and 75 fathers returned completed questionnaires. Two mothers and one father who returned answered questionnaires were not included in the study as twelve month data was unavailable for one parent, and two parents omitted the Problem scale on the ECBI. Eleven mothers and 19 fathers returned unanswered questionnaires. The final sample included 80 mothers and 74 fathers. There were 74 families for which data was available for both parents.

Demographic data collected at the time of recruitment to the Parent-Infant project and available for this study included both the mother's and the father's age, education level, occupation, income level, and family socioeconomic status. Demographic information for the infants included gender, gestational age, weight, birth order, and hospital of birth.

Data Collection Protocol

Data for this study included scores from measures of parent-infant interaction and marital quality as well as demographic data previously collected for the Parent-Infant Project, and a measure of child behaviour problems collected by this researcher.

Parent-Infant Project Data. DAS and NCATS data were collected during home visits 12 months after the child was discharged from the hospital. The DAS was completed by both parents independently. The DAS total scores were used for this study. The NCATS parent and infant subscores were obtained separately for mothers and fathers. For this study, the researcher used the NCATS parent subscores and infant subscores collected at 12 months. Observations were done at 12 months because interaction patterns are more stable and well defined than earlier in the child's life. In addition, by 12 months the infant is demonstrating more independence and autonomy. If the patterns of parent-infant interaction predict later child behaviour problems, interaction patterns at 12 months should be stable and defined enough to be used as predictors. Observers were NCAST certified and trained using standardized videos and manuals. Inter-rater reliability was verified prior to data collection using volunteer subjects and checked every tenth observation throughout the duration of the study. An average inter-observer reliability of 89.7% was achieved for observations with mothers and 86.1% for observations with fathers (Harrison & Magill-Evans, in press). Cohen's kappa ranged from .61 to .65.

Data Collected for this Study. Dr. Harrison mailed to the 103 families a letter of introduction and two ECBI questionnaires, along with a letter which explained the purpose of the study and how to complete and return the questionnaires to the Project office (see Appendixes A and B). Return of the questionnaires within three weeks was requested. Parents who did not wish to participate were asked simply to return the unanswered questionnaire in the stamped, self-addressed envelope provided. Approximately six weeks after the initial mailing, 59% of the families had responded (10 refusals included). The six week time frame was required to accommodate a holiday season during data collection. Reminder letters were mailed to those families who had not returned either completed or non-completed questionnaires. Nineteen additional completed questionnaires were returned (77.7% of the families).

Although mailing the questionnaires provides a relatively inexpensive method of contacting parents, the problem of a low response rate is a concern (Jackson, 1988). Previously, the sample for the Parent-Infant Project had demonstrated a survey return rate of 69.9% for the mothers and 64.1% for the fathers (Onyskiw, 1994). According to a formula developed by Heberlein and Baumgartner (1978) to determine response rate for surveys, the estimated response rate for this study should be 64.9% if no "special third contact" (p. 456) is made. As the Project research team offered to make a "special third contact" for non-responses after the first reminder, a return rate of 90.7% was expected (Heberlein & Baumgartner). The third contact was a telephone contact. A research assistant provided information about the study and offered a replacement questionnaire in case the first one had been misplaced. There was no pressure to participate. Twenty-three

families were provided a telephone follow-up. Of these families, an additional 13 families responded for a total of 93 families. The overall response rate for the study was 90.3%.

Protection of Human Subjects

Ethical approval for the study was obtained from the Ethics Review Committee of the Faculty of Nursing, University of Alberta. Family names and identifying data were never available to this researcher and no direct contacts were made by the researcher. Consent to participate was implied when questionnaires were completed and returned. Once the questionnaires were returned to the Project office, this researcher had access to the questionnaires which were identified only by code number.

Instruments

Nursing Child Assessment Teaching Scale. The NCATS (Sumner & Speitz, 1994) is designed to assess parent-child interaction, from birth to three years, during a novel teaching interaction (see Appendix C). The test administrator observes the parent-child interaction directly and scores the interaction behaviours either "yes" or "no", immediately after the observation. A total score is obtained by determining the number of "yes" responses in each of the four parent subscales (sensitivity to cues, response to child's distress, social-emotional growth fostering, and cognitive growth fostering) and the two infant subscales (clarity of cues and responsiveness to caregiver).

The standardization database contains 2100 teaching cases developed from a low-risk sample in which the majority of caregivers were female, Caucasian, married, high school graduates who lived in the Western United States (Barnard et al., 1989). Studies of internal consistency cited in the NCATS Manual (Sumner & Speitz, 1994) provide a

Cronbach's alpha of .87 for the Total Parent score and .81 for the Total Child score. A coefficient of .80 is acceptable for mature scales such as the NCATS (Brink & Wood, 1989). Harrison and Magill-Evans (in press) report a Cronbach's alpha for mothers and fathers in the Parent-Infant Project of .74 to .80 for the Parent Total score and .69 to .73 for the Infant Total score. Test-retest data for the reliability of the NCATS scores was obtained from observation of 30 parent-child dyads at 1, 4, 8, and 12 months of age. The generalizability coefficient which reflect the stability of scores is .85 for the Parent Total scores and .55 for the Infant Total scores (Sumner & Speitz, 1994). The greater stability of the parent scores over time may reflect inconsistencies in infant behaviour as a result of maturation. There are no short term (less than one month) test-retest reliability studies for the NCATS (Barnard et al., 1989). The NCATS has been studied with high risk caregiver-infant groups with prenatal and postnatal substance abuse, abusing mothers, and multi-problem families (Carmen, 1994; Farel, Freeman, Keenan, & Huber, 1991; Starn, 1992). These groups have consistently scored lower on the NCATS when compared with the middle class samples in the NCAST database (Sumner & Speitz, 1994). This indicates that NCATS has the ability to discriminate between groups.

Dyadic Adjustment Scale. The DAS (Spanier, 1976) is a 32-item self-report instrument designed to measure the quality of adjustment to marriage and similar dyadic relationships (see Appendix D). Four inter-related dimensions form the subscales of the DAS: (1) dyadic consensus, (2) dyadic cohesion, (3) affectional expression, and (4) dyadic satisfaction (Spanier, 1989). The number of response categories varies. Low subscale scores indicate a problem with adjustment, whereas high scores indicate the absence of a

problem. The scale has a theoretical range of scores from 0 to 151. Spanier (1989) does not provide guidelines for a cut-off point for poor marital functioning. Sharpely and Cross (1982) obtained a mean score of 108 in their study. For research purposes, they suggest that this score be used to define high versus low scorers on the DAS. The ECBI takes approximately 10 minutes to complete (Barkley, 1988).

Spanier (1989) cites a Cronbach's alpha of .96 for the total scale. Harrison and Magill-Evans (in press) report a Cronbach's alpha of .91 to .92 for the Parent-Infant sample. Test-retest reliability for the total scores of the DAS over 11 weeks is .96. Twelve month reliability is reported to be lower (.43 to .82) and may reflect change in the dyad over time. A cross-spouse correlation of .59 was reported for the DAS. The differences in test reliability may reflect areas of discord in the relationship rather than instrument reliability. One study compared cross-spouse reports with those of an independent observer (Spanier). The author reports "reasonable" levels of consistency between the couples and the trained observers (p. 26).

