The Well-Being of Youth Brought up by Parents with Disability:

A Longitudinal Population-Based Study

by

Lyndsey Hahn

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Abstract

Background: The available research suggests that children brought up by parents with disability face a heighted risk of poorer well-being, including developmental delay, respiratory health conditions, accidents and injuries, and emotional-behavioural problems. This research is however limited, and the nature of the relationship between parental disability and child/youth well-being remains poorly understood. The purpose of this study was to obtain robust population-based data on the well-being of youth brought up by parents with disability, and to investigate potentially mediating pathways. Specifically, applying Conger and Donnellan's (2007) theory of social causation, this study investigated pathways linking parental disability to youth well-being through economic hardship, family stress processes and investments (e.g., parent stimulation of learning, standard of living, and neighbourhood quality).

Methods: The study utilised Canadian data from Cycles 1, 4, and 8 of the National Longitudinal Survey of Children and Youth (NLSCY). Children in the sample were 4-5 years of age in Cycle 1, 10-11 years of age in Cycle 4, and 18-19 years of age in Cycle 8. Structural equation modeling was employed to investigate the relationship between parental disability (identified when children were 4-5 years) and youth well-being (measured at age 18-19 years), and the mediating role of economic hardship. Parental disability was defined by parent self-report of a long-term physical condition, mental condition or a health problem that either sometimes or often reduced the amount or kind of activity they could do at home, and/or at school, and/or at work, and/or in other activities (e.g., transportation or leisure), and/or caring for children. Youth well-being was conceptualised through a multi-dimensional human rights based approach. The dimensions of well-being included in this study were health, education, social support, happiness, life satisfaction, and behaviours and risks.

Results: The sample consisted of approximately 1350 children, 15.6% had a least one parent with disability (95% CI 0.130, 0.187). Parental disability was associated with lower household income in Cycle 4 and lower equivalized income in Cycles 1 and 4. Results of structural equation modeling suggest that the relationship between parental disability and youth well-being was inconsistent. No statistically

significant association was found between parental disability and youth general health, happiness/life satisfaction, and behaviours and risks. A statistically significant direct effect of parental disability on youth career education was found. Also, statistically significant indirect effects were found between parental disability and youth depression, youth education, youth literacy, and youth social support (for models containing all parent report mediating variables). Results of structural equation modeling also suggest that the relationship between parental disability and youth education, literacy and social support are mediated by economic hardship leading to reduced parental investments, with family stress processes playing a lesser role.

Conclusion: The results of this study suggest that children brought up by parents with disability generally fare well on multiple measures of well-being, by comparison with age peers. Where disparities were found, the results suggest that these may have more to do with economic hardship than parental disability *per se*: Children brought up by parents with disability are more likely than others to be exposed to economic hardship, and are somewhat disadvantaged as a result. Overall, the findings suggest that negative attitudes towards parents with disability based on assumed 'parenting deficits' have little empirical foundation. Research is now needed, ideally employing an experimental design, to investigate the benefit to children brought up by parents with disability of strategies designed to ameliorate economic hardship and bolster investments through early and middle childhood.

Preface

This thesis is an original work by Lyndsey Hahn. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name "The health and well-being of children of parents with a disability: A longitudinal study", Pro00052506, November 4, 2014.

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To my mom

For instilling a lifelong love of learning

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Chapter 1: Introduction

1.1 The Research Problem

An unknown number of Canadian children and youth are growing up with a parent with disability, defined as a "…long-term physical, mental, intellectual or sensory impairment which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others" (United Nations, 2006, p.4). Point-prevalence estimates of parental disability, based on population-representative data from the United States and the United Kingdom, range from 6% to over 12% (Hogan et al., 2007; Kim et al., 2013; Neely-Barnes et al., 2014). The available data suggest that, while many fare well, children of parents with disability face a heightened risk of poorer health and well-being, including developmental delay, accidents and injuries, respiratory health conditions, and emotional-behavioural problems (Brown, Cobigo, Lunsky, et al., 2016; Emerson & Brigham, 2014; Keltner et al., 1999; McConnell et al., 2003; Mitra et al., 2015; Neely-Barnes et al., 2014; Powell & Parish, 2017; Šumilo et al., 2012). The available data are however limited and the nature of the relationship between parental disability and well-being of children and youth remains poorly understood.

Recent reviews of the literature on the topic have highlighted significant methodological limitations that characterize this area of study (Collings & Llewellyn, 2012; Rivera Drew, 2009). There is, for example, a dearth of data on the experiences of children and youth brought up by a parent with disability (i.e., child and youth self-report data). Second, the available data on the well-being of children brought up by parents with disability comes mostly from clinical population studies with children of parents with disability identified through special programs or services. Consequently, risk estimates, or measures of the strength of the association between parental disability and child well-being, may be biased. A third major limitation is that few studies have attempted to isolate the effect of parental disability from the effects of environmental hardship (e.g., low or unstable income), which has been linked to poorer child well-being, and to which children of parents with disability are more likely to be exposed (Emerson & Brigham, 2014; Neely-Barnes et al., 2014; Olkin et al., 2006).

Some population-based data on the well-being of children of parents with disability are now

emerging. Utilising national survey data or administrative records, studies conducted in several countries including Canada, Australia, the United States and the United Kingdom demonstrate that environmental hardship may explain, in part, the disparately poorer (on average) well-being of children brought up by parents with disability (e.g., Emerson & Brigham, 2014; Feldman et al., 2012). For example, Emerson and Brigham (2014) found that low socioeconomic position accounted for over 50% of the increased risk of developmental delay, speech and language problems, behaviour problems and frequent accidents and injuries associated with parental intellectual disability. However most population-based studies to date have been cross-sectional and therefore causal relationships or pathways could not be investigated.

Environmental hardship may affect the well-being of children brought up by parents with and without disability in a variety of ways. Conger and Donnellan (2007) specify two explanatory models: The family stress model of economic hardship and the family investment model. The family stress model of economic hardship links economic hardship to family functioning in order to explain potential child well-being outcomes (Conger & Donnellan, 2007). More specifically, this model links economic hardship to economic pressure. Subsequently parents may experience emotional distress, which influences parenting practices and in turn, child well-being. The family investment model links socioeconomic hardship to child well-being through resources such as materials in the home, parent stimulation of learning, standard of living, and neighbourhood quality (Conger & Donnellan, 2007). The family stress and family investment models have robust empirical support (e.g., Bøe et al., 2014; Kohen et al., 2008; Neppl et al., 2016; Newland et al., 2013).

Research utilising longitudinal, population-based data is now needed, firstly to obtain unbiased risk estimates, and secondly to advance understanding of the pathways or mechanisms through which parental disability may influence the well-being of children and youth. More specifically, building on the results of earlier population-based studies, research is needed to investigate the mediating role of environmental hardship. A sound theoretical understanding of the relationship between parental disability and child/youth well-being is vital for Canada, and other nations, to meet their obligations, as parties to the United Nations Convention on the Rights of Persons with Disabilities (United Nations, 2006), "… [to]

take effective and appropriate measures to eliminate discrimination against persons with disabilities in all matters relating to marriage, family, parenthood and relationships, on an equal basis with others…" (Article 23 Respect for home and the family).

1.2 The Current Study

Utilising data derived from the National Longitudinal Survey of Children and Youth (NLSCY), this study investigated that nature of the relationship between parental disability and youth well-being. Conducted through Statistics Canada with sponsorship from Human Resources and Skills Development Canada, the NLSCY consists of biennial waves of data from 1994 to 2009 on the health and development of Canadian children from early childhood to young adulthood (Statistics Canada, 2009a). This includes data on child social relationships, learning and behaviour, and physical health. In Cycle 1 of the NLSCY, three questionnaires were completed: the general questionnaire (i.e., socio-economic data, completed by person most knowledgeable (PMK) of the child and PMK spouse/partner), the parent questionnaire (i.e., health and social environment data on the PMK and PMK spouse/partner), and the child questionnaire (i.e., data regarding the child) (Statistics Canada, 1995a). Additional data was also collected in the NLSCY as children became older, such as a mathematics computation exercise and self-report questionnaire for children 10-11 years of age in Cycle 4; and a youth component and literacy assessment for youth 18-19 years of age in Cycle 8 (Statistics Canada, 2001; 2010).

For the purposes of the current study, children of parents with disability were identified in Cycle 1 (age 4-5 years). These children and their peers were then followed to Cycle 4 (age 10-11 years) and Cycle 8 (age 18-19 years). Parents with disability were defined as those reporting a long-term physical condition, mental condition or a health problem that either sometimes or often reduced the amount or kind of activity they could do at home, and/or at school, and/or at work, and/or in other activities (e.g., transportation or leisure), and/or in caring for children. The sample included approximately 1,350 children (weighted population size approximately 637,400). Within this sample, 15.6% of the children had a parent who reported disability (95% CI 0.130, 0.187).

Child and youth well-being has been defined in multiple ways. Within this study, youth well-being

was conceptualised through a multi-dimensional human rights based approach. Understanding well-being through a human rights based approach focuses on the "realization of children's rights and the fulfillment of the opportunity for every child to be all she can be in the light of her abilities, skills, and potential" (Kosher et al., 2014, p.9). The United Nations Convention on the Rights of the Child (CRC) outlines multiple domains of well-being that go beyond basic needs to include rights such as participation and self-determination (UNICEF, 2014b; Peterson-Badali & Ruck, 2008). For the purposes of this study, youth well-being was measured in Cycle 8 (age 18-19). Multiple dimensions were studied, including: Health, Education, Social Support, Happiness/Life Satisfaction, and Behaviours and Risks. Indicators chosen within each of the dimensions include youth self-report data, positive and negative aspects of well-being, and indicators of well-being for the present as well as indicators that may predict future life trajectories.

A central focus of this research was to study potential mediating pathways between parent disability and youth well-being. More specifically, Conger and Donnellan's (2007) family stress model of economic hardship and the family investment model were utilised to study pathways between economic hardship and the well-being of youth (age 18-19 years) brought up by a parent with disability. This study includes youth self-report data at age 18-19. In addition, child self-report data at age 10-11 were utilised for a portion of the mediating variables. The study hypothesis is as follows:

> The relationship between parental disability and youth well-being is partially mediated by economic hardship leading to decreased parental investments (e.g., quality of neighbourhood, adequate nutrition, stimulation of learning) and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood.

Structural equation modeling (SEM) was employed to study the pathways linking parental disability to youth well-being. Essentially, SEM allows researchers to build parsimonious models that represent observed data (Little, 2013). There are multiple benefits to utilizing SEM within this study. SEM takes into account random measurement error providing more accurate estimates, allows greater flexibility to analyse competing models, and allows for multiple sequential regressions to be fit simultaneously (Fabrigar et al., 2010; Iacobucci, 2009). Multiple steps are involved when conducting an

SEM analysis. First, specification of the model needs to be completed (i.e., representing the hypotheses in a model diagram) (Kline, 2010). Graphical representations for each structural equation model tested were completed. This included each youth well-being dimension studied, including health, education, social support, happiness/life satisfaction, and behaviours and risks. When two or more indicators represented a theoretical concept confirmatory factor analysis (CFA) was employed to establish the measurement model (Li, 2011). The following steps of an SEM analysis were conducted, including: establishing that model is correctly identified, estimation of the model, evaluation of model fit, interpretation of parameter estimates, and consideration of equivalent models (Kline, 2010). Results for each model tested are discussed in detail including a graphical representation, tables, and discussion.

1.3 Thesis Outline

Ensuing chapters include a background (Chapter 2), methods (Chapter 3), results (Chapter 4), and discussion (Chapter 5). The background chapter (Chapter 2) begins with an overview of the well-being of children being raised by parents with disability. Furthermore, the factors which may influence the well-being of children of parents with disability including current evidence of the impact environmental hardship may have on these families will be discussed. Finally, the family stress model of economic hardship and family investment model, along with current research, are discussed in order to achieve a greater understanding of the impact and link between environmental hardship and individuals (Conger & Donnellan, 2007).

Chapter 3 includes an overview and rationale for methods utilised in the study and provides details on how analyses were carried out. This includes a discussion on the benefits and limitations of secondary data analysis and details pertaining to the data sample from the National Longitudinal Survey of Children and Youth (NLSCY). Next, each variable used in the study will be defined and explained. This is followed by an overview of how the data were prepared, including how missing data was handled and weighting of the data. Details of each analysis are discussed including bivariate analyses (i.e., family, household and youth comparisons) and structural equation modeling analyses (i.e., mediating models concerning the relationship between parental disability and youth well-being).

Chapter 4 provides the results for each analysis completed in the study. This includes an overview of family and household characteristics, including characteristics of parents and household information within the sample. Results of analyses comparing the well-being of youth brought up by parents with disability and youth brought up by parents without disability are outlined. Finally, results of the structural equation model analyses are provided which aim to investigate the relationship between parental disability and youth well-being. This includes confirmatory factor analysis results for each latent variable followed by the results of each full model.

Chapter 5 will include a discussion of the results found in the study. This includes a discussion on how the results of family and household characteristics compared to studies that have previously been completed. This is followed by a discussion of the results pertaining to youth well-being and mediating pathways investigated between the relationship of parent disability and youth well-being. Strengths and limitations of the study are discussed in detail. The chapter concludes with a discussion of study implications.

Chapter 2: Background

Children of parents with disability face a heighted risk of poorer well-being, broadly defined. The relationship between parental disability and child well-being however remains poorly understood. Common practice wisdom holds that parents with disability are not capable of providing the same level of care or nurturance as parents without disability (Hayman, 1990; Hertz, 1979). However, such generalizations have no empirical support: Parental disability is a poor indicator of parental care (e.g., Booth et al., 2006; Coren et al., 2011; Feldman, 1994; McConnell et al., 2002; Murphy & Feldman, 2002; Starke et al., 2013; Wade et al., 2008). Recent research has focused attention on the potentially confounding influence of environmental hardship. Children of parents with disability are more likely to grow up in relatively impoverished homes and neighbourhoods, compared with children of parents without disability, and such hardship has long been linked to poorer developmental health and well-being in children in general (e.g., Hindmarsh et al., 2017; Kohen et al., 2008; Powell et al., 2016; Sosu & Schmidt, 2017). Longitudinal data are needed to investigate *how* environmental hardship may explain or contribute to the heightened risk of poorer well-being in children of parents with disability.

2.1 The Well-being of Children Brought up by Parents with Disability

Current data suggest that although findings vary, parental disability is associated with a heightened risk of poor child well-being. Although limited, population-based studies have been conducted in multiple countries. Šumilo et al. (2012) utilised the nationally representative UK Millennium Cohort Study data to investigate family characteristics and outcomes of children of women with disability. Seventeen hundred and five mothers with disability (i.e., limiting longstanding illness: having a longstanding illness, disability, or infirmity and having this illness or disability limit activities in any way) were identified out of a sample of 18,231 (9.4%). Šumilo et al. (2012) observed that children, at age 7, were more likely to have mental health problems, behaviour problems, and diseases related to the respiratory system and ear/mastoid process if they had a mother with disability. In the United States, researchers utilised the 2006 National Health Interview Survey to investigate the relationship between parental disability and child mental health (Neely-Barnes et al., 2014). In this study, parents were

identified as having a disability if they reported an activity limitation related to work, daily activities, walking, or cognitive functions. Eight hundred and thirteen children out of a total of 7,116 (11.4%) were identified as having a parent with a disability. Results indicate that children age 4 to 17 years old, with a parent with disability, were at increased risk of mental health problems (i.e., hyperactivity-inattention, conduct, emotional, and peer problems). Although the effect size was small (Cohen's d <0.2), a significant difference between the mental health of children with a parent with disability compared to children with parents without disability was found. Also within the United States, Hogan et al. (2007) utilised the National Longitudinal Survey of Youth 1997 to investigate environment and household dynamics within families headed by parents with disability. Hogan et al. defined parental disability in terms of the International Classification of Functioning, Disability and Health (ICF) model, focusing on work participation limitations of parents. It was found that 12% of parents within 2 parent households report work disabilities, whereas 19% of mothers in single parent households report work disabilities. Findings indicate that children with mothers with disability may be a greater risk of having a less enriching home, including parents who are less involved in schooling. Overall, similar child outcomes have been found in research focusing on parents with a specific impairment. Below is an overview of research on the well-being of children being raised by parents with intellectual disability and parents with physical disability.

2.1.1 The Well-being of Children of Parents with Intellectual or Physical Disability

Studies focusing on children of parents with intellectual and or physical impairments have also documented increased risk of poorer well-being. There has been a range of research completed on the well-being of children raised by parents with intellectual disability from birth through to adulthood. Studies from a growing list of countries have consistently documented poorer birth outcomes, including increased rates of preterm birth, low birthweight and neonatal intensive care among children born to women with intellectual and developmental disabilities (Brown, Cobigo, Lunsky, et al., 2016; Brown, Kirkham, Cobigo, et al., 2016; Goldacre et al., 2014; Hoglund et al., 2012a, 2012b; McConnell et al., 2008a; Mitra et al., 2015; Parish et al., 2015). In Ontario, Canada, for instance, Brown, Cobigo, Lunsky

et al. (2016) analysed population-representative data and found that infants born to mothers with intellectual or developmental disabilities were at increased risk for preterm delivery (RR 1.74, 95% CI 1.57, 1.93) and of being small for gestational age (RR 1.44, 95% CI 1.33, 1.09), compared to infants born to mothers without intellectual and developmental disabilities. In the United States, Parish et al. (2015) report similar results from their study using a nationwide inpatient sample. Findings demonstrate that women with intellectual and developmental disabilities were more likely to have poor pregnancy and birth outcomes, including preterm birth, preeclampsia or hypertension, and low birth weight. Specifically, the odds of having complications of pregnancy were found to be 4.54 times greater for women with intellectual and developmental disabilities, compared to women without intellectual or developmental disabilities (95% CI 3.34, 6.17).

There are substantial data on the well-being of children of parents with intellectual disability through early and middle childhood. Early research focused on the mental development (e.g., Skeels, 1936; Skodak, 1939; Skodak & Skeels, 1945; Skodak & Skeels, 1949; Snygg, 1938; Speer, 1940; Stippich, 1940). Cumulatively, this early research found that children of parents with intellectual disability are somewhat more likely to have intellectual disability themselves, compared with their peers, although the majority will have intelligence quotients in the 'normal' range. More recent work investigated the well-being of children raised by parents with intellectual disability across multiple developmental domains. Hindmarsh et al. (2014) investigated the development of 9-month-old infants of mothers with intellectual disability utilising data from the UK Millennium Cohort Study. Findings suggest that infants of mothers with intellectual disability were more likely to have fine motor delay (OR 2.0, 95% CI 1.0, 4.0), but no more or less likely to demonstrate gross motor delay, communication delay or difficult temperament, compared with infants of mothers without intellectual disability. Studies of clinical samples have found that, through early and middle childhood, children of parents with intellectual disability demonstrate developmental delay in multiple areas (e.g., speech and language, physical development, social development, cognitive development) (Emerson & Brigham, 2014; Keltner et al., 1999; McConnell et al., 2003; Powell & Parish, 2017). For instance, in Australia, McConnell et al.

(2003) studied the development of a clinical sample of children under five raised by parents with intellectual disability and found that the majority demonstrated delays in physical, social, academic, and communication domains.

Several studies have focused on emotional and behavioural problems in children of parents with intellectual disability (e.g., Emerson & Brigham, 2014; McGaw et al., 2007; Powell & Parish, 2017). In the United States, Powell and Parish (2017) studied the behaviour of 3-year-old children of mothers with intellectual disability, including being anxious/depressed, withdrawn, and aggressive. Analysing data from the Fragile Families Child and Wellbeing study, they found that children of mothers with intellectual disability were more likely to demonstrate anxious/depressed and withdrawn behaviour, by comparison with children of mothers without intellectual disability. In the UK, McGaw et al. (2007) investigated psychopathology and mental health in a population of mothers with intellectual disability and their children (age 5-17 years). Findings suggest that a high proportion of children who participated in the study demonstrated at least one behavioural or psychological problem. Common problems reported include poor attention span, conduct disorders, anxiety, and acute problems.

A small number of studies have investigated the experience of growing up with a parent with intellectual disability, from the (usually now adult) child's point of view (Booth & Booth, 1998; Hewitt & Clarke, 2016; Starke, 2011; Wołowicz-Ruszkowska & McConnell, 2017). These studies highlight the impact of negative community attitudes towards mothers with intellectual disability, including the experience of being marginalized or bullied by their peers. In one of the most recent studies, Wołowicz-Ruszkowska and McConnell (2017) interviewed now adult children (age 24-34 years) and discovered that the majority had not recognized that their mothers were "different in a way that warranted shame," until this was brought to their attention by others outside the home. With the support of a grandparent or extended family, many if these children were able to accommodate this new information: "In their stories there was a perceptible sense of self continuity and internal coherence" (p.4). However, for children lacking such support, "recognition of their mother's difference led to the experience of a disruption or destructuralization of biography –a split of life into two contrasting stages (before and after) and self-

redefinition" (p.4) and, related to this, a heightened state of anxiety.

Poorer well-being in children of parents with physical disability is also well-documented. A number of studies have investigated the developmental health and well-being of children being raised by a parent with multiple sclerosis (Brandt & Weinert, 1998; Blackford, 1999; Bogosian, Moss-Morris, & Hadwin, 2010). Brandt and Weinert (1998) found that in a sample of 174 children (7 to 17 years of age) of parents with multiple sclerosis, 26% were at risk of developing a mental health problem. The mental health of children raised by parents with rheumatoid arthritis has also been studied. Zelkowitz et al. (2013) found that children of parents with rheumatoid arthritis exhibit increased internalising (i.e., anxiety, depression, somatic symptoms) and externalising problems (i.e., conduct problems, hyperactivity, aggression). Similar findings have been documented for children who have a parent with traumatic or acquired brain injury (Butera-Prinzi & Perlesz, 2004; Pessar et al., 1993). Butera-Prinzi and Perlesz (2004) interviewed 5 children (age 7-12 years) who had a father with acquired brain injury. Children and parents also completed the Behaviour Assessment Systems for Children (BASC) scale. Findings suggest that these children are at increased risk of behavioural or emotional difficulties including: anxiety, sleep and eating difficulties, withdrawal, depression, and aggression.

Overall, the results of studies completed thus far are consistent in finding that children brought up by parents with disability face heightened developmental risk. However, recent reviews of this research have highlighted a number of methodological weaknesses (Collings & Llewellyn, 2012; Rivera Drew, 2009). For example, most of the available data comes from studies involving parents who were in receipt of special services through a general hospital, clinic setting, or a specialised service or program designed for persons (or parents) with disability. Recruiting small numbers of participants solely from settings of formal supports and services may introduce a clinical sample bias resulting in a limited ability to generalize findings. A second limitation is a failure to isolate the effect of parental disability, or take confounding variables into account: The association consistently found between parental disability and poorer child well-being may well be spurious. Another methodological weakness is that most of the available data come from cross-sectional studies, and as a result, causality cannot be inferred. A fourth

methodological weakness is the lack of child/youth self-report data. Consequently, we know very little about the experiences and perspectives of children brought up by parents with disability. In order to address these methodological weaknesses, longitudinal population-based research and the collection of child/youth self-report data are needed to investigate the pathways or mechanisms linking parental disability to poor child well-being.

2.1.2 Factors Influencing the Well-being of Children of Parents with Disability

It is often assumed that parents with disability are not capable of providing an appropriate level of care or nurturance as parents without disability (Hayman, 1990; Hertz, 1979). However, such generalisations are often refuted in the literature, especially when challenges experienced by these parents are studied in depth (e.g., Booth et al., 2006; Coren et al., 2011; Feldman, 1994; McConnell et al., 2002; Murphy & Feldman, 2002; Starke et al., 2013; Wade et al., 2008). Parents with disability may experience many barriers regarding custody of their children (e.g., McConnell et al., 2002; Booth et al., 2006; McConnell et al., 2011a, 2011b; Swain & Cameron, 2003). In an analysis of the Canadian Incidence Study of Child Abuse and Neglect (CIS-2003), McConnell et al. (2011) found that parents with intellectual disability comprised approximately 10% (21,998 children) of the child maltreatment cases open. Also, of the cases that proceeded to child welfare court, approximately 27% involved a parent with intellectual disability. However, factors such as discrimination in the sense of time (i.e., time pressures and limits) within child welfare proceedings may be more prominent for parents with intellectual disability (Booth et al., 2006; McConnell et al., 2002). Parents with disability may also encounter barriers to services or supports that are accessible (Bergeron et al., 2012; Glazemakers & Deboutte, 2013; Heinz & Grant, 2003; MacIntyre & Stewart, 2011; Swain & Cameron, 2003). For instance, parenting programs may need to be modified to support the needs of parents with intellectual disability, which may not always be available (Heinz & Grant, 2003; Glazemakers & Deboutte, 2013). Taking this into account, research has repeatedly shown that parents with intellectual disability are able to increase parenting skills when provided appropriate programs (e.g., Feldman, 1994; Murphy & Feldman, 2002; Wade et al., 2008; Coren et al., 2011; Starke et al., 2013).

A number of factors may contribute to the heightened risk of poor well-being of children brought up by parents with disability. In the late 19th and early 20th centuries, family transmission ('heritability') was a prominent hypothesis, particularly in relation to children of parents with intellectual impairment. For example, in 1912, Henry H. Goddard published a book on the *Kallikak Family: A study of the heredity of feeble-mindedness*. Goddard (1912) discussed in length *feeble-mindedness* as "…a problem of true heredity" (p.51). However, the diversity in the well-being of children brought up by parents with disability, including parents with intellectual disability, suggest that heredity may be more accurately described as a contributing factor, rather than a determining factor. For example, previous research has demonstrated that most children of mothers with intellectual impairment do not have an intellectual impairment themselves (Reed & Reed, 1965). Furthermore, understanding how genes influence health and development has advanced: The focus of research today is on gene-environment interaction, or gene sensitivity to environment. For instance, Simonoff et al. (1996) suggest that past research discussing the quantification of genetic contribution (compared to environment influences) to mild intellectual disability needs to be interpreted with caution. Instead, Simonoff et al. (1996) suggest that further research is needed in order to understand the salient relationship between mild intellectual disability and psychosocial disadvantage.

In the late 20th century the focus of research attention turned from biological to environmental risk, particularly risk associated with parenting practices. Overall, results indicate that, on average, parents with disability may be less involved in their children's education (e.g., participation in school/educational activities, teacher meetings) and/or provide somewhat less developmentally enriching home environments (e.g., stimulating parent-child interaction, educational materials) (Azar et al., 2012; Hogan et al., 2007; Feldman & Walton-Allen, 1997; Taylor, 2010). However, researchers note that the relationship between parental disability, parenting practices and child well-being is confounded by life history and social disadvantage, including but not limited to parent exposure to abuse and neglect in their own upbringing, low household income and social isolation. Further, to explain the tremendous variance in the parenting practices of parents with disability, and in the developmental status of their children,

researchers have theorized multiple interacting intrinsic and extrinsic determinants. Bringing together theory and research on the topic, Feldman (2002) and Aunos and Feldman (2007) proposed an interactional model encompassing factors intrinsic to the parent and child (e.g., cognitive and metacognitive functions, beliefs, values, goals, skills, health), and contextual influences such as childhood trauma, stigma and victimization, the childcare workload (e.g., number of children in the home, child health and behaviors), partner support and family relationships, and socioeconomic resources.

Health is one well-documented determinant of parenting. Parents with disability tend to experience poorer health compared to parents without disabilities, which may adversely affect parenting, and in turn, child well-being (e.g., Emerson & Brigham, 2014; Emerson, Llewellyn, Hatton, Hindmarsh, Robertson, Man & Bains, 2015; Brown, Corbigo, Lunsky, & Vigod, 2016; Katz, Pasch, & Wong, 2003; Llewellyn, McConnell, & Mayes, 2002; McGaw, Shaw, & Beckley, 2007; O'Keeffe & O'Hara, 2008). In their study of pregnancy and birth outcomes, Brown, Corbigo, Lunsky, & Vigod (2016) found that mothers with intellectual disability had higher rates of existing diabetes mellitus, epilepsy, and psychiatric disorders compared to mothers without intellectual disability. Utilizing the UK panel survey Understanding Society (n=14371), Emerson et al. (2015) compared the health of parents with and without intellectual disability. Their analysis found that parents with intellectual disability were at increased risk of reporting overall poorer physical and mental health. In one of the first scientific studies of community-dwelling parents with intellectual disability, Mickelson (1947) found that poor mental health was prevalent in a sample of 90 "feebleminded" mothers and was a primary influence on the quality of care given to their children. More than 6 decades later, Aunos et al. (2008) reported significant correlations among parental stress, parenting practices, and child problem behavior in a clinical sample of mothers with intellectual disability.

There is also unequivocal evidence linking social and economic hardship to poorer adult and child well-being (e.g., Fortin, 2010; Miriam et al., 2016; Wei & Feeny, 2019). Socioeconomic hardship, including low or unstable income and decreased social support (formal and informal) is commonly experienced by households headed by parents with disability (e.g., Hindmarsh et al., 2014; Hindmarsh et

al., 2017; Emerson & Brigham, 2013; Emerson & Brigham, 2014; Powell et al., 2016; Blackford, 1999; Bergeron et al., 2012). When researchers have taken socioeconomic position into account, the strength of the relationship between parental disability and poorer parent health is reduced. Emerson et al. (2015), for example, analyzed data collected in a household panel survey of UK citizens and found that parents with intellectual disability (n = 299; 1.2% of the study sample) were at significantly greater risk than other parents of having poorer self-reported general, mental, and physical health, as well as obesity, arthritis, cancer, diabetes, and any of several cardiovascular conditions. However, adjusting for between-group differences in exposure to socioeconomic disadvantage (poverty-to-income ratio, financial stress, low household assets, unemployment, rental accommodation) reduced effect sizes to statistical non-significance on all but one indicator, obesity.

In the same way, when researchers have taken the disparate socioeconomic exposure of children of parents with disability into account, they have found that the 'effect' of parental disability on child outcomes is substantially reduced or statistically eliminated (Emerson & Brigham, 2014; Hindmarsh et al., 2017; Hogan et al., 2007; Neely-Barnes et al., 2014; Wickström et al., 2017). In a study conducted in England, for example, Emerson and Brigham (2014) used data collected by home visitors on a representative sample of 46,025 families to investigate the relationship between parental intellectual disability and developmental health in children under five years of age. Although the majority of children who had a parent with intellectual disability were typically developing, significantly higher rates of developmental delay (30% vs. 5%), speech and language problems (26% vs. 5%), and behavioral issues (32% vs. 7%) were noted in this group, compared with all other children. However, adjusting for between-group differences in exposure to socioeconomic disadvantage reduced the risk of poorer developmental outcomes associated with parental intellectual disability by over 50%.

2.1.2.1 The family stress model of economic hardship and the family investment model

The mechanisms or causal pathways through which socioeconomic hardship may affect the developmental health and well-being of children brought up by parents with disability are not known. In order to achieve a greater understanding of the impact and link between environmental hardship and

individuals, a social selection approach versus a social causation approach may be employed. The social selection approach implies that individuals influence the social and economic aspects of their life through personal characteristics (Conger & Donnellan, 2007). In comparison to the social selection approach, social causation implies that the social and economic context impacts an individual's development and overall functioning (Conger & Donnellan, 2007). Two models proposed by Conger, Donnellan, and colleagues, consistent with the social causation theoretical lens and which propose explanatory pathways for the effect of economic hardship on children, are the family stress model of economic hardship and the family investment model (Conger & Donnellan, 2007; Conger, Conger, & Martin, 2010; Conger & Conger, 2002). This family stress model links economic hardship (e.g., low income, debt, negative financial situations) to economic pressure or stress. Due to economic pressure, the family stress model then proposes that parents may experience poorer mental well-being. In a proposed causal chain, poorer parental mental health is linked to interparental difficulties (e.g., marital difficulties) and thus affect parenting practices (e.g., participation in child's life, harsh parenting). In turn, the development and well-being of children may be impacted. See Figure 2.1 for a visual representation of the hypotheses comprising the family stress model of economic hardship.

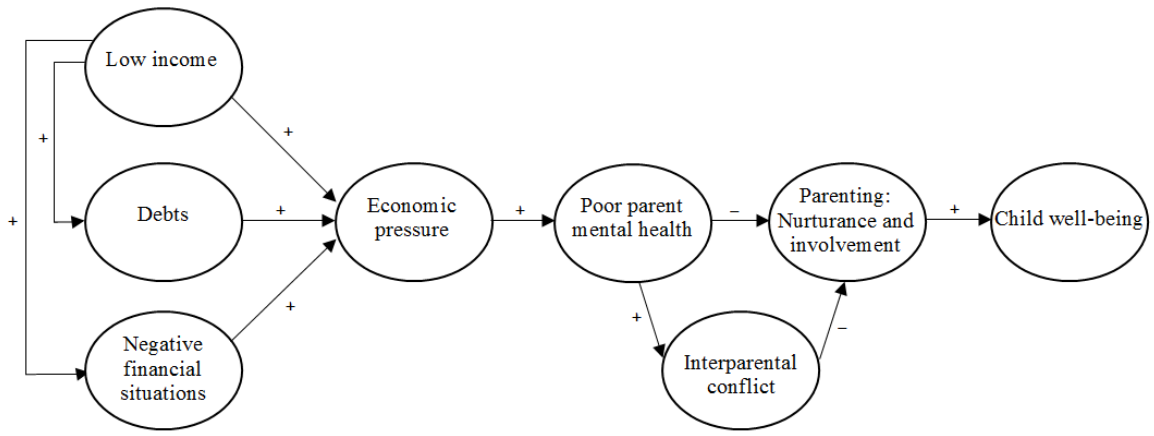


Figure 2.1 The family stress model of economic hardship. Modified from Conger and Donnellan (2007).

The second model links socioeconomic hardship to poorer child well-being by way of reduced family investments. The central hypothesis of this family investments model is that families enduring

socioeconomic hardship cannot afford their children the same developmental advantages or opportunities as other families. As a result, children who grow up in conditions of family socioeconomic hardship may experience poorer well-being. The model puts forth four areas of investment including learning materials in the home, parent stimulation of learning, standard of living, and neighbourhood quality. See Figure 2.2 for a visual representation of the family investment model.

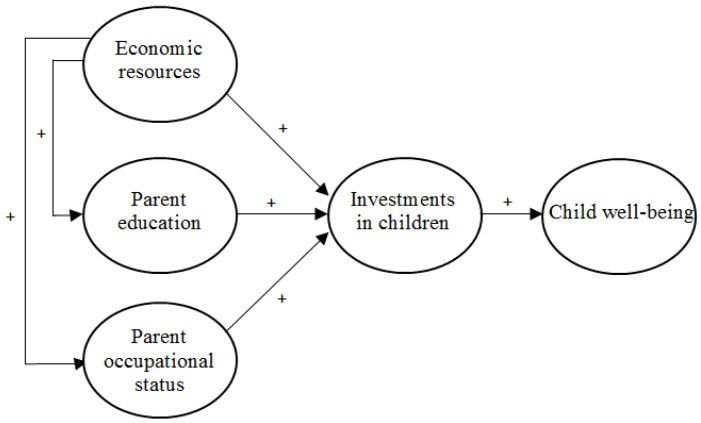


Figure 2.2 The family investment model. Modified from Conger and Donnellan (2007).

There is strong empirical support for the family stress and family investment models, although the hypotheses have not been explicitly tested in samples of children brought up by parents with disability (e.g., Kohen et al., 2008; Lee et al., 2011; Linver et al., 2002; Conger, Wallace, Sun, et al., 2002; Conger & Conger, 2002; Bøe et al., 2014; Yeung et al., 2002; Newland et al., 2013; Neppl et al., 2016; Simons et al., 2016; Coddington et al., 2014; Sosu & Schmidt, 2017; Schofield et al., 2011). Conger, Wallace, Sun, et al., (2002) tested the family stress model through the Family and Community Health Study conducted in Iowa and Georgia, USA, which involved a sample of 422 families with children 10-11 years old. Results showed that low family per capita income and negative changes to financial situation was associated with economic pressure in the family. Economic pressure was associated with parental depression and relationship conflict and, in turn, less parental nurturance and involvement. In the final step, less parental nurturance and involvement predicted lower positive adjustment of children.

In Canada, Kohen et al. (2008) utilized the National Longitudinal Survey of Children and Youth

(NLSCY) to investigate the effect socioeconomic context has on child verbal and behavioural development. The sample consisted of families with children age 4-5 years old (n=3,528). The total (direct plus indirect) effect of neighbourhood disadvantage on child verbal and behavioural development was not significant. However, a significant association was found between neighbourhood disadvantage and decreased family functioning and parent depression. Furthermore, parent depression predicted parenting practices (i.e., less consistent, and more punitive), and higher levels of punitive parenting was associated with poorer verbal development. Overall, the results suggest that the relationship between socioeconomic hardship and child verbal development was mediated by neighbourhood disadvantage.

The family investment model was tested in a study investigating the vocabulary of children between the ages of 4-5 years (Coddingston et al., 2014). Data on 1589 children under five years of age were derived from the Longitudinal Study for Early Childhood in Chile. The study found that socioeconomic status was directly related to child vocabulary score (i.e., higher socioeconomic status predicted high child vocabulary score). Furthermore, high socioeconomic status was related to living standard and educationally stimulating homes, which was subsequently related to children having a higher vocabulary score. In Scotland, researchers also found support for the family investment model utilising data from a national longitudinal survey (Sosu & Schmidt, 2017). Findings suggest that greater economic deprivation (i.e., equivalized income, parent self-report poverty) was significantly associated with poorer child problem behaviour (age 4-6). Further, economic deprivation was related to decreased nutrition, education investment, and child cognitive ability.