Construct validity was established through measurement of correlations between the DAS and the Locke-Wallace Marital Adjustment Scale (Locke, 1947), a well accepted marital adjustment scale. The correlations between these scales was .86 among married respondents and .88 among divorced respondents ($p<.001$) (Spanier, 1976). Construct validity was further supported by a factor analysis that demonstrated the four subscales accounted for 94% of the covariance among the items (Spanier & Thompson, 1982). DAS scores correlate with measures of family violence, poor marital functioning, depression, poor communication, and behaviour problems in children (Spanier, 1989).

Instrument Selection to Measure Preschool Behaviour Problems. Two instruments were examined for use in this study: the Child Behavior Checklist (Achenbach, 1978) and the Eyberg Child Behavior Inventory (Eyberg, 1992). The Child Behavior Checklist (CBCL) is widely used to identify psychopathology, however, standardization of raw scores to T scores on the CBCL involves compressing the scores within the normal range so that all raw scores below the 69th percentile are assigned the same score (Perrin, Stein, & Drotar, 1991). T scores are of little value in making distinctions among subjects where child behaviour symptoms are mild and would be expected to fall within the normal range. If the raw scores are used to detect subtle differences within the normal range, it then becomes impossible to compare scores between gender groups because of the differences in items between these subgroups. The ECBI, which is designed as a screening measure, uses the sum of raw scores for both Intensity and the Problem scales and should yield more variability in scores within the normal range.

CBCL scores for children with chronic health problems are consistently higher than healthy children due to the inclusion of questions related to physical health (Perrin, et al., 1991; Wallander, Varni, Babni, Banis, & Wilcox, 1988). However, ECBI scores for children with chronic illness have not differed from scores of nonchronically ill children (Eyberg, 1992). The ECBI would be a suitable measure for use in a sample that includes children born preterm with the potential for chronic health problems. Another issue of note relates to the different periods of recall. The CBCL asks that parents recall behaviours for the past 12 months (Achenbach, 1978) whereas the ECBI requests responses regarding the current behaviour of the child. Accuracy of recall may affect

parental response regarding their child's behaviour. For these reasons the ECBI was selected for use in this study.

Eyberg Child Behavior Inventory. The ECBI (Eyberg, 1992) is a parent-report questionnaire designed to assess conduct problem behaviour in children aged 2 to 17 years of age (see Appendix E). The 36 items assess behaviour on two dimensions, the frequency of occurrence and whether or not the behaviour is problematic to the rater. The frequency ratings are arranged on a scale from (1) never to (7) always, and are summed to yield an Intensity score which ranges from 36 to 252. The suggested cut-off for the clinical range on the Intensity scale is 127. The problem identification score results from the parent answering "yes" or "no" to the question "Is this behaviour a problem for you?" The total Problem Score (1 to 36) is the sum of the total "yes" responses. Problem scores above 11 are considered to be clinically problematic. The ECBI was standardized with 512 children between the ages of 2 and 12 years who attended a paediatric clinic over a period of three months (Robinson et al., 1980).

The ECBI standardization data showed a mean split-half correlation for the Intensity Score of .95 and the mean split-half correlation for the Problem Score was .94. Reliability coefficients of .98 for both the Problem and the Intensity Scores indicate that both scales of the ECBI are homogeneous (Eyberg & Robinson, 1983; Robinson et al., 1980). Test-retest correlations were .86 for the Intensity Score, and .88 for the Problem Score over 21 days (Robinson et al., 1980). For the mothers and fathers in this study, Cronbach's alphas ranged from .89 to .90 for the Intensity Scale and .87 to .91 for the Problem Scale.

The validity of the scale has been primarily established through the factor analytic studies. The original normative studies described the ECBI as a unidimensional measure of conduct problem behaviour (Eyberg & Robinson, 1983; Robinson, Eyberg, & Ross, 1980). The unidimensional nature of the ECBI has been challenged in a factor analysis study by Burns and Patterson (1991), who identified the dimensions of oppositional defiant disorder, conduct disorder, and attention-deficit hyperactivity disorder. Concurrent validity of the ECBI using the CBCL as a criterion measure has been established (Boggs, Eyberg, & Reynolds, 1990). The long-range predictive validity of the ECBI has not been provided, although some authors (Lerner et al., 1985; Richman et al., 1975) support the notion that conduct behaviour problems are stable throughout childhood and are not affected by development; that is, children do not "grow out of" behaviour problems.

The scores on the ECBI have been found to correlate significantly with direct observational measures of non-compliance and negative parent child interactions (Webster-Stratton & Eyberg, 1982). The ECBI Scores were significantly correlated with both the Internalizing and Externalizing scales of the Child Behavior Checklist (Achenbach, 1978), although a higher correlation was demonstrated with the Externalizing scale (Boggs et al., 1990). The discriminant validity of the ECBI has been supported in a study of adolescents (Eyberg & Robinson, 1983) and children with behaviour problems (Eyberg & Ross, 1978).

Data Analyses

The data for the samples of mothers and fathers were tabulated and analyzed separately using the Statistical Package for Social Sciences (Version 6.0) software

program. The level of significance was set at $p = .05$, except where correlations and univariate t-tests were used. For correlations and univariate t-tests the confidence level was adjusted to $p = .01$ to decrease the possibility of obtaining spurious results.

Missing Data. Prior to analyses, data were examined for missing data and patterns of missing data. In both the samples of mothers' and fathers' ECBI data, there were only 54 missing responses out of a total of 11,088 items. A pattern of missing data was identified related to questions regarding behaviours toward siblings. Some mothers and fathers in single child families did not respond or wrote "not applicable" to the questions regarding behaviours toward siblings. Eyberg (personal communication, April 13, 1996) replaces any missing data with "1" and discards questionnaires with more than 5 missing items. In this study, no questionnaires contained more than five missing items. It was decided to replace the missing values for questions regarding behaviours toward siblings with "1". All other missing data was replaced with the mean for that item for the mother or father of the preterm or term infant. This approach was consistent with previous practice by the Parent-Infant Project and provides a conservative estimate of the missing value.

Descriptive Statistics. Descriptive statistics were used to describe the samples' demographic variables (age, education, and family socioeconomic status). The characteristics of the infants, including infant gender and perinatal status (term or preterm) were analyzed using chi-square. Socioeconomic status was measured by the Hollingshead Four Factor Index (1975). The Four Factor Index includes number of years of education completed and the occupation of the individual. The combined scores for the factors

provide a score for the individual. Individual scores for mothers and fathers collected by the Parent-Infant Project were averaged to determine a family socioeconomic score.

Parent and infant interactions require that both the parent and the infant be available to participate in the interaction (Barnard et al., 1989). It is important to differentiate between the contributions of each member of the dyad, thus it is appropriate to use the Parent Total and Infant Total scores of the NCATS for the analysis. The range, mean, and standard deviation were calculated for the NCATS Parent Total and Infant Total scores, the total score of the DAS, and the Intensity and Problem scores of the ECBI.

Inferential Statistics. The relationships between each independent variable (infant perinatal status, infant gender, NCATS Parent Total and Infant Total scores, DAS scores, and socioeconomic status) and the dependent variables (the ECBI Intensity or Problem scores) were tested using the Pearson product moment correlation ($p<.01$) to determine the direction and strength of the relationship. Multiple regression using a hierarchical model was then used to determine the significance of all the independent variables in the predicting the ECBI Problem and Intensity scores. The variables were entered in the following order: (a) step one, infant perinatal status (term or preterm) and gender, (b) step two, Parent Total score and Infant Total score on the NCATS, and (c) step three, the DAS scores and socioeconomic status. This order was determined by the conceptual model for the study. The regressions were run separately for the mothers and the fathers. Multiple regression using a stepwise method to enter all the independent variables

simultaneously was then used to determine which variable was the best predictor of preschool behaviour problems for the sample of mothers and fathers.

A t-test for paired comparisons was used to determine if there was a difference between mothers' and fathers' perceptions of their child's behaviour on the Intensity and Problem scores of the ECBI (N=74). A t-test for paired comparisons was used because the mothers' and fathers' scores are based on their perception of the same child, and mothers' and fathers' perceptions are not independent (Munro & Page, 1993). Parents whose partners did not complete the ECBI were excluded for this specific analysis.

An independent t-test was used to compare the Intensity and Problem scores on the ECBI for term infants and preterm infants and for boys and girls. The analyses were completed separately for the mothers' and the fathers' responses.

Chapter 4

Findings

Presentation of findings begins with a description of the characteristics of the samples of mothers and fathers. This information is followed by a discussion of the results of regression analyses and t-tests as they relate to each research question.

Demographic Characteristics

A summary of the means and standard deviations for age, education, occupation, and family socioeconomic status for the sample of mothers and the sample of fathers is presented in Table 1. A Hotelling's T^2 - test comparing the mothers of preterm and mothers of term infants on these demographic variables showed a significant difference between the groups (Hotelling's T^2 $(3,76) = 3.17$, $p < .05$). When the univariate ANOVA result for each dependent variable were examined, the groups differed on maternal occupation (F $(1,78) = 4.56$, $p < .01$). However, the occupation level for the mothers in both groups ranged from menial service workers (Hollingshead class 1) to major professionals (Hollingshead class 9). The fathers of preterm and term infants did not differ significantly in terms of age, education, occupation, and family socioeconomic status.

The ages of mothers of the preterm infants ranged from 19 to 43 years. Mothers of term infants ranged in age from 20 to 38 years. Mothers of preterm infants had nine to 22 years of education. Mothers of term infants reported between 10 and 21 years of formal education. Fathers of preterm infants ranged in age from 23 to 46 years, whereas fathers of term infants ranged from 21 to 48 years. Education level for fathers of the preterm group ranged from eight to 24 years, and for fathers of term infants from 10 to 24

years. The occupation level for the fathers in both groups ranged from menial service workers (Hollingshead class 1) to major professionals (Hollingshead class 9).

Gender and birth order for the infants in both the samples of mothers and fathers are presented in Table 2. A chi-square test on the sample of mothers showed no association between group status and infant gender ($\chi^2(1, N = 80) = .41, p = .52$) or group status and birth order ($\chi^2 (1, N = 80) = .25, p = .62$). A chi-square test on the sample of fathers showed no association between group status and infant gender ($\chi^2 (1, N = 74) = .36, p = .55$) or group status and birth order ($\chi^2 (1, N = 74) = .08, p = .78$).

Scores on DAS, NCATS, and ECBI for Mothers and Fathers

Scores for parents of preterm infants were compared with scores for parents of term infants on the DAS, NCATS Parent and Infant subscales, and ECBI Intensity and Problem scales. The means and standard deviations of the scores are presented in Table 3. T-tests for independent samples were used to determine if there were significant differences between the parents of the preterm or term infants for the samples of mothers or fathers.

On the DAS, low scores indicate lower marital quality. A score of 108 on the DAS is used to define high versus low scorers for research purposes (Sharpely & Cross, 1982). Mothers of preterm infants reported less marital satisfaction than mothers of term infants but the difference was not significant ($t(78) = 1.24, p = .220$). The average DAS scores for fathers of preterm infants and fathers of term infants were very similar and no significant differences were found between the groups ($t(72) = .08, p = .937$).

NCATS scores below the 10th percentile (by ethnic group) have been established as the lower limit of the normal range for mothers (Sumner & Speitz, 1994). For Caucasians, the suggested cutoffs for the Parent Total score and Infant Total score are 34 and 10, respectively. Independent t-tests showed significant differences between preterm and term groups on the NCATS Parent Total scores for the fathers ($t(72) = 2.87$, $p = .005$) but not for the mothers ($t(78) = 2.37$, $p = .021$). There were no significant differences between the preterm or term groups on the NCATS Infant Total scores for either the mothers ($t(78) = .25$, $p = .800$) or fathers ($t(72) = .54$, $p = .590$).

On both the ECBI Intensity and Problem scales, a higher score is indicative of more behaviour problems. In the samples of mothers and fathers, Intensity scores reported in the clinical range were 26% and 20%, respectively. Overall, the average ECBI Intensity scores for mothers and fathers of either preterm or term infant groups fell below the clinical cutoff of 127 (Eyberg, 1992). The difference between ECBI Intensity scores for mothers of preterm and term infants was not statistically significant ($t(78) = .38$, $p = .709$). The difference between ECBI Intensity scores for fathers of preterm and term infants was not statistically significant ($t(72) = .33$, $p = .744$).

For mothers and fathers, Problem scores reported in the clinical range were 21% and 30%, respectively. The average ECBI Problem scores for the mothers and fathers of either preterm or term infant groups also fell below the clinical cutoff of 12 (Eyberg, 1992). Although the parents of the preterm infants reported slightly more behaviours that were a problem to them, there were no statistically significant differences in the ECBI Problem scores for mothers of the preterm or term groups ($t(78) = .02$, $p = .984$) or for

fathers of the preterm or term groups (t (72) = .98, p = .331). The incidence of behaviour problems reported for this study are higher than the 7.9% reported on the ECBI by parents in a non-clinical sample (N=810) of school aged children and adolescents (Burns and Patterson, 1990). Using different measures in samples of preschool children, the incidence of preschool behaviour problems reported by other researchers ranges from 11.1% to 22% (Larson et al., 1988; Richman et al., 1975).

Correlations Between the Mothers' and Fathers' ECBI Intensity and Problems Scores

Pearson product-moment correlation coefficients were computed between scores reported by the total sample of mothers and the total sample of fathers on both the ECBI Intensity and Problem Scales. The correlations are presented in Table 4. Moderate to strong relationships existed among mothers' and fathers' scores on both the ECBI Intensity Scale (r = .61) and Problem Scale (r = .57). Correlations between parent reported scores in this study were similar to those reported in a study with a clinic referred sample (Eisenstadt, McElreath, Eyberg, & McNeil, 1994); the correlation between mothers' and fathers' Intensity scores was .69 and the correlation between mothers' and fathers' Problem scores was .61. In a non-clinic referred, full term sample of two year old children, Koniak-Griffin and Verzemnieks (1995) found significant interparent associations for scores on the Intensity Scale (r = .55, p = .002) but not for the Problem Scale.