Extensions to the family stress model and family investment model have integrated theory from both a social causation and social selection perspective (Conger & Donnellan, 2007). Conger and Donnellan (2007) refer to this approach as an interactionist model, which incorporates elements such as attributes of individuals before they have children. Schofield et al. (2011) tested an interactionist model utilising data from multiple generations of families in the United States. The study found that personal attributes of youth predicated socioeconomic status, family investments, and family stress later in life. Additional findings show that family socioeconomic status predict parenting practices. In addition,

family investments (e.g., resources in the home, health insurance, neighbourhood) and family stress (i.e., single measure indicative parent stress, relationship conflict, and financial pressure) were associated with development and behavioural outcomes of children.

Although the family stress process and family investment models have not been explicitly tested in samples of children brought up by parents with disabilities, the results of several studies are consistent with the underlying hypotheses (Wade et al., 2011, 2015; Feldman et al., 2012). For example, Wade et al. (2011, 2015) modeled contextual influences on the parenting practices of 120 parents (mostly mothers) with intellectual disability who were participants in an Australian effectiveness trial of two different parent education programs. The results were consistent with the hypothesis that parent mental health mediates the relationship between contextual factors, including neighborhood disadvantage and access to support, and parenting practices, particularly parental warmth and responsiveness, which in turn mediated the relationship between parent mental health and child well-being. Feldman et al (2012) also modeled contextual influences on parental functioning and developmental outcomes for children, using data from a child protection sample of over 1000 children of parents with intellectual disability. The results were consistent with a causal chain running from low parental social support, through parental mental health issues and (in turn) emotional maltreatment, to child emotional/behavioral issues.

2.2 Chapter Summary

In summary, the available data suggest that children of parents with disability face a heightened risk of poorer well-being, broadly defined to include measures of development, health, and behaviour in multiple domains. The available data are however limited in a number of important respects. There is, for example, a dearth of population-based longitudinal data. Consequently, pathways linking parental disability to poorer child and youth outcomes are not well understood. The default assumption of child welfare/social care professionals is that parental disability is an impediment to good enough parenting, and as such, is a 'cause' of poorer outcomes (Llewellyn et al., 2003; McConnell et al., 2011a). There is however mounting evidence to suggest that the well-being of children brought up by parents with disability may be influenced by a complex interaction of numerous factors affecting the dynamics of

family life. Socioeconomic marginalization and hardship—associated with disability-based discrimination may be the cause of causes. Notably, when studies have properly controlled for confounding variables, including indicators of socioeconomic hardship, the size of the effect of parental disability on child well-being is substantially reduced. Conger and Donnellen (2007) suggest that economic hardship may affect child well-being through family stress processes and family investments. Further research, using population-based, longitudinal and ideally, child/youth self-report data, is needed to determine whether the relationship between parental disability and poorer child well-being is mediated by economic hardship, through family stress and investment pathways. A sound theoretical understanding of pathways influencing the development and well-being of children brought up by parents with disability is vital for identifying needed parenting supports, and for developing effective prevention focused policy and early intervention programs.

2.3 Current Study

Utilising the National Longitudinal Survey of Children and Youth (NLSCY), the purpose of this study was two-fold: to derive robust data on the well-being of Canadian youth with a parent with disability, and to investigate longitudinal pathways and mechanisms linking parental disability to youth well-being. Adopting a human rights based approach and framework for child well-being, multiple dimensions of well-being were examined, including health, education, social support, happiness/life satisfaction, and behaviours and risks. The primary hypothesis tested was:

> The relationship between parental disability and youth well-being is partially mediated by economic hardship leading to decreased parental investments (e.g., quality of neighbourhood, adequate nutrition, stimulation of learning) and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood.

The methods used in the study are detailed in Chapter 3. This includes a description of the NLSCY, the methods used to derive the sample for the study, a description of study variables, and the analytical approach.

Chapter 3: Methods

To investigate the relationship between parental disability, economic exposures, and youth well-being, a secondary data analysis was undertaken utilizing the most recent Canadian, population-based, longitudinal data available for the study, the National Longitudinal Survey of Children and Youth (NLSCY). The NLSCY includes data on the health and development of a representative sample of Canadian children. Biennial waves of data were collected from 1994 to 2009 (Cycles 1-8). After data preparation, youth well-being at age 18-19 was compared between youth with a parent with disability and youth with parents without disability. Structural equation modeling (SEM) was employed to investigate the nature of the relationship between parental disability and youth well-being, including the mediating role of family stress processes and family investments. Specifically, SEM was utilized to test the following hypothesis: The relationship between parental disability and youth well-being is partially mediated by economic hardship leading to decreased parental investments (e.g., quality of neighbourhood, adequate nutrition, stimulation of learning) and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood.

In undertaking this secondary data analysis, a number of methodological choices were made. SEM allows for parsimonious models of processes to be built to represent observed data (Little, 2013). Furthermore, SEM allows researchers to test assumptions regarding causal direction (Fibrgar et al., 2010). Maximum likelihood estimation with missing values was utilised for all SEM analyses. This method allows for estimates to be selected that increase the likelihood that differences that continue to exist may be due to sampling variation (Hayduk, 1987). In addition, in order to evaluate parameter estimates, Cycle 8 funnel longitudinal weights were utilised for all SEM analyses. Through data non-response and post-stratification, Statistics Canada has provided weights to correct for missing data (Statistics Canada, 2009a). Variables from the NLSCY were chosen in order to represent constructs within the structural equation models. This includes variables which provide measures of youth well-being, parental disability and mediating constructs. Although numerous definitions of well-being are present in the literature, variables were chosen in order to measure multiple dimensions of well-being (e.g., health, education,

social support, happiness/life satisfaction, behaviours and risks) present within a human rights perspective of well-being. Variables selected were limited to data availability in the NLSCY. The rationale for these and other methodological choices are detailed below.

3.1 Survey and Data Sample

3.1.1 Secondary Data Analysis

The use of large-scale or population-based secondary data for the study of parents and parenting with disability, and the developmental health or well-being of their children overall still remains a gap in current research (Llewellyn & Hindmarsh, 2015). As reported in Chapter 2, investigators have recently utilised such data to investigate pregnancy and birth outcomes, the developmental health of children brought up by parents with disabilities, and the apprehension of these children by child protective services (e.g., Brown, Cobigo, Lunsky, et al., 2016; Parish et al., 2015; Šumilo et al., 2012; Neely-Barnes et al., 2014; Hogan et al., 2007; McConnell et al., 2011). Advantages of using large scale or population-based secondary data generally include data credibility, with clear documentation of sampling, data collection and management procedures; large sample sizes, allowing for the study of small and often marginalized populations, and the statistical power to conduct complex analyses; and generalizability to broad populations (Boo & Froelicher, 2013; Schlomer & Copp, 2014). There is also the obvious practical advantage. When the requisite data are available, individual investigators or research teams can utilise secondary data to seek answers to questions they would not otherwise be able to ask, that is, without the tremendous resources required to undertake the enterprise themselves (Vartanian, 2010).

There are also a number of challenges in any research based on analyses of existing secondary data sources. To start, the researcher must choose a data set that will appropriately answer the proposed research question(s). This will include careful consideration of the survey codebooks and manuals in order to properly assess potential limitations of the data (Aponte, 2010). If the research question does not fit the data set, the question may need to be altered or a different data set may need to be found in order to carry out the research (Doolan & Froelicher, 2009). When utilizing an existing data set the researcher may subsequently lack control regarding which variables are measured, how these variables were

measured, the sampling frame and population represented in the study (Boo & Froelicher, 2013; Schlomer & Copp, 2014; Pienta et al., 2010; Brown & Semradek, 1992). There may also be limitations in controlling for reliability of the data. Pollack (1999) suggests that the coding process of variables, methods used in the collection of the data, and stability of variables measured in longitudinal research need to be considered.

3.1.2 National Longitudinal Survey of Children and Youth (NLSCY)

The secondary data utilised in this study came from the Canadian National Longitudinal Survey of Children and Youth (NLSCY). The NLSCY was conducted through Statistics Canada with sponsorship from Human Resources and Skills Development Canada (Statistics Canada, 2009a). The NLSCY consists of biennial waves of data collected from 1994 to 2009 (Cycles 1-8) on the health and development of a representative sample of Canadian children from early childhood to young adulthood. This includes data collected on child physical health, learning and behaviour and social relationships (e.g., family and friends). Overall, the NLSCY was designed to identify child risk and protective factors in order to implement effective policies and programs (Statistics Canada, 2009a). This secondary data can be accessed through Statistics Canada Research Data Centres (RDC). Housed within secure university settings across Canada, Research Data Centres are governed by the Statistics Act (Statistics Canada, 2017). All research projects must be approved by Statistics Canada in order to gain access to data. Furthermore, researchers are sworn in under the Statistics Act and are considered 'deemed employees' of Statistics Canada (Statistics Canada, 2017). The Microdata Research Contract for the current project was received January 29, 2014. For the purposes of this research, the NLSCY was accessed at the Research Data Centre located at the University of Alberta.

The Labour Force Survey (LFS) was utilised to identify households with children for the NLSCY (Statistics Canada, 1995a). The LFS provides a representative sample of the Canadian population (15 years and older) living in each of the 10 provinces. This sample does not include full-time members of the Canadian Armed Forces, individuals living on reserves, inmates living in institutions, or residents of the Yukon, Nunavut, and the Northwest Territories (Statistics Canada, 2009a). In addition to the LFS,

Cycle 1 of the NLSCY included participants from the National Population Health Survey (NPHS) (Statistics Canada, 1995a). If the randomly selected member of the household (who participated in the NPHS) was 0-11 years of age then he/she was eligible to participate in the NLSCY. A maximum of four children per household could participate in Cycle 1 (Statistics Canada, 1995a). All participation in the NLSCY survey is voluntary. The original NLSCY cohort in Cycle 1 consists of 22,831 children, 0-11 years of age, from 13,439 households (Statistics Canada, 1995a). This cohort was followed through each of the cycles and was not altered to mirror population differences through time due to immigration (See Figure 3.1) (Statistics Canada, 2009a). Therefore, this cohort may be considered exclusively longitudinal.

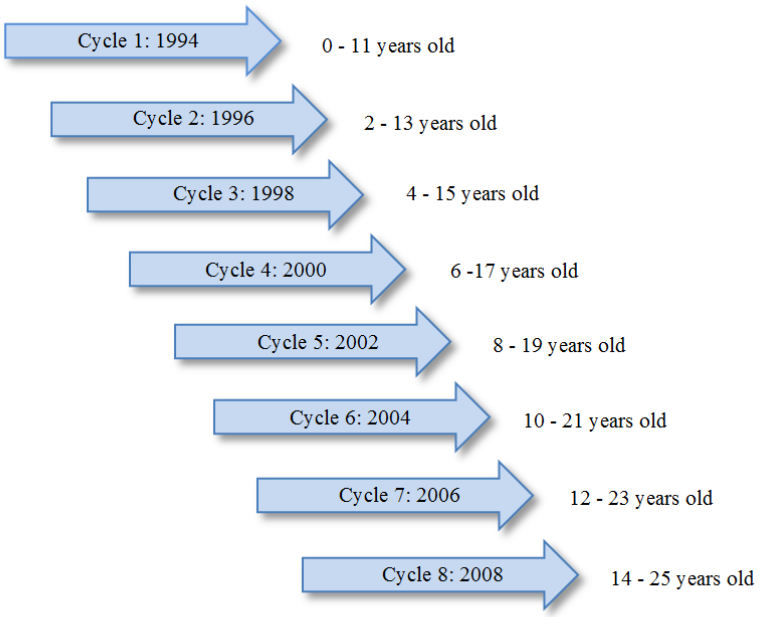


Figure 3.1 National Longitudinal Survey of Children and Youth (NLSCY): Original Cohort (adapted from Statistics Canada, 2009a).

3.1.3 Data Used in the Current Study

For the purposes of this study, only data from Cycles 1 (1994-1995), 4 (2000-2001), and 8 (2008-2009) were used, corresponding to children at age 4-5 years (early childhood), age 10-11 years (middle childhood) and age 18-19 years (youth). These time periods were chosen in order to maximize inclusion

of child and youth self-report data in analyses. In Cycle 4, the self-report questionnaire for children age 10-11 includes diverse topics, including questions pertaining to their relationship with their parents (e.g., questions relating to parental nurturance and parental rejection) (Statistics Canada, 2001). Also, in Cycle 8, the youth report questionnaire includes numerous topics, including (but not limited to) transitions (e.g., moving out of parent's home), education, labour, career aspirations, income, health, feelings, behaviours, activities, abilities, and social support (Statistics Canada, 2009a). Data was not stacked across cycles to increase sample size due to drawbacks outweighing the advantages. For example, the NLSCY questionnaire in Cycles 2 and 3 does not include variables to identify parental disability. If parental disability was identified in Cycles 2 and 3 through imputation of data in Cycle 1, stacking the data would not allow for all children to be followed to age 18-19 years. The youth report questionnaire includes multiple items (e.g., happiness/life satisfaction survey questions) for youth age 18-19 years that are not asked to younger age groups (e.g., youth age 16-17 years).

Within the NLSCY, an individual in each of the households was identified as *Person Most Knowledgeable (PMK)* of the child. The PMK was most often the mother of the child (Statistics Canada, 1995a). In Cycle 1, the PMK completed three questionnaires: the general questionnaire (i.e., collecting socio-economic data on the PMK and spouse/partner), the parent questionnaire (i.e., collecting health and social environment data on the PMK and spouse/partner), and the child questionnaire (i.e., collecting data regarding the child; e.g., health, behaviour, education, etc.) (Statistics Canada, 1995a). In addition, the Peabody Picture Vocabulary Test – Revised (PPVT-R) was administered for children 4-5 years of age (Statistics Canada, 1995a). Neighbourhood observations were also completed by the interviewer, which included observations of the physical environment in which the family lived (Statistics Canada, 1995a).

In Cycle 4, the PMK completed an entry/exit component of the survey (i.e., collecting information on demographic characteristics such as age, date of birth, sex of the PMK), the adult component (after Cycle 1 the general and parent questionnaire were combined; Statistics Canada, 1995a) and the child component (Statistics Canada, 2001). The entry/exit component was also utilised to obtain a list of household members and tracing information (Statistics Canada, 2001). Children who were 10-11

years of age in Cycle 4 also completed a mathematics computation exercise and a self-completed questionnaire (i.e., collected information on friends and family, school, behaviour, etc.). Additional information was collected from his or her teacher and principal regarding academic performance and educational environment.

In Cycle 8, the adult and child questionnaires were only completed by the PMK if the child was 17 years of age or under and still living in the household (Statistics Canada, 2009a). Youth age 18-19 years completed a literacy assessment in addition to the youth component which included topics discussed above, such as education, career aspirations, income, health, social support and relationships (Statistics Canada, 2009a). Despite living independently or still with her/his family, the youth responded to all questions within this component. (i.e., the PMK was not permitted) (Statistics Canada, 2009a).

3.2 Study Variables

3.2.1 Identifying Parents with Disability

There are varying definitions of the term disability, depending on the context in which it is used. In the context of research using large scale or population-based secondary data, disability is often identified with activity limitations or role restrictions associated with, or attributed to a long-term health condition, or a physical or mental impairment (Olkin et al., 2006; Neely-Barnes et al., 2014; Hogan et al., 2007; Šumilo et al., 2012). For example, analyzing data from the US 2006 National Health Interview Survey, Neely-Barnes et al. (2014) identified parents as having a disability if an activity limitation was identified in daily activities, work, walking or cognitive functions. Similarly, analyzing data from the US National Longitudinal Survey of Youth 1997, Hogan et al (2007) identified parents as having a disability if work participation was limited. Within the NLSCY, parents with disability could be identified in a similar fashion. Specifically, for the purposes of this study, parents with disability include those who reported, in Cycle 1, that a long-term physical condition, mental condition or a health problem either sometimes or often reduced the amount or kind of activity they could do at home, and/or at school, and/or at work, and/or in other activities (e.g., transportation or leisure), and/or in caring for children (Statistics Canada, 1995c) (See Table 3.2).

Table 3.1 Parental disability

Construct	Variable name created for use in study (Data from NLSCY Cycle 1)	Variable description
Parental disability (PMK or spouse)	c1arpmkspousechild45	Long-term physical condition, mental condition or a health problem either sometimes or often reduced the amount or kind of activity they could do at home, and/or at school, and/or at work, and/or in other activities (e.g., transportation or leisure), and/or in caring for children (RESTR-Q1) Using the above data, c1arpmkspousechild45 is dichotomous: Activity restriction of PMK or spouse (yes sometimes or often, no)

Note: Variable description in current study based on NLSCY question (Statistics Canada, 1995a; 1995c)

3.2.2 Youth Well-being

A single definition of child well-being does not exist in the literature. Instead, depending on the theoretical stance, well-being may be defined in a multitude of ways. One framework to do so is through a human rights approach to conceptualising well-being. Conceptualizing child well-being through a human rights approach focuses on the "realization of children's rights and the fulfillment of the opportunity for every child to be all she can be in the light of her abilities, skills, and potential" (Kosher et al., 2014, p.9). The United Nations Convention on the Rights of the Child (CRC) provides a framework to recognise the well-being of children (United Nations Human Rights Office of the High Commissioner for Human Rights, 1989; Bradshaw et al., 2006). The CRC includes civil, cultural, economic, political and social rights of the child (UNICEF, 2014a). More specifically, rights of the child are organized into three major classifications: survival and development rights, protection rights, and participation rights (UNICEF, 2014b). Each of these rights are realised within a set of guiding principles. Guiding principles include non-discrimination (Article 2), best interest of the child (Article 3), survival and development (Article 6) and respect for the views of the child (Article 12) (UNICEF, 2014b). The CRC emphasises the child as the focus of study instead of focusing on the family or home (Fernandes et al., 2012). This is further demonstrated by the CRC highlighting the importance of understanding child well-being in the present and the future (i.e., multiple viewpoints of the child are considered). In other words, the CRC considers child well-being along with well-becoming (Bradshaw et al., 2007).

Understanding child well-being through a human rights approach emphasises the benefit to studying well-being through multiple dimensions. The CRC outlines child rights through broad domains that highlight conditions or areas of child well-being (Kosher et al., 2014). This also provides a framework to understand child well-being that goes beyond basic needs, as the CRC demonstrates a commitment to uphold basic nurturance rights of the child and also participation and self-determination (Peterson-Badali & Ruck, 2008). Multiple domains are demonstrated through the CRC's recognition of the child's right to protection from violence, abuse, and neglect (Article 19), right to the highest attainable standard of health (Article 24), right to adequate standard of living (Article 27), right to education (Article 28), and right to play and recreation (Article 31) (United Nations Human Rights Office of the High commissioner for Human Rights, 1989). Fulfillment of a child's rights and thus a measure of child well-being may be demonstrated through positive child outcomes (Bradshaw et al., 2007). Negative outcomes may be an indicator that the child's rights are not being met. Edberg (2009) states that an overall understanding of well-being may be achieved by studying domains which provide information on positive outcomes as well as negative outcomes or risk.

In order to measure child well-being within a multi-dimensional lens, indicators within each dimension are chosen. An indicator may consist of a broad sign to specific measurements (Frønes, 2007). Differences in well-being indicators may be indicative of data availability (UNICEF, 2017; Martorano et al., 2013). Also, well-being indicators may vary based on the age of the child. This may reflect changes throughout the life course (Ben-Arieh & Frønes, 2011). For example, within the UNICEF (2013) Report Card 11, which compared child well-being, education indicators differ for children at 4 years of age (indicator: preschool participation proportion) compared to children at 15-19 years of age (indicators: proportion in further education, rate not in education or employment, achievement in reading, math and science 15 years).

Within this study, the human rights approach was utilised to provide a framework to understand youth well-being. In doing so, multiple dimensions of well-being were identified in order to reflect the broad range of child rights within the Convention on the Rights of the Child (CRC). Youth well-being

was measured at age 18-19 years (Cycle 8) and focuses on the following dimensions: Health, Education, Social Support, Happiness/Life Satisfaction, and Behaviours and Risks (See Table 3.3) (See Statistics Canada, 2009a; 2009b for additional survey information with questions utilised). Each indicator chosen, to measure the well-being dimensions, contains self-report data of the youth, which is consistent with the CRC's emphasis on the child being the focus rather than the parents or home (Fernandes et al., 2012). Indicators were chosen to include positive and negative indicators to reflect an overall picture of well-being (Edberg, 2009). For example, an indicator of health included a response of very good and good health (positive indicator), whereas an indicator of behaviours and risks included a report of stolen items and driving under the influence of alcohol (negative indicator). Furthermore, indicators that reflect well-being in the present (e.g., self-report life satisfaction) were included along with indicators that may predict potential life course trajectories (e.g., education plan for future career). Finally, indicators chosen took into consideration the developmental age of the youth. Since well-being was being measured at age 18-19 years of age, indicators were chosen to reflect this. For example, the education dimension of well-being includes self-report of ability to write, read, use a computer, solve problems, and oral communication.

Table 3.2 Youth well-being (18-19 years of age, Self-report, Cycle 8)

Construct	Variable name created for use in study (Data from NLSCY Cycle 8)	Variable description
Health	c8genhealthyouthR	General rating of health (HLTC_Q01). Responses include: poor, fair, good, very good, excellent.*
	c8depscaleyouth	Depression score (Factor score from HLTY_Q14A, HLTY_Q14B, HLTY_Q14C, HLTY_Q14D, HLTY_Q14E, HLTY_Q14F, HLTY_Q14G, HLTY_Q14H, HLTY_Q14J, HLTY_Q14K, HLTY_Q14M, HLTY_Q14N). Total score 0-36, high score presence of depression symptoms.
Education	C8youtheducation c8compabilityyouth c8writeabilityyouth c8readabilityyouth c8oralabilityyouth c8solveabilityyouth	The latent variable (C8youtheducation) includes the following variables: Rating of ability to use a computer (ABY_Q01), rating of writing abilities (ABY_Q02), rating of reading abilities (ABY_Q03), rating of oral communication abilities (ABY_Q04), rating of ability to solve new problems (ABY_Q05). Responses include: poor, fair, good, very good, excellent.
	c8lityouth	Classical score for youth literacy assessment. The total score 0-36.
	c8careeredyouth	Minimum level of education needed for planned career (CASP_Q4). Responses include: less than high school graduation, high school diploma or graduation equivalency, trade/vocational certificate or diploma or apprenticeship, college or CEGEP (Quebec) certificate or diploma, one university degree (for example, Bachelor's), more than one university degree (Master's, PhD, more than one Bachelor's).
Social support	c8socsuppyouth	Social support score (Factor score from SUPY_Q1A, SUPYQ1B, SUPYQ1C, SUPYQ1D, SUPYQ1E, SUPYQ1F, SUPYQ1G, SUPYQ1H). Total score 0- 24, high score presence of social support.
Happiness/Life satisfaction	c8selfimageyouth	General self-image score (Factor score from ABM_Q01, ABM_Q02, ABM_Q03, ABM_Q04). Total score 0-16, high score high degree of self-esteem.
Behaviours and risks	C8behrisks c8stoleyouth c8attackyouth c8driveinflyouth c8passinflyouth	The latent variable (C8behrisks) includes the following variables: In the past 12 months, about how many times have you stolen something (FBH_Q06), attacked someone with idea of seriously hurting him or her (FBH_Q07), operated a motorized vehicle (for example, a car, motorcycle or boat) after you had been drinking alcohol or taking drugs (FBH_Q08), been a passenger in a vehicle when the driver had been drinking alcohol or taking drugs (FBH_Q09). Responses include: never, once or twice, 3 or 4 times, 5 or more times.

Note: Variable description in current study based on NLSCY questions (Statistics Canada, 2009a; 2009b).
*Description based on reversed scale (from original NLSCY variable) for consistency within study

3.2.3 Mediating Variables

3.2.3.1 Household economic position.

Household economic position was measured utilising a household equivalence scale at Cycle 1 (child 4-5 years old) and Cycle 4 (child 10-11 years old). In general, household equivalence scales take into account the relative income needs of different household compositions (Nelson, 1993; Lewbel, 2004). Without utilising an equivalence scale, household income may overestimate the economic security of a large family. In other words, without employing a household equivalence scale there is an assumption that the needs of each household are equal across the income distribution (Galobardes et al., 2006). Multiple equivalence scales are described in the literature (e.g., McClements, 1977; Arias, Atella, Castagnini, & Perali, 2004; Ebert, 1999; OECD, 2005). These scales may produce varying results based on factors taken into consideration. For example, the age of children within a family may or may not be taken into consideration (OECD, 2005). In 2010, Statistics Canada revised their low income measure by choosing to adopt a square root equivalence scale (i.e., household income is divided by the square root of household size) (Murphy et al., 2010). The rationale for adopting this equivalence scale was based on the need for international consistency and it is monotonic in terms of household size. Currently, the Organisation of Economic Co-operation and Development (OECD) utilises the square root scale when assessing income inequality across countries (OECD, 2008; OECD, 2011). For the purposes of this study a square root equivalence scale was utilised to measure household equivalized income. This is defined as the reported household income divided by the square root of the number of members living in the household including adults and children. In order to produce comparable metrics, household equalized income was transformed into scales ranging from 1 to 43 (Cycle 1) and 1 to 42 (Cycle 4). Comparable metrics may assist statistical software packages to converge on estimates for structural equation models (Little, 2013). Furthermore, similar variable metrics may assist with model evaluation and identifying potential problems when performing structural equation modeling (Little, 2013). The variables for household equivalized income are included in Table 3.3 Parent mediating variables (NLSCY Cycle 1 and Cycle 4). For additional survey information also see Statistics Canada, 1995a; 1995c; 2001; 2003a).

3.2.3.2 Parental investments in children.

Based on the family investment model, mediating variables were chosen to reflect: I) stimulation of learning, II) standard of living, and III) neighbourhood quality (Conger and Donnellen, 2007). PMK responses from Cycle 1 (child 4-5 years old) and Cycle 4 (child 10-11 years old) of the NLSCY include measures of each of these categories (See Table 3.3). Neighbourhood quality was measured by the neighbourhood scales based on research completed at the University of Harvard on neighbourhoods in Boston and Chicago and parent's view of danger (Statistics Canada, 2001; Statistics Canada, 1995b). In Cycle 4, responses from child self-report was also included (note: these responses were unavailable for children age 4-5 in Cycle 1). This includes child report of parental stimulation of learning (i.e., parents help at school if there are problems). For additional survey information also see Statistics Canada, 1995a; 1995c; 2001; 2003a; 2003b.

3.2.3.3 Family stress processes.

Based on the family stress model of economic hardship, variables were selected from the NLSCY to indicate parent mental health, family functioning, and harsh parenting (Conger & Donnellan, 2007). Parent mental health was measured in Cycle 1 (child 4-5 years old) and Cycle 4 (child 10-11 years old) through a depression scale (See Table 3.3). A high score on this depression scale indicates the presence of depression symptoms reported by the PMK. This scale was adapted from the Depression Rating Scale (CED-D) developed by the Epidemiology Study Center of the National Institute of Mental Health in the United States (Statistics Canada, 2001). Instead of measuring overall mental health of the PMK, developers of the NLSCY chose to focus on depression due to prevalence, lack of population data in this area, and past research showing the potential effect of parental depression on children (Statistics Canada, 2001).

Family functioning was measured through the family functioning scale in Cycle 1 (child 4-5 years old) and Cycle 4 (child 10-11 years old) with the family functioning scale (See Table 3.3). Researchers at the Chedoke-McMaster Hospital of McMaster University developed the family functioning scale in order to measure problem solving, communication, roles, affective involvement, affective responsiveness, and

behaviour control within the family (Statistics Canada, 2001). A high score, as reported by the responses of the PMK, indicates a high degree of family dysfunction.

Parent report harsh parenting was measured in Cycle 1 (child 4-5 years old) and Cycle 4 (child 10-11 years old) with four scales: positive interaction, hostile ineffective parenting, consistency, and punitive/aversive (i.e., name of scale changed to rational parenting style in Cycle 4) (See Table 3.3). These scales were adapted from the Parent Practices Scale of Stayhorn and Weidman and researchers at the Chedoke-McMaster Hospital and the Vanderbilt University (Statistics Canada, 2001). Utilising the four scales, latent variables were created in the current study to provide a single measure of parent report harsh parenting in Cycle 1 and parent report harsh parenting in Cycle 4. Parent-report harsh parenting was therefore measured through low positive parenting interactions, high hostile/ineffective parenting interactions, low consistent parenting interactions, and high punitive/aversive parenting interactions. Child report harsh parenting was also measured in Cycle 4 (child age 10-11 years). Child report harsh parenting was unavailable for Cycle 1 (child age 4-5 years). These responses comprise the parental nurturance scale and the parental rejection scale. Questions from these scales were included in the NLSCY from the Western Australia Child Health Survey (Statistics Canada, 2001). Utilising the two scales, the researcher of the current study created a latent variable to provide a single measure of child-report harsh parenting in Cycle 4. Child-report harsh parenting was therefore measured through low parental nurturance and high parental rejection. For additional survey information on variables related to family stress processes in the current study also see Statistics Canada, 1995a; 1995c; 2001; 2003a; 2003b.

Table 3.3 Parent mediating variables (NLSCY Cycle 1 and Cycle 4)

Construct	Variable name created for use in study (Data from NLSCY Cycle 1)	Variable name created for use in study (Data from NLSCY Cycle 4)	Variable description
Household economic position	Household income: Ratio of household income for the economic family (LICOR) (/1000) multiplied by the low income cut off Persons in household ---------- Variable name: c1equivincomescale3	Household income Persons in household ---------- Variable name: c4equivincomescale4	Equivalized income was computed by household income/SQRT(persons in the household) c1equivincomescale3 Scale ranges from 1 - 43 c4equivincomescale4 Scale ranges from 1 - 42
Parent investments in children: Stimulation of learning	Variable name: c1farschool2	Variable name: c4farschool2	How far hope child will go in school (Cycle 1: EDU-Q18B; Cycle 4: EDU_Q36). Responses include: primary/elementary school, secondary or high school, Cycle 1 responses: go to community college, technical college, CEGEP, learn a trade, Cycle 4 responses: community college, CEGEP or nursing school, trade technical or vocational school, or business college, university
		Child self-report Variable name: c4schoolparencR	Child report of parent encouragement to do well in school (B18b). Responses include: never, rarely, some of the time, most of the time, all of the time*
Parent investments in children: Standard of living	Child experienced being hungry Frequency ---------- Variable name: c1childhungry1	Child experienced being hungry Frequency ---------- Variable name: c4childhungry1	Variable was computed from data from the following survey questions: Report of child experienced being hungry because the family has run out of food or money to buy food (Cycle 1: PAR-Q26A; Cycle 4: PAR_Q31A). and how often (Cycle 1: PAR-Q26B; Cycle 4: PAR_Q31B). For how often question responses include: regularly, end of the month, more often than end of the month, every few months, occasionally, not a regular occurrence
Parent investments in children: Neighbourhood quality	Variable name: c1neighsafety	Variable name: c4neighsafety	Neighbourhood safety score. Total score 0-6 (Cycle 1) and 0-9 (Cycle 4: Factor score from SAF_Q5A, SAF_Q5B, SAF_Q5C), a high score high perceived neighbourhood safety.

Parent mental health	Variable name: c1deppmk	Variable name: c4deppmk	Depression score (Cycle 1: Factor score from CHLT-Q12A, CHLT-Q12B, CHLT-Q12C, CHLT-Q12D, CHLT-Q12E, CHLT-Q12F, CHLT-Q12G, CHLT-Q12H, CHLT-Q12I, CHLT-Q12J, CHLT-Q12K, CHLT-Q12L; Cycle 4: Factor score from HLA_Q12A, HLA_Q12B, HLA_Q12C, HLA_Q12D, HLA_Q12E, HLA_Q12F, HLA_Q12G, HLA_Q12H, HLA_Q12I, HLA_Q12J, HLA_Q12K, HLA_Q12). Total score 0-36, a high score depression symptoms.
Family functioning	Variable name: c1famfunct	Variable name: c4famfunct	Family functioning scale (Cycle 1: Factor score from FNC-Q1A, FNC-Q1B, FNC-Q1C, FNC-Q1D, FNC-Q1E, FNC-Q1F, FNC-Q1G, FNC-Q1H, FNC-Q1I, FNC-Q1J, FNC-Q1K, FNC-Q1L; Cycle 4: Factor score from FNC_Q1A, FNC_Q1B, FNC_Q1C, FNC_Q1D, FNC_Q1E FNC_Q1F FNC_Q1G, FNC_Q1H, FNC_QI1, FNC_Q1J, FNC_Q1K, FNC_Q1L). Total score 0-36, a high score family dysfunction.
Harsh parenting	Variable name: c1posinterparentingR Variable name: c1hostilepmk Variable name: c1consistpmkR Variable name: c1punitpmk ---------- Latent variable name: C1harshparenting	Variable name: c4posinterparentingR Variable name: c4hostilepmk Variable name: c4consistpmkR Variable name: c4punitpmk ---------- Latent variable name: C4harshparenting	The latent variables (C1harshparenting, C4harshparenting) include the following variables: **Positive interaction** c1posinterparentingR/c4posinterparentingR (Cycle 1: Factor score from PAR-Q1, PAR-Q2, PAR-Q3, PAR-Q6, PAR-Q7; Cycle 4: Factor score from PAR_Q1, PAR_Q2, PAR_Q3, PAR _Q6, PAR_Q7). Total score 0-20, low score positive interactions.* **Hostile ineffective parenting** c1hostilepmk/c4hostilepmk (Cycle 1: Factor score from PAR-Q4, PAR-Q8, PAR-Q9, PAR-Q13, PAR-Q14, PAR-Q15, PAR-Q18; Cycle 4: Factor score from PAR_Q4, PAR_Q8, PAR_Q9, PAR_Q13, PAR_Q14, PAR_Q15, PAR_Q18). Total score 0-25/28, high score hostile/ineffective interactions. **Consistent parenting** c1consistpmkR/c4consistpmkR (Cycle 1: Factor score from PAR-Q10, PAR-Q11, PAR-Q12, PAR-Q16, PAR-Q17; Cycle 4: Factor score from PAR_Q10, PAR_Q11, PAR_Q12, PAR_Q16, PAR_Q17). Total score 0-20, low score consistent parenting behaviour.* **Punitive/aversive interactions** c1punitpmk/c4punitpmk (Cycle 1: Factor score from PAR-Q21, PAR-Q22, PAR-Q23, PAR-Q24; Cycle 4: Factor score from PAR_Q21, PAR_Q22, PAR_Q23, PAR_Q24). Total score 0-19/20, high score punitive/aversive interactions.

	The latent variable (C4harshparentingchild) includes the following variables:
Child self-report Variable name: c4parentnuturR Variable name: c4parentreject ---------- Latent variable name: C4harshparentingchild	**Parental nurturance** (G9a, G9d, G9l, G9n, G9r, G9h, G9i) Total score 0-28, low score parental nurturance.* **Parental rejection** (G9c, G9g, G9j, G9m, G9p, G9q, G9k) Total score 0-28, high score parental rejection.

Note: Variable description in current study based on NLSCY questions (Statistics Canada, 1995a; 1995c; 2001; 2003a; 2003b). *Description based on reversed score (from original NLSCY variable) for consistency within study

3.3 Preparing the Data

The data were prepared for analysis utilising Stata 15 software. First, data from Cycles 1, 4 and 8 were merged into a single data file. This included: Cycle 1 PMK report questionnaire (i.e., general questionnaire, parent questionnaire, and child questionnaire), Cycle 4 PMK report questionnaire (i.e., parent questionnaire and child questionnaire), Cycle 4 child report questionnaire, and Cycle 8 youth report questionnaire. In order to correctly merge files together, data in each of the files was first sorted by the unique person identifier. Data from Cycles 1 PMK report questionnaire and Cycle 4 PMK report questionnaire were merged utilising the keep(match) command to specify that cases will only remain in the merged data set if they are present across cycles. This data file was renamed as the master data file. Next, Cycle 4 child report questionnaire was merged with the master data file utilising the keep(match) command. This data file was renamed as the new master data file. The Cycle 8 youth report questionnaire was then merged with the new master data file utilising the keep(match) command. This data file was renamed as the final master data set. Finally, the NLSCY Cycle 8 Bootstrap Original Longitudinal master was merged with the final master data set. Please see section 3.3.2 Weighting of the data for the discussion on the rationale for weights utilised.

3.3.1 Missing Data

Missing data have often been thought of as a universal dilemma within data analysis (Graham, 2009; Allison, 2003). Researchers have discussed at length the harmful effects missing data may have on

data analysis (e.g., parameter bias and inaccurate hypothesis testing results) (Newman, 2014; Barry, 2005). Below the causes of missing data and missing data mechanisms will be discussed followed by the missing data analyses and statistical methods utilized to account for missing data.

3.3.1.1 Causes of missing data.

Missing data may result from diverse causes. McKnight et al. (2007) suggest that missing data may be due to participant characteristics, study design, or the interaction between participants and study design. For example, attrition (i.e., the permanent loss of participants in a study) may occur in longitudinal studies due to participant morbidity or mortality (Meneses et al., 2014; Young et al., 2006; Feng et al., 2012). It has also been shown that participants are more likely to drop out of a longitudinal study if they have lower socioeconomic status (Powers & Loxton, 2010). The study design may impact the amount of missing data through what is referred to as undercoverage (i.e., the exclusion of certain eligible participants in a study) (Murphy, 1990). For example, in Cycle 2 of the National Longitudinal Survey of Children and Youth (NLSCY) some participants were not followed up with due to funding constraints (Statistics Canada, 1997). This included all participants who were selected through the National Population Health Survey (NPHS) in Cycle 1. In addition, a maximum of two children per household were included in Cycle 2 (Statistics Canada, 1997). This differs from Cycle 1 when a maximum of four children could participate in the survey (Statistics Canada, 2009a). Item non-response (i.e., specific questions within a survey that are not completed) may occur due to participant characteristics (Schafer & Graham, 2002; Murphy, 1990; McKnight et al., 2007). For example, some participants may intentionally not respond to certain survey questions they find offensive (McKnight et al., 2007). Missing data may also result from surveys that demand a large amount of a participants' time (McKnight et al., 2007). Also, some participants may not be able to complete all survey questions on a long questionnaire due to illness (Messiah et al., 2011; Knight et al., 2007). Statistics Canada (2009) states that item non-response may occur due to unintentional skipping of questions, fatigue, sensitive questions asked, or not all members of the household responding to survey questions asked (e.g., person most knowledgeable (PMK) responds to questions but her/his spouse does not).