In this study, a moderate relationship existed between the Intensity scores and Problem scores for the mothers (r = .57) and for the fathers (r = .45). The Intensity and Problem score correlations for this study were lower than those reported by Eisenstadt et al. (1994) who reported correlations of .87 and .68 for mothers and fathers, respectively.

Correlations Among the Mothers' ECBI Intensity and Problem Scores and Predictor Variables

Pearson product-moment correlations coefficients were used to examine the direction and strength of the relationship between the mothers' ECBI Intensity and Problem scores and all the independent variables. Results are displayed in Table 5. Mothers' ECBI Intensity scores were significantly negatively correlated with scores of marital quality ($r = -.33$, $p = .003$). That is, mothers who reported a higher frequency of preschool behaviour problems at 4 years also reported a lower level of marital quality at 12 months.

Correlations Among the Fathers' ECBI Intensity and Problem Scores and Predictor Variables

Pearson product-moment correlations coefficients were used to examine the direction and strength of the relationship between the fathers' ECBI Intensity and Problem scores and all the independent variables (see Table 6). There were no significant correlations between the fathers' ECBI Intensity and Problem scores and any independent variables. The fathers' NCATS Parent Total score was significantly correlated with group status ($r = .30$, $p = .007$).

Predictors of the ECBI Intensity and Problem Scores

Data for predictor variables were explored prior to conducting the regression analyses. Histograms of the scores on the DAS, NCATS Parent and Infant Totals for the samples of mothers and fathers were examined to determine normality of distribution. For the sample of mothers, the data from the DAS and the NCATS Parent and Infant Total

scores were positively skewed. The data for the sample of fathers followed a similar pattern. The evaluation of relevant assumptions revealed no threat to multivariate analysis.

Multiple regression analysis using the hierarchical method was used to assess the contribution of the predictor variables to the ECBI Intensity and Problem scores. The regressions were conducted separately for the samples of mothers and fathers using the predictor variables of infant status at birth, sex, NCATS Parent and Infant Total scores, DAS, and family socioeconomic status. None of the predictor variables contributed significantly to the variance on either of the ECBI scores for the sample of mothers or fathers (see Appendixes E to H for summaries of hierarchical regression results).

The regression analyses were repeated using the stepwise method to determine which variable predicted the greatest proportion of the variance in the ECBI Intensity and Problem scores. The results are presented in Table 7. For the sample of mothers, the measure of marital quality was the best predictor of both ECBI scores and accounted for 10% of the variance on the Intensity score and 4% of the variance on the Problem score. For the sample of fathers, none of the variables were predictive of ECBI Intensity scores. Family socioeconomic status and marital quality were predictive of ECBI Problem scores for fathers. Socioeconomic status and marital quality accounted for 9% of the variance in the ECBI Problem scores.

Comparison Between Mothers' and Fathers' Perceptions of Their Child's Behaviour on the Intensity and Problem Scales

A *t* - test for the comparison of paired samples was done to calculate the differences in mothers' and fathers' reports of the same child on the ECBI Intensity and

Problem scores. This was done using only the families in which both the mothers and fathers returned completed ECBI questionnaires. Results are displayed in Table 8. Mothers reported statistically significant higher ECBI Intensity scores than did fathers (t (73) = 3.20, p = .002). In the total sample, mothers did not rate their children's behaviours on the ECBI Problem Scale higher than did fathers (t (73) = .87, p = .388).

Comparison of Behaviour Problems for Preterm and Term Children

An independent t -test was used to examine the difference between scores for the preterm infants and term infants on the ECBI Intensity and Problem Scales for the samples of mothers and fathers (see Table 3). Although the literature suggests that children born preterm will have significantly more behaviour problems than children born at term, results of this study do not support this hypothesis. There were no significant differences between the preterm or term groups for the sample of mothers on either the Intensity scores (t (78) = .38, p = .709) or the Problems scores (t (78) = .02, p = .984). No statistically significant differences were found between the preterm and term groups for the sample of fathers on the Intensity (t (72) = .33, p = .744) and Problem (t (72) = .98, p = .331) scores.

Comparison of Behaviour Problems for Boys and Girls

To examine if there is a difference in the number of behaviour problems for boys and girls reported by mothers and fathers, a t -test for independent samples was used. The Means and standard deviations are presented in Table 9. The sample of mothers did not report any statistically significant differences between boys and girls at four years of age on the Intensity (t (78) = .45, p = .653) or Problem (t (78) = 1.41, p = .164) scores. In the

sample of fathers, no statistically significant differences were found between boys and girls on the Intensity (t (72) = .23, p = .822) and Problem (t (72) = .04, p = .965) scores.

Table 1

Age, Education, Occupation, and Family Socioeconomic Status of Parents of Preterm and Term Infants in Samples of Mothers and Fathers

	Mothers (N = 80)			Fathers (N = 74)		
	Preterm	Term	All	Preterm	Term	All
Age						
M	29.69	29.32	29.49	32.40	31.66	31.99
SD	5.18	4.79	4.90	6.11	5.66	5.86
Education						
M	14.06	14.73	14.43	14.00	14.93	14.51
SD	2.93	2.71	2.81	3.52	3.10	3.30
Occupation						
M	4.25	5.71	5.05	5.70	6.24	6.00
SD	2.45	2.00	2.32	2.20	2.13	2.16
SES						
M	42.01	45.91	44.16	41.70	46.52	44.37
SD	11.89	9.87	10.93	11.46	9.94	10.84

Note. SES = Socioeconomic status.
* (t (78) = 2.87, p = .006).

Table 2

Gender and Birth Order of Preterm and Term Infants in Samples of Mothers and Fathers

	Mothers			Fathers		
	Preterm n=36	Term n=44	All N=80	Preterm n=33	Term n=41	All N=74
Infant Gender						
Female	13	19	32	13	19	32
Male	23	25	48	20	22	42
Birth Order						
First born	20	22	42	18	21	39
Later born	16	22	38	15	20	35

Table 3

Scores on DAS, NCATS, and ECBI for Parents in Samples of Mothers and Fathers

	Mothers (N = 80)			Fathers (N = 74)		
Instrument Scores	Preterm	Term	All	Preterm	Term	All
DAS						
M	109.19	113.18	111.39	111.52	111.27	111.38
SD	16.87	11.89	14.39	14.97	11.75	13.19
NCATS Parent						
M	37.42	39.96	38.81	35.58	39.02	37.49 *
SD	5.43	3.80	4.75	5.78	4.57	5.39
NCATS Infant						
M	19.58	19.73	19.66	19.15	19.49	19.34
SD	2.38	2.64	2.51	3.03	2.31	2.65
ECBI Intensity						
M	116.56	114.61	115.49	110.42	108.85	109.55
SD	25.40	20.93	22. 92	22.00	19.13	20.33
ECBI Problem						
M	7.28	7.25	7.26	7.79	6.27	6.95
SD	6.34	5.74	5.98	6.28	6.90	6.63

Note. DAS = Dyadic Adjustment Scale; NCATS = Nursing Child Assessment Teaching Scale; ECBI = Eyberg Child Behavior Inventory.