3.3.1.2 Missing data mechanisms.

Missing data may be *missing completely at random* (MCAR), *missing at random* (MAR), or *not missing at random* (NMAR) (Rubin, 1976; Graham, 2009). Missing completely at random (MCAR) refers to missing data that are independent from observed and unobserved variables in the study (Little & Rubin, 2002). Data that is considered MCAR may occur when a randomly selected subsample is only asked back to participate in a longitudinal study after a certain cycle or wave (Feldman & Rabe-Hesketh, 2012). Overall, data that are MCAR is uncommon and it is not possible to know for certainty if the data are MCAR (Feldman & Rabe-Hesketh, 2012; Jeličić et al., 2009). Missing at random (MAR) refers to missing data that are dependent of observed variables in the study but independent of unobserved variables (Little & Rubin, 2002). For example, after controlling for certain variables in a study, the chance of having missing data for a particular variable is unrelated to a participant's response (Acock, 2005). Finally, not missing at random (NMAR) refers to missing data that are dependent on unobserved variables in the study (Little & Rubin, 2002). In other words, the probability of missingness depends on the missing data values themselves even after controlling for variables in the study that may be related to missingness (Newman, 2014). In general, data that are MCAR is considered unproblematic, whereas data that are MAR or NMAR cannot be ignored (Graham, 2009).

3.3.1.3 Missing data analysis.

3.3.1.3.1 *Attrition.*

An attrition analysis of the missing data was completed for the NLSCY data sample utilized in this study. Within the current study, the reported proportion of children who have a parent with a disability was similar from Cycle 1 through to 8. Results demonstrate that the percentage of participants (children) lost from Cycles 1, 4 and 8 were similar for children with a parent with disability (PMK or spouse) compared to children with parents without disability.

3.3.1.3.2 *Item non-response.*

An analysis of item non-response (i.e., missing data within individual variables) was performed for variables utilized within bivariate comparisons and structural equation models. Most variables have

low missing observations (<1.0% to <5.0%). Variables with higher missing observations consisted of child (age 10-11) self-completed survey questions in Cycle 4.

3.3.1.4 Statistical approaches to account for missing data.

Statistical approaches to account for missing data were taken into consideration before completing analyses. Due to the overall low amount of item non-response (see Table 3.7: Item non-response of variables), listwise deletion was utilised for each of the logistic and linear regression analyses (described in detail in section 3.4). Listwise deletion, also known as complete case analysis, drops cases which do not have complete data (Schafer & Graham, 2002). One advantage of listwise deletion is that it produces a data set that is complete for standard statistical analyses (Baraldi & Enders, 2010). A major drawback to listwise deletion is that it will lower sample size thus decreasing statistical power (i.e., more chance of false negatives or Type II errors when conducting hypothesis testing) (Graham, 2009). Statistics Canada survey weights and bootstrap weights were also utilised for each logistic and linear regression analysis. Please see discussion below (section 3.3.2 Weighting of the data) on Statistics Canada weights and missing data.

Missing data were also considered for each structural equation model tested. Maximum likelihood estimation with missing values (MLMV) was used for each structural equation model tested. This approach may also be referred to as full information maximum likelihood estimation (Stata, 2018). Compared to other estimation methods, MLMV does not delete cases (e.g., listwise deletion) (Stata, 2017). Instead, cases with missing data are included in the analysis and parameter estimates are derived from variable covariation (Peters & Enders, 2002). Utilizing full information maximum likelihood estimate will produce accurate parameter estimates when data is missing completely at random (MCAR) and missing at random (MAR) (Enders & Bandalos, 2001). The full information maximum likelihood estimation approach assumes multivariate normality (Enders & Bandalos, 2001). Enders (2001) investigated how nonnormal missing data may effect structural equation modeling analyses when full information maximum likelihood estimation is utilized. The results of this study demonstrated that missing data that is nonnormal will produce biased results similar to when data is nonnormal and

complete. For example, an increase in the rejection rates of the null hypothesis. Taking this into consideration, Enders (2001) further states that the proportion of missing data does not increase nonnormality bias. Statistics Canada survey weights were also utilized for each structural equation model. Please see discussion below (section 3.3.2 Weighting of the data) on Statistics Canada weights and missing data.

3.3.2 Weighting of the Data

Representative surveys, such as the National longitudinal Survey of Children and Youth (NLSCY), collect a sample from the population. This sample may be derived from *complex sampling strategies* which aim to provide a sufficient number of participants with specific characteristics (Thomas et al., 2005). The NLSCY utilised Statistics Canada Labour Force Survey and the National Population Health Survey (NPHS) in Cycle 1 in order to locate households with children (Statistics Canada, 1995a) (See section 3.1.2 National Longitudinal Survey of Children and Youth (NLSCY) above for additional details). Sampling was designed in order to produce an adequate number of participants from each of the provinces and each of the key age group cohorts (Statistics Canada, 1995a). Statistics Canada has also provided weights (longitudinal and cross-sectional) in order to correct for missing data through non-response and post-stratification (Statistics Canada, 2009a). The non-response adjustment is intended to account for non-response from Cycle 1 through 8. Statistics Canada achieves this through a method called response homogenous groups (RHGs) (Statistics Canada, 2009a). This method includes computing adjustment factors for groups of participants with similar response patterns. Post-stratification will also adjust data, in this case to known demographic information including child age, sex and the province in which they live. Furthermore, Statistics Canada provides funnel longitudinal weighting and non-funnel longitudinal weighting (Statistics Canada, 2009a). Cycle 8 funnel longitudinal weights include children (longitudinal cohort) who participated in each cycle (1 through 8). Whereas, Cycle 8 non-funnel longitudinal weights include children (longitudinal cohort) who participated in Cycle 8, but may not have participated in one or more previous cycles. Therefore, since this study only required children to participate in Cycles 1, 4 and 8 (and not all cycles in-between), Cycle 8 longitudinal non-funnel weights

were applied to all logistic and linear regression analyses and structural equation modeling for the purposes of evaluation of parameter estimates. Reported fit indices of structural equation models do not have Cycle 8 longitudinal weights applied due to limitations with Stata software.

Bootstrapping was also utilized for each logistic and linear regression analysis completed. Bootstrapping involves repetitively sampling the data in order to provide an estimate of the sampling distribution (Mooney & Duval, 1993). Mooney and Duval suggest that applying bootstrapping may be useful in situations where there is an unknown sampling distribution or the sampling distribution is not well managed. Statistics Canada (2009) suggests to use bootstrapping due to the influence sample design may have on variance. Bootstrap weights may assist in providing more accurate variance estimates and thus test statistics (Statistics Canada, 2009a). Statistics Canada provides bootstrap weights that may be merged with the data set. Bootstrap weights from Cycle 8 were used for each logistic and linear regression analysis.

3.4 Analysis

3.4.1 Bivariate Comparisons

3.4.1.1 Family, household, and youth characteristics.

Family, household and youth characteristics were studied in Cycle 1 (children 4-5 years old), Cycle 4 (children 10-11 years old), and Cycle 8 (youth 18-19 years old). This included bivariate comparisons between families with a parent with disability and families without a parent with disability (i.e., parent age, gender, relationship to child, marital status, education, working status, households living in rural vs urban areas, total persons in household, total children in household, household income/equivalized income, youth gender, total siblings in household, living situation in Cycle 8). Tabulation, cross-tabulation, and linear regression and logistic regression were employed for the purpose of between group comparisons. Included variables were composed of scales (original or rescaled) for linear regression analyses or were transformed into dichotomous variables for logistic regression analyses. Listwise deletion was employed as a means to handle item non-response within variables. Please see discussion above on statistical approaches to account for missing data. Cycle 8 non-funnel

longitudinal weights and bootstrap weights were applied to each bivariate comparison. Please see section 3.3.2 Weighting of the data for discussion. Release guidelines established in the Microdata User guide – National Longitudinal Survey of Children and Youth Cycle 8 were followed to ensure confidentially and acceptable data quality was upheld (Statistics Canada, 2009a).

3.4.1.2 Youth well-being.

Included in the bivariate analyses, youth well-being was studied through linear and logistic regression of variables in Cycle 8 (youth 18-19 years old). This included bivariate statistical comparisons of the well-being of youth with a parent with disability and youth without a parent with disability. Variables within each well-being dimension (i.e., health, education, social support, happiness/life satisfaction, behaviours and risks) were studied. Included variables were composed of scales (original or rescaled) for linear regression analyses or were transformed into dichotomous variables for logistic regression analyses. Listwise deletion was employed as a means to handle item non-response within variables. Cycle 8 non-funnel longitudinal weights and bootstrap weights were applied to each bivariate comparison. Please see section 3.3.2 Weighting of the data for discussion. Release guidelines established in the Microdata User guide – National Longitudinal Survey of Children and Youth Cycle 8 were followed to ensure confidentially and acceptable data quality was upheld (Statistics Canada, 2009a).

3.4.2 Structural Equation Modeling

Structural equation modeling (SEM) was employed to test the study hypothesis (i.e., The relationship between parental disability and youth well-being is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood). SEM allows researchers to build parsimonious models of the processes that represent observed data (Little, 2013). An analysis utilising SEM may be thought of as having two main goals: 1) “understand patterns of covariance (i.e., the strength of an association between X and Y and their variabilities) among a set of observed variables and 2) explain as much of their variance as possible within the researcher’s model” (Kline, 2010, p.10). SEM allows researchers to statistically control for the effects of other variables (similar to multiple

regression analyses), and takes into account random measurement error and (in some cases) systematic measurement error providing a more accurate estimate of the effects of the hypothesized causal variable (Fabrigar et al., 2010). In addition, Fabrigar et al. (2010) state that SEM allows greater flexibility in analysing competing models. For example, SEM allows researchers to test various assumptions regarding causal direction. Furthermore, unlike regression, SEM allows multiple sequential regressions to be fit simultaneously (allowing for greater parsimony and thus more precise estimates, smaller standard errors and less bias) and non-recursive relations to be studied (Iacobucci, 2009).

In order to conduct an SEM analysis, the first step is specification of the model (Kline, 2010). This involves representing the proposed hypotheses in a model diagram (Please see Section 3.4.2.1 on the graphical representation of structural equation models tested). Confirmatory factor analysis (CFA) was employed to establish the measurement model when two or more observed indicators represent a theoretical concept (Li, 2011). Essentially, CFA "...tests if the indicators load significantly on the underlying factor" (Li, 2011, p. 9). CFA may be thought of as providing a more parsimonious representation of the covariation of indicators (Brown & Moore, 2012). Thus there are less latent variables in the model than observed indicators. CFA was utilised for the following latent variables: youth education (C8youtheducation), youth behaviours and risks (C8behrisks), and harsh parenting (C1harshparenting) (C4harshparenting) (C4harshparentingchild). According to Brown and Moore (2012), evaluation of CFA models need to include: goodness of fit, identifying areas of poor fit, and an evaluation of the parameter estimates. Model fit was based on the Chi-square 'lack-of-fit' test, the Bentler Comparative Fit Index (CFI) (>0.95), and the Steiger-Lind Root Mean Square Error of Approximation (RMSEA) (<0.07) (Hu & Bentler, 1998; 1999; Bentler, 1990; Steiger, 2007*;* Kline, 2010*)*. Good model fit does not entail that parameter estimates are statistically significant (Bowen & Guo, 2012). Bowen and Guo state that statistical significance of CFA loadings is needed in order to interpret meaningful differences within the model. Nonsignificance may provide grounds for dropping a variable from the CFA analysis (Iacobucci, 2009). Finally, factorial invariance was evaluated for the latent variables: C1harshparenting and C4harshparenting. Within the context of longitudinal SEM, testing

factorial invariance evaluates whether the same construct and metric are consistent across time (Widaman et al., 2010). Factorial invariance was tested according to the levels of invariance provided by Widaman and Reise (1997). This includes 1) Configural invariance, 2) Weak factorial invariance, 3) Strong factorial invariance, and 4) Strict factorial invariance.

The next step entails confirming the model is correctly identified (i.e., it is theoretically possible for each model parameter to have an estimate derived) (Kline, 2010). This is followed by estimation of the model, evaluation of model fit, interpretation of the parameter estimates, and consideration of equivalent models (Kline, 2010). Model fit was evaluated based on the Chi-square 'lack-of-fit' test and supplementary fit indices, including the Bentler Comparative Fit Index (CFI) (>.95), and the Steiger-Lind Root Mean Square Error of Approximation (RMSEA) (<.07) (Hu & Bentler, 1998; 1999; Bentler, 1990; Steiger, 2007; Kline, 2010). The Standardized Root Mean Square Residual (SRMR) was not utilised due to missing values (i.e., fit index not provided in Stata output due to missing data). Unstandardized and standardized parameter estimates were considered for each structural equation model. Unstandardized parameter estimates are useful for determining statistical significance (Weston & Gore, 2006). Whereas standardized parameter estimates enable researchers to accurately compare coefficients (i.e., when variables contain distinct scales unstandardized estimates may not allow for accurate comparison) (Weston & Gore, 2006).

Maximum likelihood estimation with missing values was utilised for all SEM analyses. This approach produces parameter estimates that maximize the likelihood that the covariances were pulled from the population (Kline, 2010). Essentially, estimates are selected that increase the likelihood that differences that continue to exist may be due to sampling variation (Hayduk, 1987). Crisci (2012) states that maximum likelihood estimation may be considered confirmatory in that it operates by comparing covariances produced by model specification to covariances of the data provided. As discussed above (Section 3.3.1.4 Statistical approaches to account for missing data), in order to produce accurate results, maximum likelihood estimation with missing values assumes missing values are Missing at Random (MAR) or Missing Completely at Random (MCAR) and data is considered multivariate normal (Enders

& Bandalos, 2001). However, Little (2013) suggests that maximum likelihood estimation can tolerate moderate violations to the multivariate assumption. Release guidelines established in the Microdata User guide – National Longitudinal Survey of Children and Youth Cycle 8 were followed to ensure confidentially and acceptable data quality was upheld (Statistics Canada, 2009a). This included utilizing survey weights to achieve path coefficients for each model (Please see section 3.3.2 Weighting of the data).

3.4.2.1 Graphical representation of structural equation models tested.

In order to complete the first step of SEM analysis, specification of the model, a model diagram of the proposed hypotheses is needed (Kline, 2010). LISREL (i.e., linear structural equations, a statistical software program) has provided equations and covariance matrices to fit a structural equation model (Hayduk, 1987). Understanding the notation within these equations provides a means to describe model connections. Equation 1 below represents direct effects between concepts (Hayduk, 1987). Eta (η) represents each endogenous variable. Endogenous variables may be thought of as dependent variables within the model (Schreiber, 2008). Whereas, xi (ξ) represents each exogenous variable. Exogenous variables may be thought of as independent variables (Schreiber, 2008). Beta (B) and Gamma (Γ) represent the structural coefficient matrices which will be estimated in the model (lower case beta (β) and gamma (γ) are utilised in the graphical representations discussed below). Finally, Zeta (ζ) represents error in the equation. Equation 2 and 3 shown below represent the "…link between conceptual variables to their observed indicators." (Hayduk, 1987, p.92). More specifically, equation 2 connects endogenous concepts to endogenous indicators (y) and equation 3 connects exogenous concepts to exogenous indicators (x). The errors in each of the equation are represented by Epsilon (ϵ) and delta (δ) respectively.

$$\eta = \mathrm{B}\eta + \Gamma\xi + \zeta \quad (1)$$

$$y = \Lambda_y\eta + \epsilon \quad (2)$$

$$x = \Lambda_x\xi + \delta \quad (3)$$

Below are the graphical representations of each structural equation model for the hypothesis (i.e., The relationship between parental disability and youth well-being is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood). This includes each dimension of youth well-being studied: Health, Education, Social Support, Happiness/Life Satisfaction, and Behaviours and Risks (Please see Table 3.2: Youth well-being (18-19 years of age, Self-report, Cycle 8). Well-being dimensions with more than one outcome variable were not combined into the same model due to software limitations. Instead of reducing the mediating variables in each model, the models were run separately for each well-being variable (latent and observed) in order to preserve the complexity of the family stress model and the family investment model. Furthermore, the graphical representations below include structural equation models which exclusively include parent report mediating variables and structural equation models which include a combination of parent report meditating variables and child report mediating variables. Including available child report mediating variables enables examination of select variables from the child's perspective at age 10-11 years (Cycle 4). As discussed above, child report of mediating variables were unavailable for children in Cycle 1 (e.g., children 4-5 years did not respond to questions regarding harsh parenting) and therefore parent report harsh parenting was utilised.

For the youth well-being dimension of health, separate structural equation models are presented for: youth general health (parent report mediating variables), youth general health (parent and child report mediating variables), youth depression (parent report mediating variables), and youth depression (parent and child report mediating variables) (See Figures 3.2-3.5).

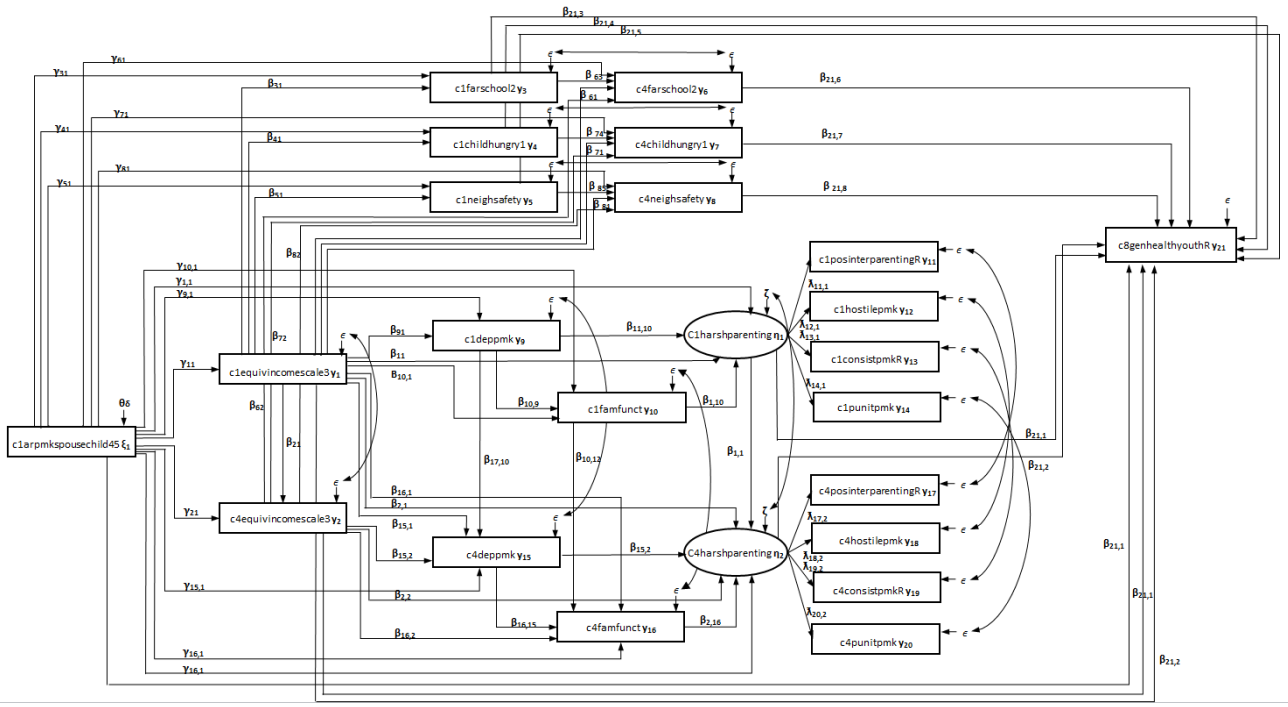


Figure 3.2 The relationship between parental disability and **youth general health (c8genhealthyouthR)** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent report** mediating variables.

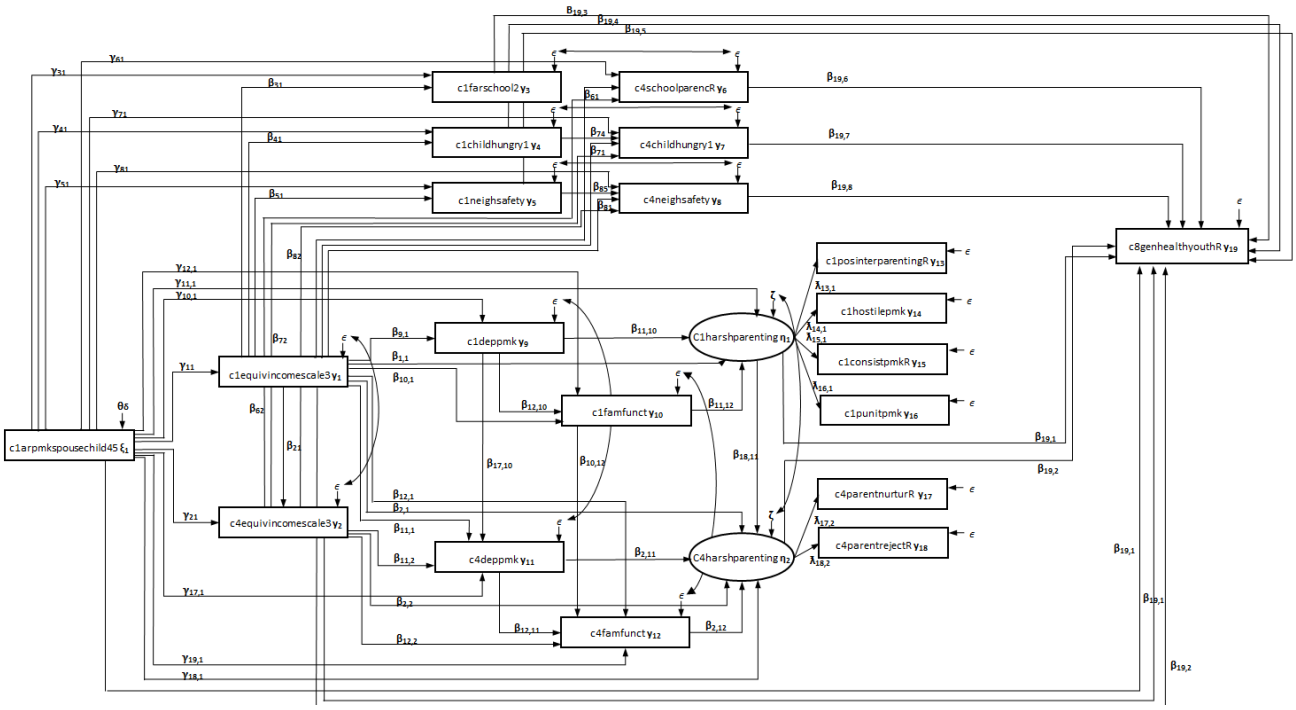


Figure 3.3 The relationship between parental disability and **youth general health (c8genhealthyouthR)** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent and child report** mediating variables.

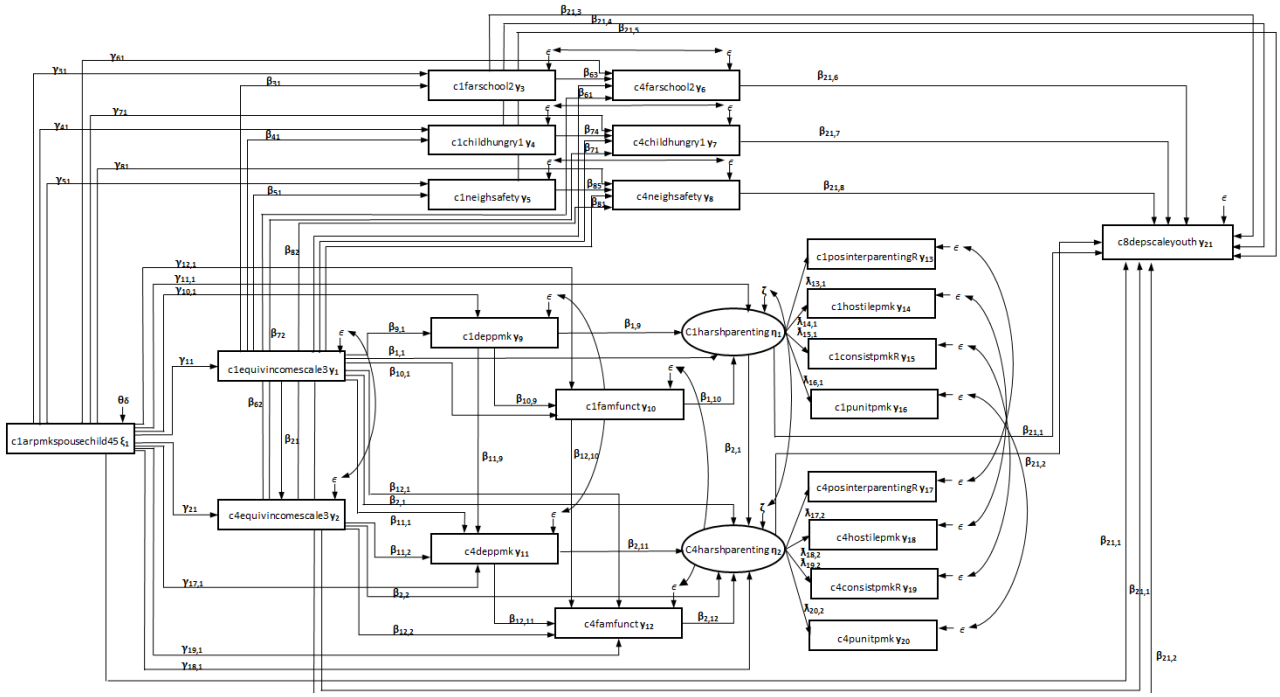


Figure 3.4 The relationship between parental disability and **youth depression (c8depscaleyouth)** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent report** mediating variables.

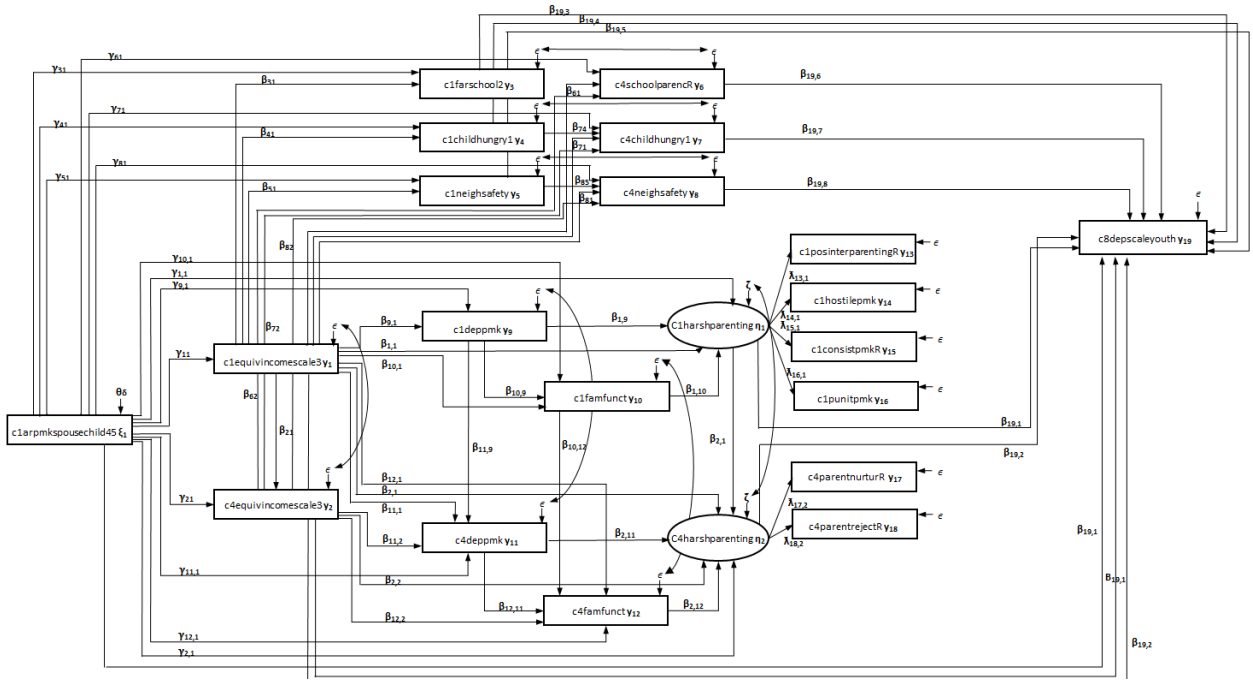


Figure 3.5 The relationship between parental disability and **youth depression (c8depscaleyouth)** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent and child report** mediating variables.

For the youth well-being dimension of education, separate structural equation models are presented for: the latent variable of youth education (parent report mediating variables), the latent variable of youth education (parent and child report mediating variables), youth literacy (parent report mediating variables), youth literacy (parent and child report mediating variables), youth career education (parent report mediating variables), and youth career education (parent and child report mediating variables) (See Figures 3.6-3.11).

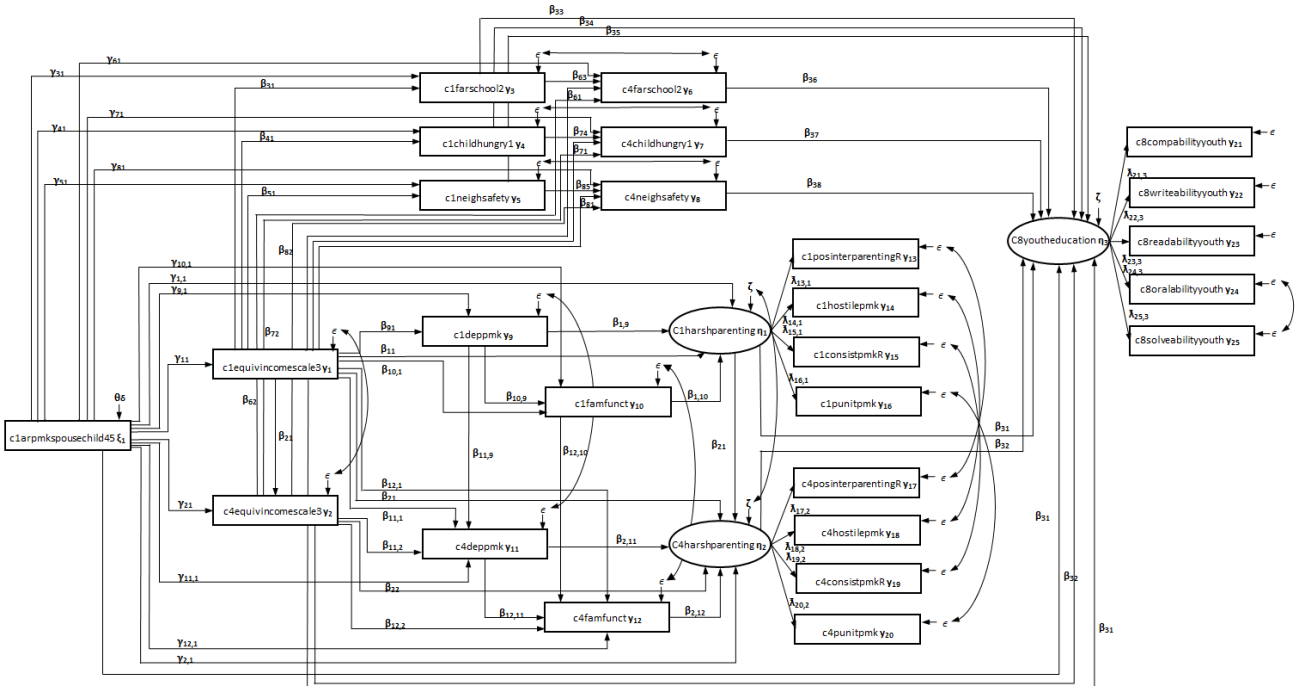


Figure 3.6 The relationship between parental disability and **youth education (C8youtheducation)** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent report** mediating variables.

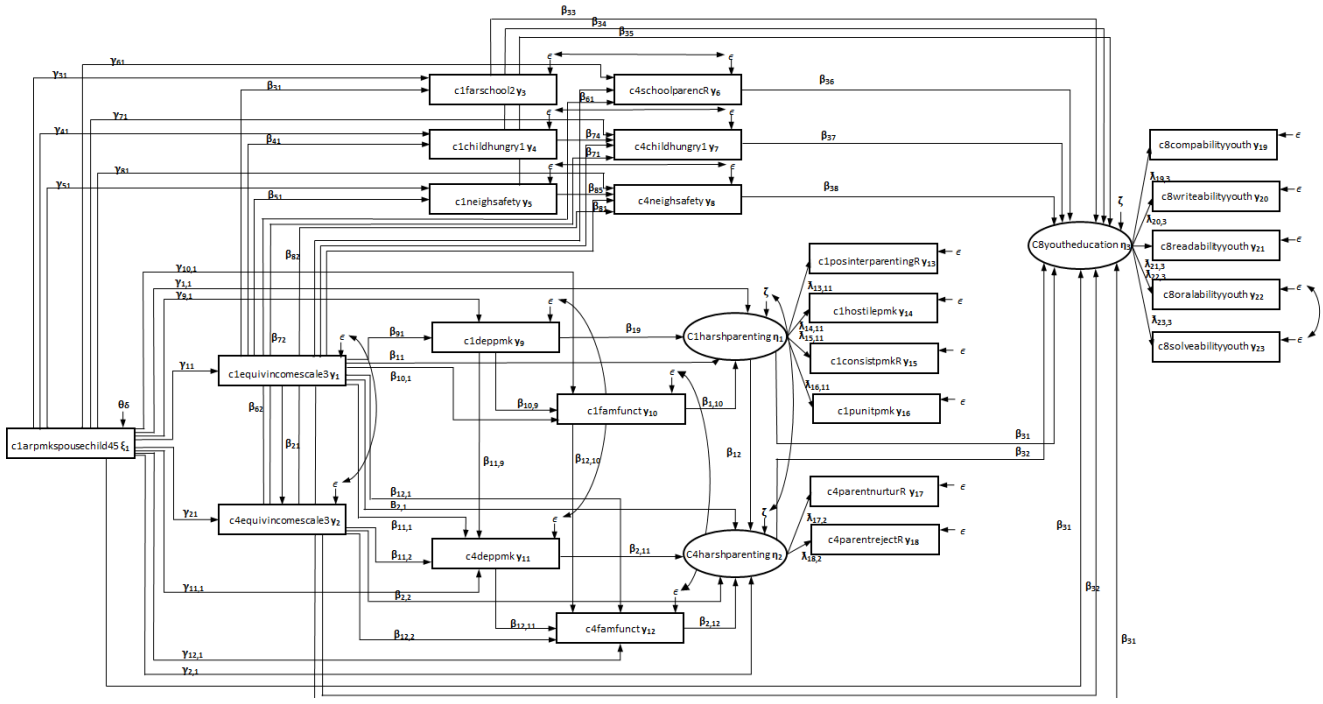


Figure 3.7 The relationship between parental disability and **youth education (C8youtheducation)** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent and child report** mediating variables.

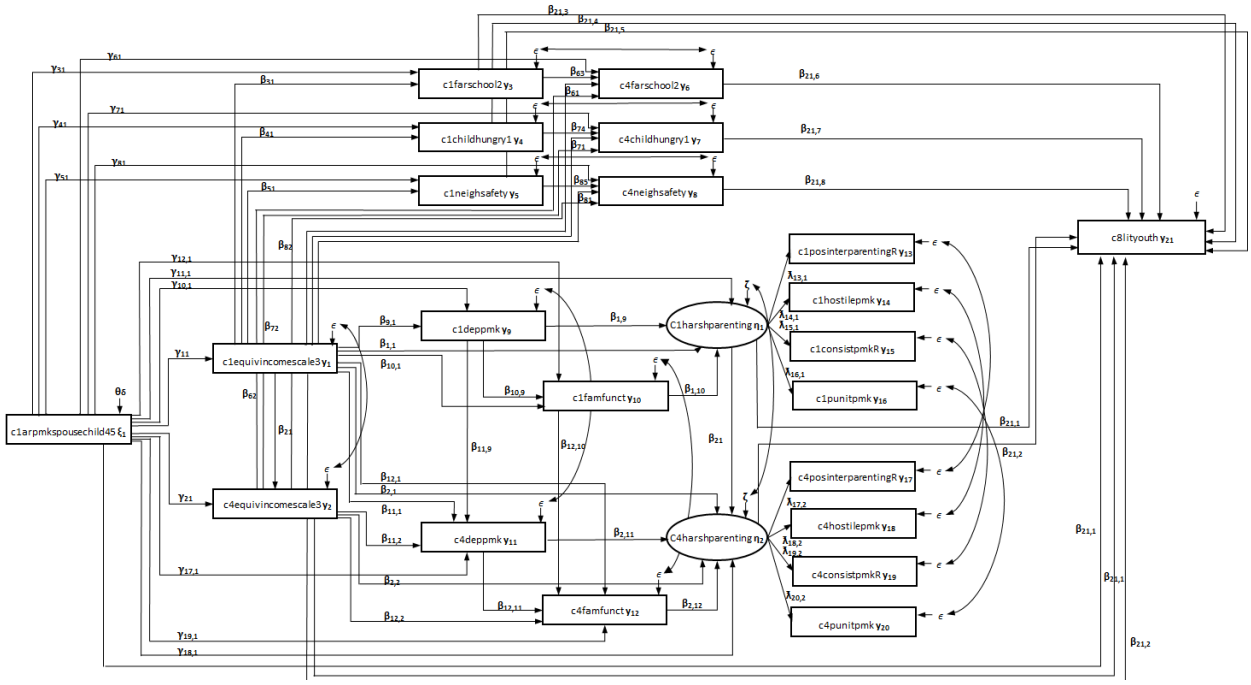


Figure 3.8 The relationship between parental disability and **youth literacy (c8lityouth)** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent report** mediating variables.