* ($t(72) = 2.87$, $p = .005$).

Table 4

Correlations Between the Mothers' and the Fathers' Scores on the ECBI Intensity and Problem Scales (N=74)

	Mother Intensity	Mother Problem	Father Intensity	Father Problem
Mother Intensity	--	.57**	.61**	.36*
Mother Problem		--	.54**	.57**
Father Intensity			--	.45**
Father Problem				--

Note. ECBI = Eyberg Child Behavior Inventory.
*$p < .01$. **$p < .001$.

Table 5

Correlations Between the Mothers' ECBI Intensity and Problem Scores and Independent Variables (N=80)

	ECBI Intensity	ECBI Problem	Group	Sex	NCATS Parent	NCATS Infant	DAS	SES
ECBI Intensity	--	.57**	-.04	-.05	-.04	-.01	-.33*	-.16
ECBI Problem		--	-.00	.16	-.03	-.07	-.23	-.10
Group			--	.07	.27	.03	.14	.18
Sex				--	-.08	-.03	-.08	-.12
NCATS Parent					--	-.03	.15	.24
NCATS Infant						--	-.06	.09
DAS							--	.23
SES								--

Note. ECBI = Eyberg Child Behavior Inventory; NCATS = Nursing Child Assessment Teaching Scale; DAS = Dyadic Adjustment Scale; SES = Socioeconomic status.
*$p < .01$. **$p < .001$.

Table 6

Correlations Between the Fathers' ECBI Intensity and Problem Scale and Independent Variables (N=74)

	ECBI Intensity	ECBI Problem	Group	Sex	NCATS Parent	NCATS Infant	DAS	SES
ECBI Intensity	--	.45**	-.04	-.03	-.03	-.02	-.17	.07
ECBI Problem		--	-.12	-.01	.02	-.19	-.22	-.25
Group			--	.07	.32*	.06	-.01	.22
Sex				--	.03	.06	-.09	-.15
NCATS Parent					--	.06	-.16	.20
NCATS Infant						--	.12	.05
DAS							--	-.06
SES								--

Note. ECBI = Eyberg Child Behavior Inventory; NCATS = Nursing Child Assessment Teaching Scale; DAS = Dyadic Adjustment Scale; SES = Socioeconomic status.
*$p < .01$. **$p < .001$.

Table 7

Summary of Stepwise Regression Analyses for Variables Predicting the ECBI Intensity and Problem Scores for Mothers (N=80) and Fathers (N=74)

Predictor Variable	B	Beta	T	p
	ECBI Intensity Scale			
A. Mothers				
Marital Quality	-.52	-.33	-3.05	.003
Adjusted R^2 = .10				
	ECBI Problem Scale			
A. Mothers				
Marital Quality	-.10	-.23	-2.10	.039
Adjusted R^2 = .04				
B. Fathers				
Marital Quality	-.11	-.23	-2.09	.040
Family SES	-.16	-.26	-2.37	.020
Adjusted R^2 = .09				

Note. ECBI = Eyberg Child Behavior Inventory; SES = Socioeconomic status.

Table 8

Comparison of Mothers' and Fathers' Report on the ECBI Intensity and Problem Scores for Preterm ,Term, and All

ECBI Scores	Mothers M	Mothers SD	Fathers M	Fathers SD	p
Preterm (n = 33)					
ECBI Intensity	119.09	24.76	110.42	22.00	.037
ECBI Problem	7.79	6.37	7.79	6.28	1.000
Term (n = 41)					
ECBI Intensity	114.61	20.70	108.85	19.13	.021
ECBI Problem	7.34	5.91	6.27	6.90	.249
All (N = 74)					
ECBI Intensity	116.61	22.55	109.55	20.33	.002*
ECBI Problem	7.54	6.08	6.95	6.63	.388

Note. ECBI = Eyberg Child Behavior Inventory.

Table 9

Comparison of Mothers' and Fathers' Reports on the ECBI Intensity and Problem Scores for Boys and Girls

	Mothers			Fathers		
ECBI Scores	Boys (n = 48)	Girls (n = 32)	p	Boys (n = 42)	Girls (n = 32)	p
Intensity						
M	116.44	114.06	.653	110.02	108.94	.164
SD	23.33	22.58		18.01	23.32	
Problem						
M	6.50	8.41	.822	6.98	6.90	.965
SD	5.61	6.42		6.91	6.38	

Note. ECBI = Eyberg Child Behavior Inventory.

Chapter 5

Discussion of Findings

This chapter provides a discussion of the findings of the relationships among preschool behaviour problems, parent and infant interaction, and marital quality. The chapter begins with a discussion of the predictors of preschool behaviour problems for the samples of the mothers and fathers followed by a discussion of various comparisons between groups. Limitations of the study, along with clinical and research implications of the findings conclude the chapter.

Predictors of Preschool Behaviour Problems

As noted previously, the Structural/Behavioral Model provided the theoretical perspective for the choice and ordering of the variables entered into the regression equation. This model suggests that developmental outcomes for children are accounted for by both organismic and environmental variables. In this study of 4 year olds, it was hypothesized that organismic variables (infant status [preterm or term] and infant gender), followed by proximal environmental variables (quality of parent and child interaction) would be the best predictors of behaviour problems. It was expected that more distal environmental variables (parental marital quality and socioeconomic status) would predict a lesser amount of the variance in preschool behaviour problems. Using the hierarchical method, none of these variables were predictors of the ECBI scores for mothers or fathers. With the same variables, the regression analysis was run using the stepwise method. A different picture emerged. Marital quality at 12 months was a significant

predictor of ECBI Intensity and Problem scores for mothers explaining 10% and 4%, respectively. Socioeconomic status and marital quality predicted 9% of the variance for the ECBI Problem scores for fathers.

The findings of this study are supported by previous research that found an association between parental marital quality and child behaviour problems (Jouriles et al., 1988; Katz & Gottman, 1993). Using observational measures, Katz and Gottman noted that stable marriages have a much higher ratio of positive to negative behaviours in their marital interactions than unstable marriages. Wilson and Gottman (1995) expanded the concept of positive marital interaction by suggesting that parents who experience high levels of marital quality are more likely to feel supported in the marital relationship. This support provides an environment for consistent, positive, and responsive parenting practices. Conversely, parents who experience low levels of marital quality may not feel supported in the relationship. Marital conflict may siphon parenting energies resulting in negative affect and inconsistent parenting practices in the family leading to childhood behaviour problems. However, it is premature to accept uncritically the assumption that a single causal relationship exists between marital quality and behaviour problems. Robinson and Anderson (1983) found the relationship between marital quality and child behaviour problems to be nonsignificant when social desirability is controlled in parent report measures of marital quality and child behaviour problems. They suggest that reports of dysfunction vary with parental willingness to report behaviour problems rather than the degree to which the problems exist.