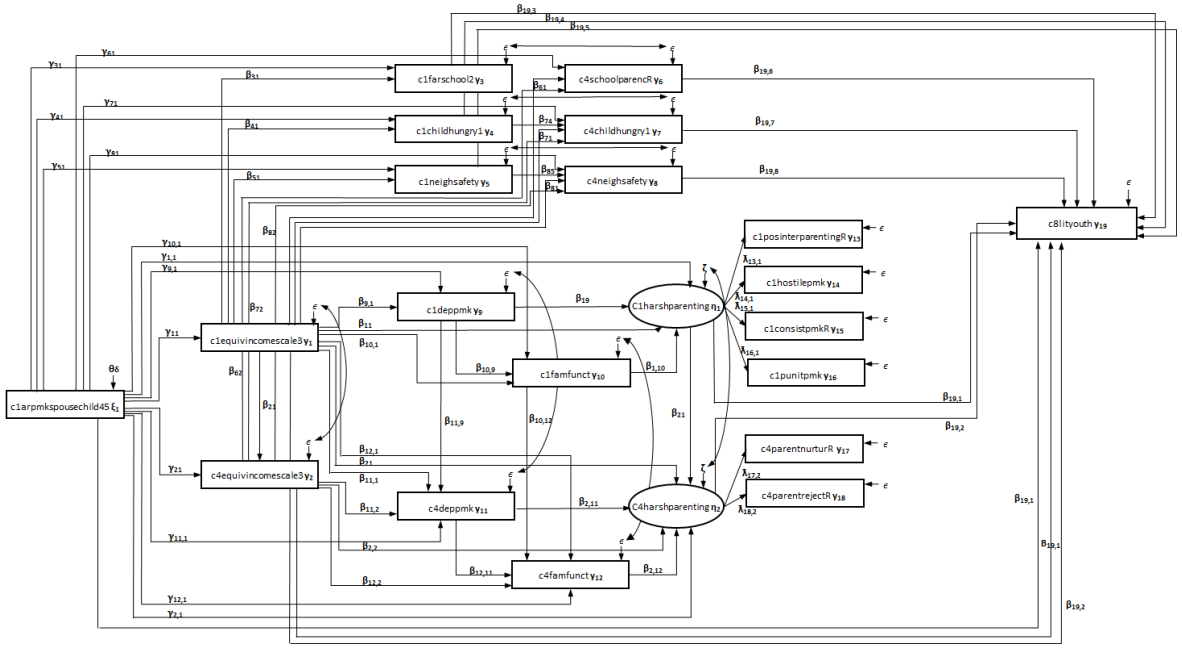


Figure 3.9 The relationship between parental disability and **youth literacy (c8lityouth)** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent and child report** mediating variables.

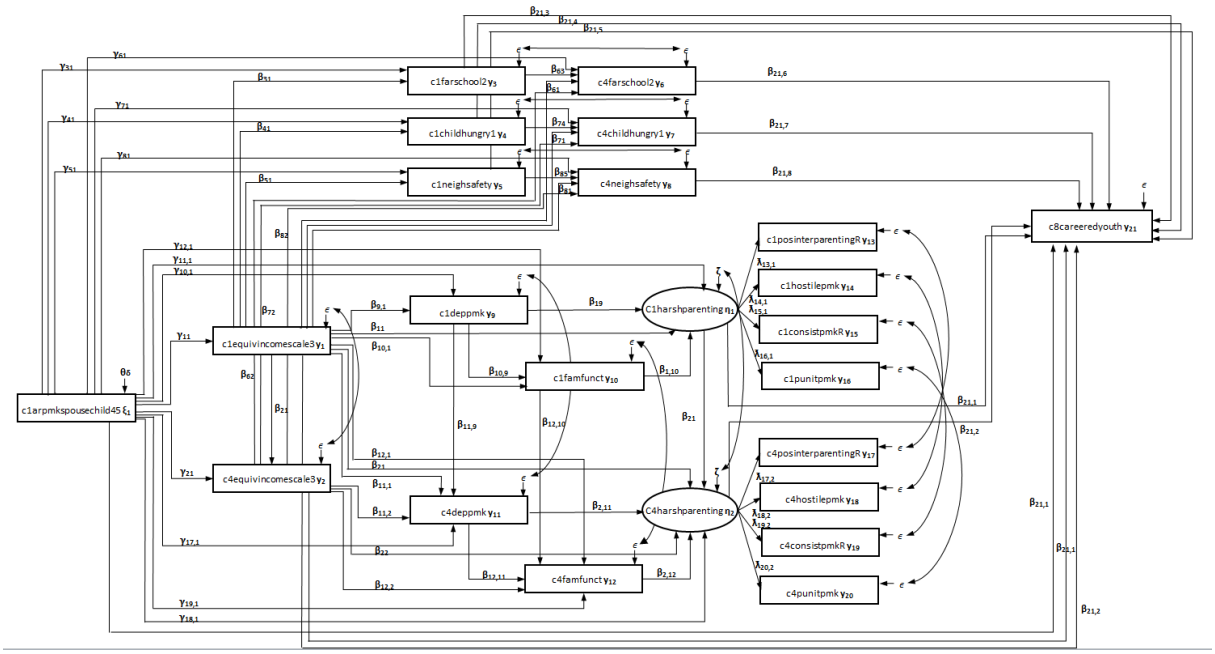


Figure 3.10 The relationship between parental disability and **youth career education (c8careeredyouth)** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent report** mediating variables.

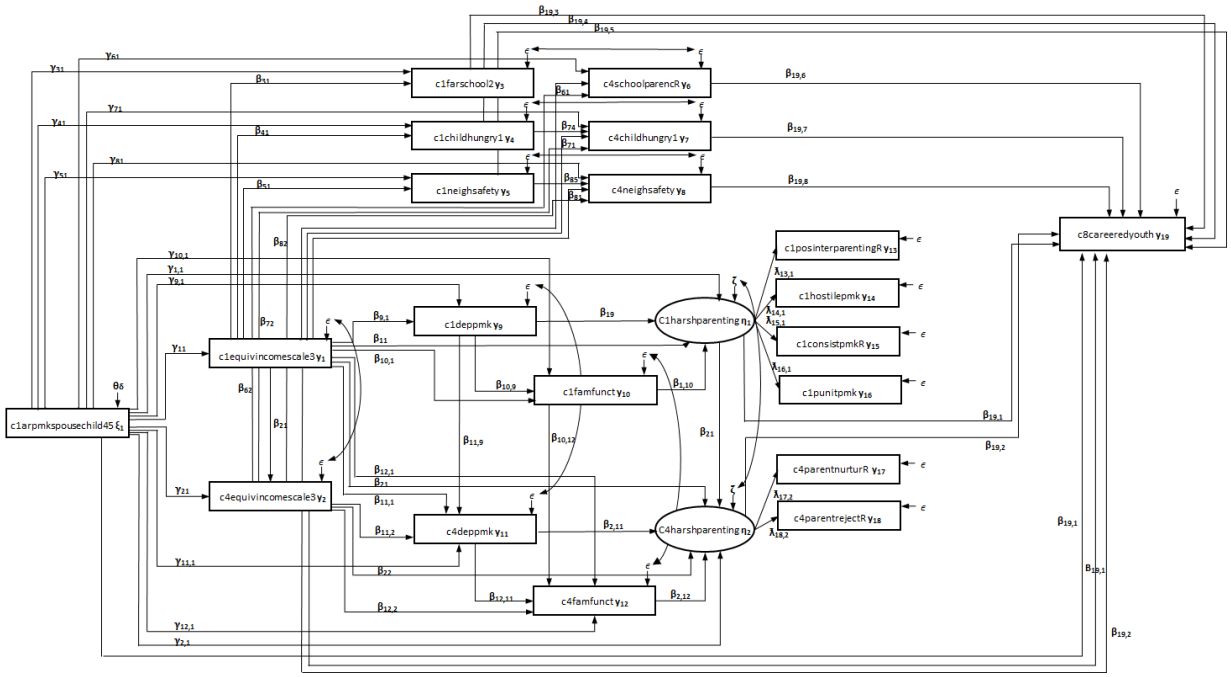


Figure 3.11 The relationship between parental disability and **youth career education (c8careeredyouth)** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent and child report** mediating variables.

For the youth well-being dimension of social support, separate structural equation models are presented for: youth social support (parent report mediating variables) and youth social support (parent and child report mediating variables) (See Figures 3.12-3.13).

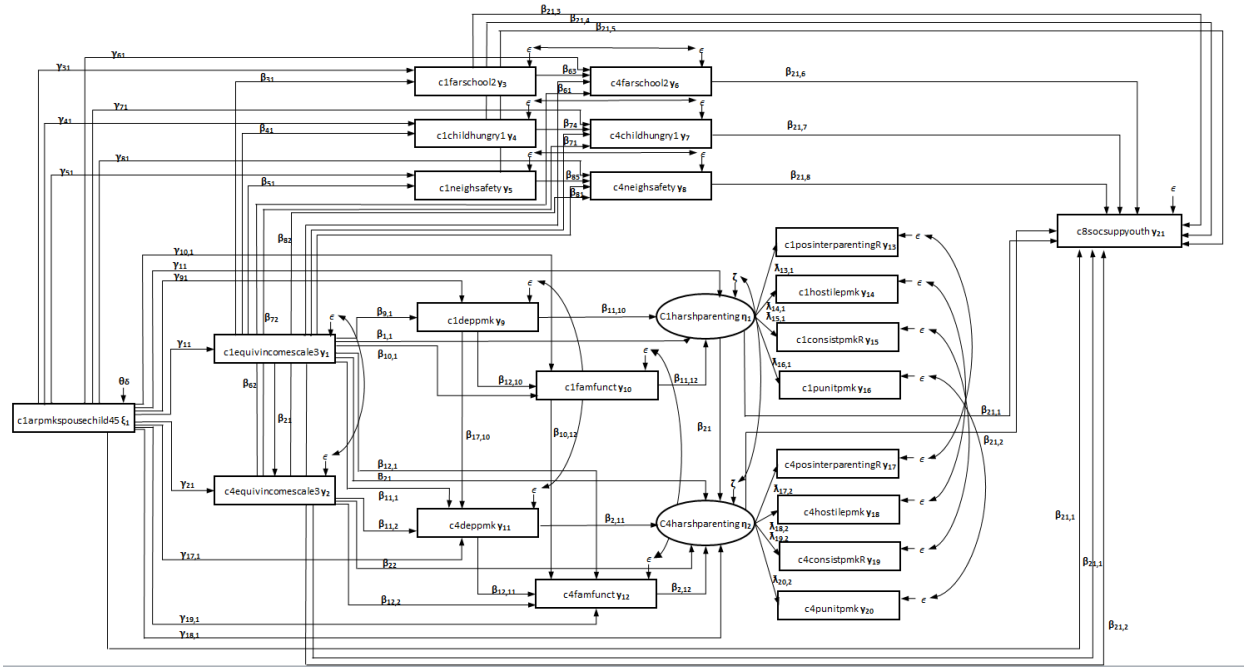


Figure 3.12 The relationship between parental disability and **youth social support** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent report** mediating variables.

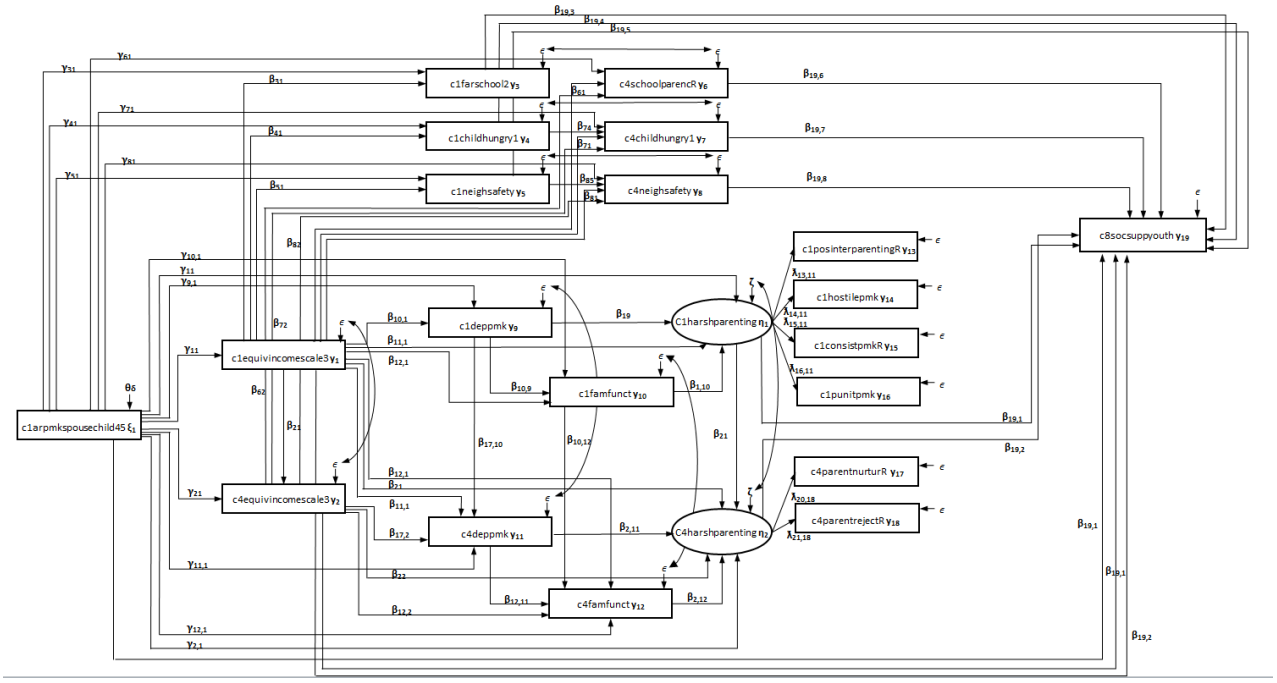


Figure 3.13 The relationship between parental disability and **youth social support** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent and child report** mediating variables.

For the youth well-being dimension of happiness/life satisfaction, separate structural equation models are presented for: youth happiness/life satisfaction (parent report mediating variables) and youth happiness/life satisfaction (parent and child report mediating variables) (See Figures 3.14-3.15).

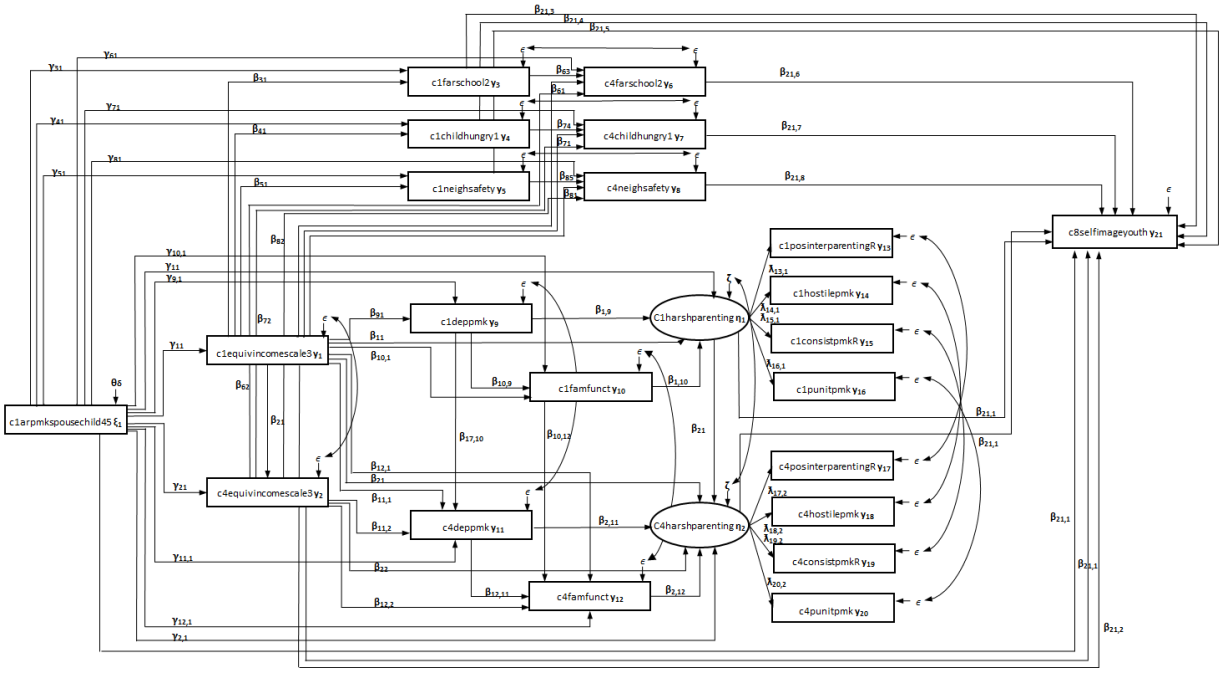


Figure 3.14 The relationship between parental disability and **youth happiness/life satisfaction** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent report** mediating variables.

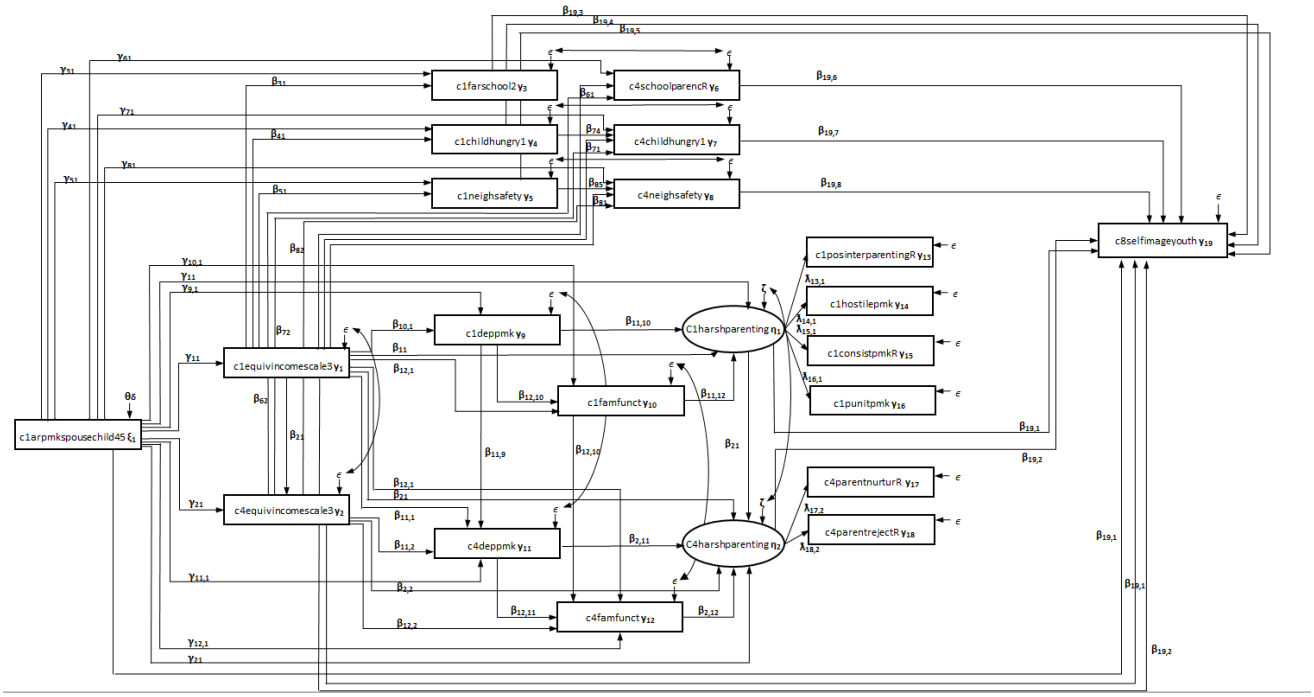


Figure 3.15 The relationship between parental disability and **youth happiness/life satisfaction** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent and child report** mediating variables.