The potential association of socioeconomic status with preschool behaviour problems has been studied frequently with inconsistent results (Adams et al., 1994; Earls, 1987; Larson et al., 1988; Richman et al., 1975; Thomas, Byrne, Offord, & Boyle, 1991). For the sample of fathers in this study, lower family socioeconomic status predicted a higher score on the Problem scale but not on the Intensity scale. That is, lower socioeconomic status for fathers predicted a greater number of child behaviours that were a problem for the father. It may be speculated that in families of lower socioeconomic status, fathers may experience increased stress related to economic pressures. Increased stress levels may reduce fathers' tolerance for misbehaviour and fathers may perceive more behaviours as a problem. This does not explain why family socioeconomic status did not predict behaviour problem scores for mothers as mothers in a family would experience economic pressures similar to fathers.

The organismic and proximal environmental variables failed to predict behaviour problems on either the Intensity or the Problem scale. Several explanations may be offered for the failure to find any relationships between infant status, infant gender or parent-child interaction and preschool behaviour problems. The preterm infants in this sample were healthy at birth. In addition, Beckwith and Cohen (1984) suggest that the effects of preterm birth on outcome measures diminishes between 12 and 24 months of age and environmental variables become more potent predictors of developmental outcomes. The preterm children in this study are now four years old and the influence of environmental variables such as socioeconomic status may be better predictors of behaviour problems than preterm status. The measure of family socioeconomic status indicated that the

families in this study were of working to middle socioeconomic class. The samples of mothers and fathers for this study were, on the average, better educated than one would find in the general Canadian population. In general, this would be considered a low risk population. In an attempt to address developmental outcomes for disadvantaged children in the United States, the majority of the literature describing differences between term and preterm infants has emerged from research directed at high risk populations (McCormick, 1989). These high risk populations include young, single mother families living in poverty with little or no social support. In these studies, maternal education and occupation levels frequently fall below the average for the population at large. These variables are often accompanied by suboptimal conditions which result in long term ramifications for the child and family. Thus, outcomes for preterm infants are often confounded with factors such as social class, maternal age, family living conditions, and lack of social support. As a result, it is difficult to compare these findings with other research considering variations in the samples described in the literature.

Healthy preterm children may experience subtle behaviour problems that may not become evident until they reach school age when learning abilities and peer interactions play an important role. Longitudinal research which follows healthy preterm infants to school entry may assist in understanding variables associated with the development of child behaviour problems. An alternative measure of child behaviour may identify subtle behaviour problems in preterm children not evident using the ECBI. Burns and Patterson (1991) used factor analysis to identify the multidimensional constructs of the ECBI: oppositional defiant disorder, attention-deficit hyperactive disorder, and conduct disorder.

Perhaps research using these scores as measures of behaviour problems may yield useful findings for preterm children.

The failure to predict preschool behaviour problems based on gender is not surprising. Previous research suggests only subtle gender differences in behaviour problems exist prior to school age (Earls, 1987; Richman et al., 1975).

In this study, parent-infant interaction at 12 months, as measured by the NCATS, did not predict behaviour problems at 4 years. Robinson et al. (1980) suggest that behaviour problems are a manifestation of the interaction between the parent and the child. Using the NCATS and the ECBI as concurrent measures, Koniak-Griffin et al. (1995) found a significant relationship between parent-infant relationships and child behaviour problems. Previous research indicates that quality of parent-child interactions within the family was able to discriminate between school aged children with behaviour problems and those without (Brandt et al., 1992). The research by Brandt et al. involved the use of multiple measures of family interactive quality between eight months and eight years. Perhaps the use of multiple measures of parent-child interaction may be more predictive of behaviour problems than a single observation. Further investigation may reveal that specific items or subscales of the NCATS may predict behaviour problems whereas the Parent and Infant Total scores did not.

One assumption of the Structural/Behavioral Model (Horowitz, 1990) is that there are periodic reorganizations of the organismic and environmental variables that influence outcomes for children. It is accepted that the influence of specific variables on individual children may change over time, but how this occurs is poorly understood. Are there

interactive influences of specific variables? Do variables influence outcomes bidirectionally? Are there thresholds of influence for certain variables? It may be that variables measured at repeated intervals are more predictive of later outcomes than variables measured at one time period. For example, the trend over several measures of parent and infant interactions may better predict preschool behaviour problems than a single measure. In this study, the measure of parent-infant interaction may not predict preschool behaviour problems because of rapid developmental changes in children of these ages. Alternatively, organismic variables may influence infant developmental outcomes strongly prior to the age of one year, and environmental variables such as marital quality and socioeconomic status may become significant predictors during preschool years. Further work is needed to develop and test other models of the relationships between child behaviour problems and family variables.

Relative to the Canadian population as a whole, the samples for this study were homogeneous on the variable of socioeconomic status. When a homogenous sample is used, a restricted range of scores may prevent meaningful covariation. However, ranges of ECBI scores in this study appeared sufficient to permit meaningful correlations. Perhaps in comparing this study to other research, it may be suggested that predictive relationships among organismic variables, environmental variables, and preschool behaviour problems are more likely in clinical samples that contain a greater frequency of child behaviour problems.

The sample sizes for this study were moderate and the power calculated for the number of variables entered into the hierarchical regression equation was adequate

(Sample of mothers = .78; Sample of fathers = .75). However, a larger sample size may increase the ability to identify predictors of behaviour problems and increase the generalizability of results to other similar populations.

Comparisons Between Groups

For the same child, mothers in this study reported a significantly greater number of behaviour problems on the Intensity scale than did fathers. This finding is consistent with others who have found that mothers report a significantly greater number of behaviour problems than do fathers (Eisenstadt et al., 1994; Webster-Stratton, 1988). Koniak-Griffin and Verzemnieks (1995) found that mothers reported a greater intensity of behaviour problems than did fathers, but the differences in scores for their samples of healthy two year olds did not reach statistical significance. Interestingly, stronger interparental agreement on the ECBI Intensity scores was found by Koniak-Griffin and Verzemnieks when mothers were employed outside the home. As was the case with this sample, usually mothers are primary caregivers, spend more time with their children than fathers, and may be exposed to more situations where problem behaviours occur.

There was no statistically significant difference between mothers' and fathers' reports on the Problem scale in this study. This finding is consistent with the results of the non-clinic referred population studied by Koniak-Griffin and Verzemnieks (1995). In clinic referred samples however, significant differences were found between mothers' and fathers' reports of whether child behaviours were a problem for them (Eisenstadt et al., 1994; Webster-Stratton, 1988). The differences in parental perceptions that certain behaviours constitute a problem may be related to differential attitudes. Men and women

come to a dyadic relationship with established attitudes and beliefs about parenting and expectations of children's behaviours. Congruence of preconceived attitudes and beliefs in the relationship will ultimately influence reciprocal support and consistency of parenting practices. A relationship exists between mothers' and fathers' reports on the Problem scale and marital quality. The majority of families in this study were in stable marital relationships with above average measures of marital quality. In these families, perhaps a high degree of consistency exists between parental attitudes and beliefs.

In the majority of literature regarding behaviour problems in children, inclusion criteria for preterm birth is very low birth weight (less than 1500 grams). Consistently, these infants, many of whom score in the extreme range on organismic variables, have demonstrated a higher incidence of behaviour problems using various instruments (McCormick et al., 1990). The smallest and sickest infants are over-represented in the group of infants with severe developmental problems. For this investigation, inclusion criteria for preterm status indicated that the infants must weigh greater than 1500 grams, and be healthy with no major congenital anomalies at birth. The findings from this study suggest that healthy preterm infants do not necessarily have significantly more preschool behaviour problems than their term counterparts. Similar findings were found in a study of 9 to 11 years olds in which Simonds, Silva, and Aston (1981) found no significant differences in behaviour disorders between low birth weight term infants, preterm infants, and children born at term with normal birth weight. Schothorst and Engeland (1996) found similar results. Grizenko et al. (1994) also found that biological variables were not good predictors of behaviour change or school reintegration in a sample of clinic referred

Canadian children. Adams et al. (1994) found that socio-environmental factors may well be stronger determinants of outcome than infant birth status. Perhaps organismic variables may strongly influence outcome measures for children at an early age, but as the child grows, there is a shift toward environmental variables being more significant predictors of outcome measures. Finally, the ECBI has been noted to address externalizing behaviours more than internalizing behaviours (Boggs et al., 1990; Schothorst & Engeland, 1996). Preterm infants and those with chronic illness may exhibit more internalizing disorders (Adams et al.), thus the ECBI may not be sensitive to some of the behaviour problems experienced by children born preterm.

Gender differences on ECBI Intensity and Problem scores were not found in this sample, although Robinson et al. (1980) reported gender differences in the ECBI standardization database. The lack of gender differences in this sample is consistent with other studies using the ECBI in non-clinic referred samples of preschool children (Koniak-Griffin & Verzemnieks, 1995). Epidemiological studies by Earls (1987) and Richman et al. (1975) using the Behaviour Screening Questionnaire revealed only minimal influences of gender on preschool behaviour problems. They suggest the subtle gender differences in behaviour problems at 3 years of age become increasingly evident by school age as the effects of different socialization practices become apparent. Earls describes a continuity of aggressive behaviour problems in 3 year old boys leading to poor social competence at school entry. Behaviour problems in girls tended to be less specific with no evidence to support a link between behaviour problems and school entry competence. It may be that gender differences in the frequency of behaviour problems do not become apparent until

middle childhood, although Brandt et al., (1992) using the CBCL found that gender was not a significant discriminator of behavioral-emotional problems in a sample of 8 year olds. It is also important to note that some researchers (e.g., Thomas et al., 1991) who do report gender differences in preschool children used the Child Behavior Check List (Achenbach, 1978) as a measure of behaviour problems. The CBCL is comprised of different items on subscales depending on age and gender of the child being tested, thus differing research results may be a reflection of differential test items instead of actual gender differences in behaviour problems.

Limitations

Interpretation of the results of this study must be made with caution. It has been shown that social risk influences the rates of behaviour disorders for children (Adams et al., 1994; Thomas et al., 1991). The socioeconomic status of the sample limits the generalizability of the findings beyond this sample to less advantaged populations. Additionally, families who volunteered to participate in this longitudinal research project may not be representative of the population of families with preschool children. The characteristics of mothers and fathers who chose not to respond to the questionnaire are unknown.

The Parent-Infant Project data collection time frame precluded inclusion of four year demographic variables in this study. It is expected that there would be changes in certain characteristics over four years that may influence preschool behaviour problems. For example, three of the families in the study are now lone parent families. The impact of lone parenting on behaviour problems in these samples remains to be investigated.

In addition, other measures that may be expected to co-vary with parent reports of preschool behaviour problems were not collected for this study. For example, measures of parental mental health and infant temperament were not included and may be crucial links in understanding the variables that predict behaviour problems.

Significance for Nursing Practice and Research

Early identification and treatment of behaviour problems may promote optimal outcomes for children, reduce stress for families, and result in long-term health care savings. It is important for nurses to address parental concerns about their child's behaviour during family contacts in the early preschool years. An awareness of the differing perceptions of their child's behaviours between mothers and fathers should encourage nurses to consider both parent's reports whenever possible.

Eight families in this study reported ECBI scores two standard deviations beyond the mean for the sample. Two families with extreme outlying scores were identified. These two families were contacted by the co-investigators to provide referrals. One family was already receiving treatment; the other family refused assistance. Interestingly, two additional families, whose scores fell within one standard deviation below the mean for the sample, contacted the Project office for assistance with their children's behaviour problems after completing the questionnaires. These results support the ability of the ECBI scales to discriminate between children who have behaviour problems and those who do not. Thus, the ECBI may be a useful clinical tool to assist nurses in assessing children whose parents report behaviour problems during preschool contacts.

In this study, environmental variables, but not organismic variables, predicted preschool behaviour problems in samples of mothers and fathers of preterm and term infants. Identification of marital quality as a predictor of behaviour problems in three out of the four ECBI measures would suggest that nurses who are working with children who have behaviour problems should investigate the quality of marital relationships in these families. A supportive marital relationship may assist parents to develop skills that may ameliorate or buffer variables that influence children's negative behaviours. Nursing interventions that assist parents to understand the benefits of a supportive marital relationship for parenting may also be an initial step in the treatment of children with established behaviour problems. Although the results of this study provide additional evidence that marital quality has a significant influence on child outcomes, it remains unclear exactly what aspects of marital quality predict behaviour problems. Further study is needed to examine parental patterns of interactions associated with low marital quality that are related to preschool behaviour problems.

The NCATS Parent and Infant Total scores did not prove to be predictors of preschool behaviour problems. Although results were based on a single measure of parent-infant interaction, findings from this study suggest that it would be premature for nurses to use NCATS scores to predict preschool behaviour problems. Further research is needed to examine the ability of repeated NCATS measures to predict behaviour problems. In developing early interventions to prevent preschool behaviour problems, nurses may need to consider using alternative measures that may be stronger predictors of preschool behaviour problems.

Behaviour problems in children have a potentially serious and long term impact on families and society. The ability to predict preschool behaviour problems based on an infancy assessment would facilitate early nursing intervention to assist families with children at risk for preschool behaviour problems. It is worthwhile to continue to investigate the variables that predict behaviour problems. It would be useful to follow this sample to determine if the higher than expected rates of behaviour problems continue. The significance of marital quality as a predictor of preschool behaviour problems is poorly understood. It is important to determine whether there is a relationship between fathers' reports of behaviour problems and family stresses other than low socioeconomic status. Further research is needed to explore the differential perceptions of mothers and fathers on the ECBI Intensity and Problem scales. The use of measures to assess family and personal stress levels, along with longitudinal assessments of parental and observational reports of behaviour problems and marital quality may assist in yielding useful results.

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Appendix A

Correspondence with Parents

Letter of Introduction Sent to Parents in the
Parent-Infant Project by Dr. Harrison

November 27, 1995

Dear_____and_____,

I want to thank you for your continued interest in the Parent-Infant Project. Joyce Magill-Evans and I appreciate your time and help with our research.

When you joined the Parent-Infant Project, you said that you would consider being in other studies on families with children. Karen Benzies, a graduate student in the Faculty of Nursing, is studying whether the behaviour of children at 4 years is related to early parent-infant interactions.

If you are interested in being part of that study, Karen would like each of you to fill in one of the enclosed questionnaires. The questionnaire takes about 10 minutes to answer. If you do not wish to answer the questionnaire, please return the questionnaire using the enclosed envelope. This will let Karen know that you do not want to participate. If only one of you wishes to participate, please return the completed questionnaire with the blank one.

The code number that has been assigned to your family in the Parent-Infant Project is used on this questionnaire. Karen will have access only to the code numbers, not the names of the families in the Project. The questionnaires will be kept in locked files. They will be destroyed seven years after the end of the study. If the researchers use the information in the future, they will ask permission from a university ethical review committee. When the findings of the study are discussed, only group information will be used. Your names will not be used.

The information from the study will be used by nurses in planning how to help parents whose children are more difficult to parent. There is no direct benefit to you for being in the study. If you have any questions, please call me at 492-5931.

Thank you again for all your help with our research.

Sincerely,

Margaret J. Harrison, RN, PhD
Professor

Directions Sent with First Letter to Parents

November 27, 1995

Dear Parents,

Thank you for participating in my study about behaviours of preschool children. This letter gives the directions for completing the questionnaire about child behaviours. Two identical questionnaires are included in this envelope. In the top left hand corner of each questionnaire there is the identifying code number that you were assigned in the Parent-Infant Project. One questionnaire is to be completed by the mother, and one is to be completed by the father. Please be sure that you fill out the top part of the questionnaire. It is important for the study that I know who (mother or father) filled out which questionnaire. Please do not share your answers to the questionnaire with your partner.

If there is any question that you do not wish to answer, please mark "no comment" beside it. This will let me know that you have not simply forgotten to answer that question. A self-addressed, stamped envelope has been provided to return the questionnaires. Please return them by **December 15, 1996**.

There is no direct benefit to you or your child for participating in this study. The results from the questionnaires will be used only for the study. If, after completing the questionnaire, you have any questions about preschool child behaviour please telephone Dr. Harrison at (403) 492-5931.

If you wish to receive a summary of the results of the study about child behaviours, please leave your name and address on the answering machine (403) 492-7344.

Sincerely,

Karen Benzies, RN, MN Candidate

First Reminder Letter Sent to Parents

January 12, 1996

Dear _____ and _____ ,

Karen Benzies, a graduate student in the Faculty of Nursing, sent both of you a letter about two weeks ago. The letter asked if you would participate in her study. Karen included two questionnaires for you to fill out.

If you would like to participate in this study, Karen would appreciate if you could mail back the questionnaires as soon as possible. If you do not wish to participate, then please return the blank questionnaires in the stamped, self-addressed envelope. This will let her know that you do not want to participate.

If you have misplaced the questionnaires and need another one, please call the Parent-Infant Project at 492-7344. Should you have any questions or concerns about the study or the questionnaire, please call me at 492-5931. I would be pleased to answer any questions you might have.

We know how busy life can be with small children. We appreciate the time you have already given us and wish to thank you for considering participation in this study.

Sincerely,

Margaret J. Harrison, RN, PhD
Professor

Second Reminder to Parents by Parent-Infant Project Research Assistant

Instructions for telephone contact:

Please ask to speak to either parent of the child participating in the Parent-Infant Project. Introduce yourself as a research assistant associated with the Project. State:

About two months ago, Karen Benzies, a graduate student in the Faculty of Nursing, sent a letter to you asking if you would participate in her study. In the envelope were two questionnaires for you to fill out.

If you are interested in participating in this study, Karen would appreciate if you could mail back the questionnaires as soon as possible. If you do not wish to participate, then please return the blank questionnaires. This will let Karen know that you do not wish to participate. If you have misplaced the questionnaires and need a replacement, I would be glad to send some to you.

If you have any questions or concerns about the study or the questionnaire, I will be pleased to answer them. If you wish to speak to Dr. Harrison, I will ask her to call you back. We realize how busy life can be with small children. We appreciate the time you have already given to the Parent-Infant Project. Thank you for considering participation in this study.

Goodbye.

Appendix B

Nursing Child Assessment Teaching Scale

Permission to use the Nursing Child Assessment Teaching Scale was granted to Dr. M. J. Harrison by Georgina Sumner, Director of NCAST.

All information regarding this instrument may be obtained from NCAST Publications, University of Washington, CDMRC, WJ-10, P.O. Box 357920, Seattle, Washington, 98195.

Appendix C

Dyadic Adjustment Scale

The Dyadic Adjustment Scale can be obtained from Multi-Health Systems, Inc., 95 Thorncliffe Park Drive, Suite 100, Toronto, Ontario M4H 1L7.

Appendix D

Eyberg Child Behavior Inventory

Permission to use the Child Behavior Inventory was granted to Karen Benzies by Dr. S. Eyberg, Department of Clinical and Health Psychology, Box J-165 Health Science Center, University of Florida, Gainesville, Florida 32610-0165.

Appendix E

Summary of Hierarchical Regression Analysis for Variables Predicting the ECBI Intensity Scores for Mothers (N= 80)

Variable	B	SE B	ß
Step 1			
Family Group	-1.78	5.22	-.04
Gender	-2.25	5.30	-.05
Step 2			
NCATS Infant Total	.21	1.01	.02
NCATS Parent Total	.10	.56	.02
Step 3			
Marital Quality	.50	.18	.32
SES	.22	.25	.11

Note. Adjusted R^2 = -.02 for Step 1; Adjusted R^2 = -.05 for Step 2; Adjusted R^2 = .05 for Step 3.

Appendix F

Summary of Hierarchical Regression Analysis for Variables Predicting the Problem Scores of the ECBI for Mothers (N=80)

Variable	B	SE B	ß
Step 1			
Family Group	.28	1.42	.02
Gender	1.62	1.38	.13
Step 2			
NCATS Infant Total	-.18	.27	-.07
NCATS Parent Total	.01	..15	.01
Step 3			
Marital Quality	-.09	..05	-.22
SES	-.02	.06	-.03

Note. R^2 = .03 for Step 1; R^2 = .03 for Step 2; R^2 = .08 for Step 3.

Appendix G

Summary of Hierarchical Regression Analysis for Variables Predicting the ECBI Intensity Scores for Fathers (N=74)

Variable	B	SE B	ß
Step 1			
Family Group	-1.43	5.25	-.04
Gender	-1.16	5.00	-.03
Step 2			
NCATS Infant Total	.04	.93	.01
NCATS Parent Total	-.22	.48	-.06
Step 3			
Marital Quality	-.28	.19	-.18
SES	.12	.24	.06

Note. R^2 = .00 for Step 1; R^2 = .00 for Step 2; R^2 = .04 for Step 3.

Appendix H

Summary of Hierarchical Regression Analysis for Variables Predicting the ECBI Problem Scores for Fathers (N=74)

Variable	B	SE B	ß
Step 1			
Family Group	-.91	1.61	-.07
Gender	-.66	1.54	-.05
Step 2			
NCATS Infant Total	-.39	.29	..15
NCATS Parent Total	.08	.15	.07
Step 3			
Marital Quality	-.11	.06	-.21
SES	.16	.07	-.26

Note. R^2 = .01 for Step 1; R^2 = .05 for Step 2; R^2 = .15 for Step 3 .