For the youth well-being dimension of behaviours and risks, separate structural equation models are presented for: the latent variable of youth behaviours and risks (parent report mediating variables) and the latent variable of youth behaviours and risks (parent and child report mediating variables) (See Figures 3.16-3.17).

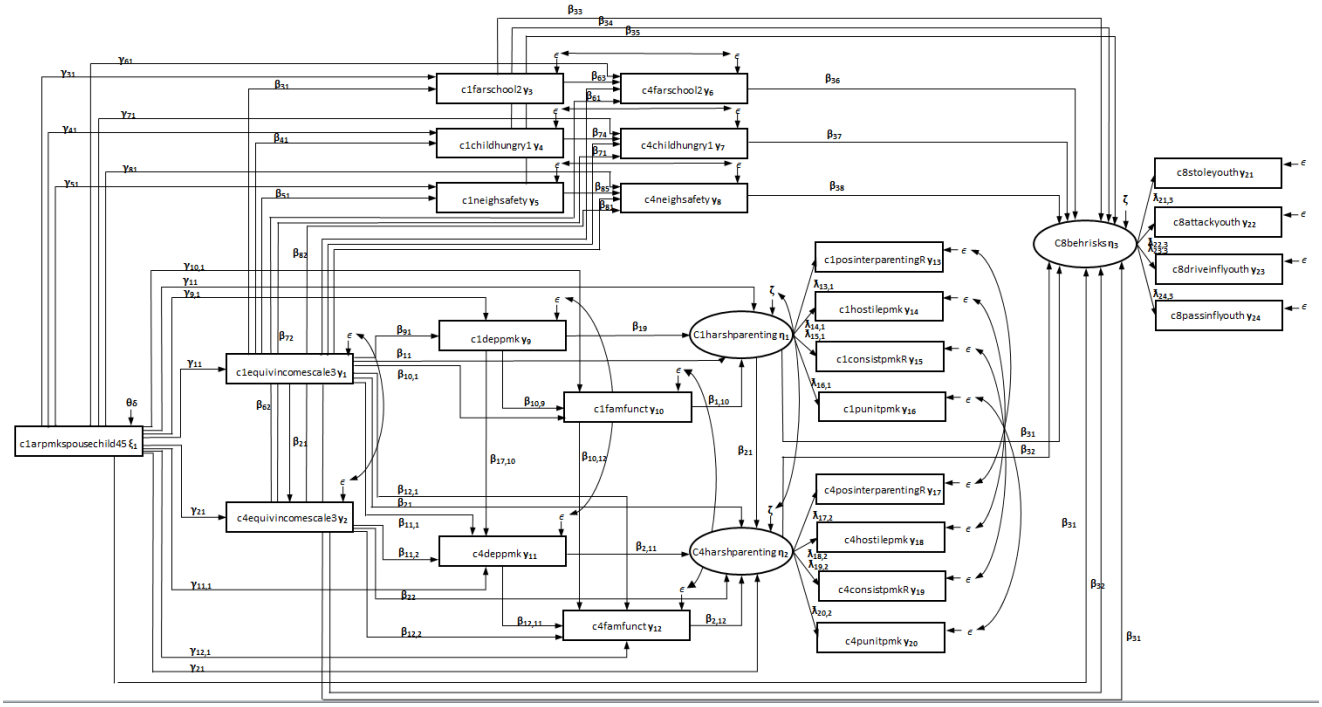


Figure 3.16 The relationship between parental disability and **youth behaviours and risks** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent report** mediating variables.

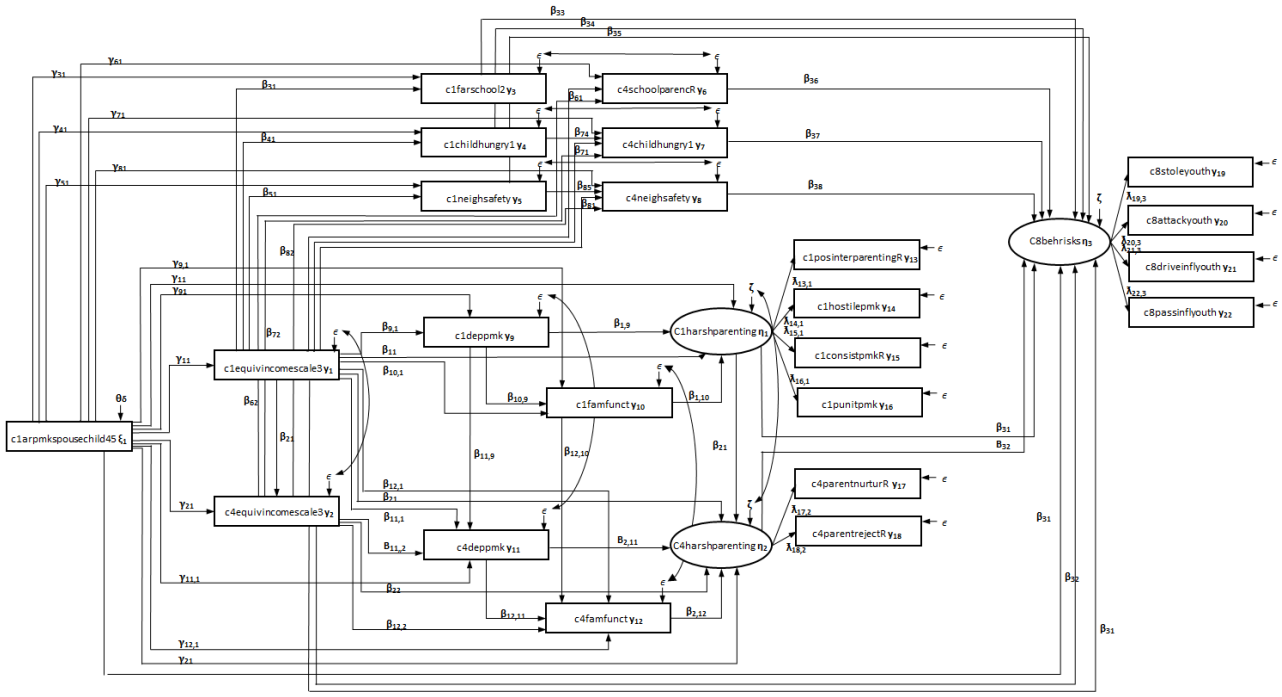


Figure 3.17 The relationship between parental disability and **youth behaviours and risks** is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. Model includes **parent and child report** mediating variables.

3.5 Chapter Summary

This chapter provides an overview of the methods utilised in the current study. A secondary data analysis was undertaken in order to investigate the relationship between parental disability, socioeconomic hardship, and the well-being of youth. Structural equation modeling was employed to test the study hypothesis: the relationship between parental disability and youth well-being is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood. In doing so, five dimensions of youth well-being were studied: health, education, social support, happiness/life satisfaction, and behaviours and risks. The structural equation models incorporate parent report mediating variables or a combination of parent report and child report mediating variables.

The following chapter discusses the results of the study, including descriptive analyses and the results of each structural equation model tested.

Chapter 4: Results

This chapter begins with an examination of family and household characteristics, including parents with disability and parents without disability (e.g., age, marital status, education) and household information (e.g., living in rural vs urban area, income, and number of persons living in the household) within the sample. This is followed by the results of bivariate analyses comparing the well-being of youth of parents with disability and the well-being of youth of parents without disability. Results of the structural equation modeling are then presented beginning with confirmatory factor analysis results for each latent variable followed by the full model results for each youth well-being dimension.

4.1 Family and Household Characteristics

4.1.1 Parents with Disability

The National Longitudinal Survey of Children and Youth (NLSCY) sample consisted of approximately 1,350 children (weighted population size approximately 637,400). Statistics Canada regulations prevent reporting precise sample size (Statistics Canada, 2009a). Of the children included in the sample for this study, 15.6% had at least one parent with disability (95% CI 0.130, 0.187). PMK report of disability included 9.0% of the sample (95% CI 0.070, 0.115) and spouse of PMK reported disability included 10.4% of the sample (95% CI 0.081, 0.134) (See Figure 4.1).

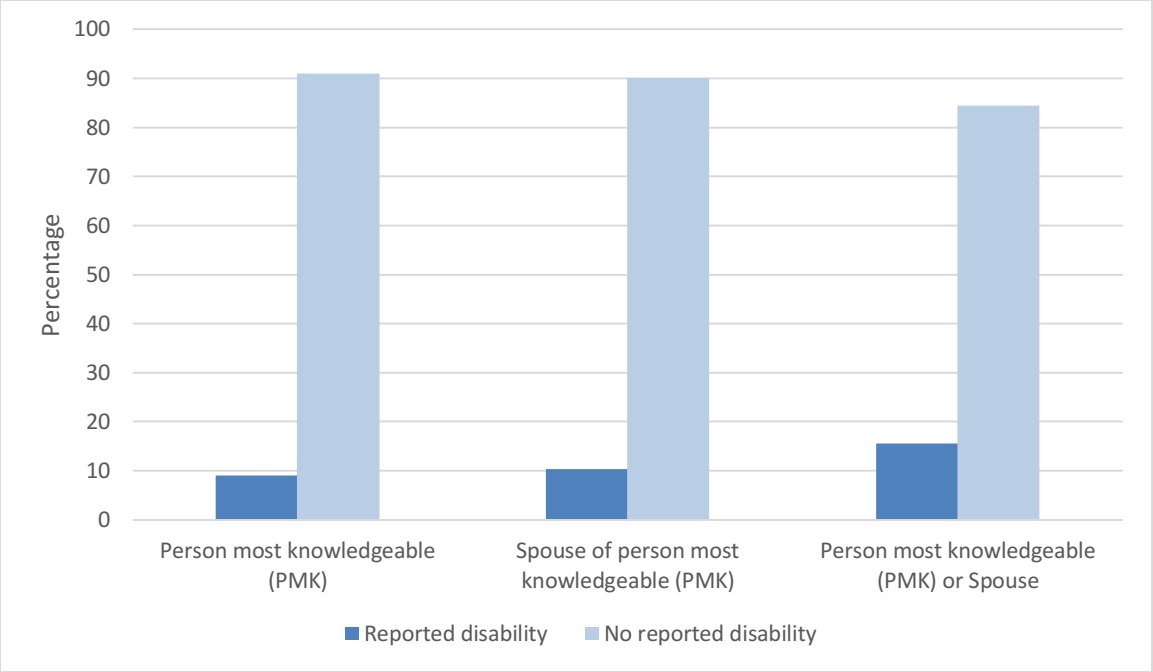


Figure 4.1 Weighted proportions of parent disability reported in Cycle 1 of the National Longitudinal Survey of Children and Youth (NLSCY).

Results demonstrate that the proportion of children who have a parent (PMK or Spouse) with a disability were consistent with past population-based studies. Šumilo et al.'s 2012 study of the UK Millennium Cohort Study found that 9.4% of women reported having a limiting long standing illness. Furthermore, utilizing the National Longitudinal Survey of Youth 1997 from the United States, Hogan et al. (2007) found that mothers with disability (i.e., long-term health problem or condition limiting employment) consisted of 12.2% of the sample and fathers with disability consisted of 11.6% of the sample. Also utilizing United States population data (2006 National Health Interview Survey), Neely-Barnes et al. (2014) found that 813 children out of a sample of 7,116 (11.4%) reported having a minimum of one parent with a disability (i.e., activity limitation within daily activities, work, walking, or cognitive functions).

Parent characteristics are presented in Table 4.1. No association was found between Person Most Knowledgeable (PMK) disability and PMK age (B = -0.20, 95% CI -1.91, 1.51, p = 0.819) or between PMK spouse disability and PMK spouse age (B = 0.76, 95% CI -0.92, 2.43, p = 0.376). Similarly, no

association was found between PMK disability and PMK gender (OR 0.80, 95% CI 0.24, 2.65, p = 0.709), or between PMK spouse disability and PMK spouse gender (OR 0.65, 95% CI 0.15, 2.83, p = 0.566). Further, PMKs with disability were no more or less likely than PMKs without disability to be the child's biological mother (OR 0.70, 95% CI 0.25, 1.98, p = 0.507), and PMK spouses with disability were no more or less likely than PMK spouses with disability to be the child's biological father (OR 2.01, 95% CI 0.49, 8.27, p = 0.331).

Also shown in the Table 4.1 are analysis results for marital status, including married, common-law, or single (never married), widowed, separated, or divorced. Results for education attainment include highest level of education achieved. No association was found between PMK disability and PMK employment status (currently working) (OR 1.39, 95% CI 0.30, 6.43, p = 0.670). However a significant association was found between PMK spouse disability and PMK spouse employment status (currently working) (OR 0.28, 95% CI 0.12, 0.68, p = 0.005). In short, the PMK was no more or less likely to be working if they had a disability, whereas the spouse of the PMK was less likely to be working if they had a disability.

Table 4.1 Cycle 1 Person Most Knowledgeable (PMK) and Spouse of Person Most Knowledgeable Characteristics

	Person Most Knowledgeable (PMK) n= ~1350				**Spouse of PMK n= ~1160**			
	Disability reported		No disability reported		Disability reported		No disability reported	
	mean	% (SE)	Mean	% (SE)	mean	% (SE)	mean	% (SE)
Age (years)	33.6	(0.23)	33.8	(0.84)	36.9	(0.27)	36.1	(0.80)
Gender female		92.8		94.2		*		6.1
Relationship to child: Biological mother (PMK data); Biological father (Spouse of PMK data)		89.0		92.0		94.2		88.9
Marital status: Married		74.4		78.9				
Marital status: Common-law or living with partner		9.4		6.6				
Marital status: Single (never married), widowed, separated, or divorced		16.2		14.5				
Education: highest level secondary school graduation		20.9		20.4		8.6		17.4
Education: highest level some trade, technical, vocational, community college, business college, community college, CEGEP, nursing school (n = ~910 pmk; ~760 spouse)		49.6		34.3		29.5		27.8
Education: highest level some university (n = ~910 pmk; ~760 spouse)		6.3		7.8		8.7		5.1
Education: highest level diploma or certificate from trade or community college (n = ~910 pmk; ~760 spouse)		24.9		36.4		35.3		36.8
Education: highest level bachelor's degree or graduate degree (n = ~910 pmk; ~760 spouse)		19.3		21.5		26.5		30.3
Working status: currently working (n = ~960 pmk; ~1110 spouse)		89.6		86.0		81.8		94.1

Note: n are approximate values to meet Statistics Canada requirements (Statistics Canada, 2009a); *Data suppressed to meet Statistics Canada requirements (Statistics Canada, 2009a); weighted data

4.1.2 Household Characteristics

Household characteristics of children with and without a parent (PMK or spouse) with disability are presented in Table 4.2. The results suggest that the household characteristics of children of parents with and without disability were similar in most respects. In Cycle 1 and 4 no association was found between parental disability and the likelihood of living in a rural as opposed to an urban area (Cycle 1:

OR 1.17, 95% CI 0.78, 1.78, p = 0.450) (Cycle 4: OR 1.09, 95% CI 0.66, 1.79, p = 0.735). Likewise, no association was found between parental disability and total number of persons living in the household (Cycle 1: B = 0.28, 95% CI -1.14, 0.69, p = 0.194) (Cycle 4: B = 0.11, 95% CI -0.21, 0.44, p = 0.492) or the total number of children living in the household (Cycle 1: B = 0.21, 95% CI -0.12, 0.53, p = 0.210) (Cycle 4: B = -0.03, 95% CI -0.26, 0.20, p = 0.796).

Table 4.2 Household characteristics

	Total sample n= ~1350		**Parent with or without disability n = ~1350**			
			Parent (PMK or spouse) reported disability		Parent reported no disability	
	mean	% (SE)	mean	% (SE)	mean	% (SE)
Cycle 1 household lives in rural area		18.3		20.3		17.9
Cycle 1 household lives in urban area population <30,000		12.7		13.5		12.5
Cycle 1 household lives in urban area population 30,000 to 99,999		8.1		5.4		8.6
Cycle 1 household lives in urban area population 100,000 to 499,999		19.5		24.2		18.7
Cycle 1 household lives in urban area population 500,000+		41.5		36.6		42.4
Cycle 4 household lives in rural area		14.3		15.2		14.1
Cycle 4 household lives in urban area population <30,000		15.2		14.9		15.3
Cycle 4 household lives in urban area population 30,000 to 99,999		8.5		8.0		8.6
Cycle 4 household lives in urban area population 100,000 to 499,999		20.7		25.0		19.9
Cycle 4 household lives in urban area population 500,000+		41.3		37.0		42.2
Cycle 1 Total persons in household	4.5		4.7	(0.2)	4.4	(0.1)
Cycle 4 Total persons in household	4.5		4.5	(0.2)	4.4	(0.1)
Cycle 1 Total children (0-17 years old) in household	2.4		2.5	(0.2)	2.3	(0.0)
Cycle 4 Total children (0-17 years old) in household	2.3		2.3	(0.1)	2.4	(0.0)

Note: n are approximate values to meet Statistics Canada requirements (Statistics Canada, 2009a), weighted data

At the significance level of p<.05, statistically significant associations were however found between parental disability and both household income and equivalized income. Table 4.3 displays the results of the linear regression analyses performed for equivalized income. Results indicate that parental disability was associated with lower household income in Cycle 4 and lower equivalized income in Cycles 1 and 4. Overall, the results are consistent with previous research in showing that children of

parents with disability are, as a group, experience relative economic disadvantage (e.g., Bergeron et al., 2012; Blackford, 1999; Emerson & Brigham, 2013; Emerson & Brigham, 2014; Hindmarsh et al., 2014; Hindmarsh et al., 2017; Powell et al., 2016).

Table 4.3 Equivalized income

	Parent (PMK or spouse) reported disability mean (SE)	**Parent reported no disability mean (SE)**	**Regression coefficient (B)**	**95% CI**	**P-value**
Cycle 1 Household equivalized income (scale 1-43)	17.7	20.2 (0.5)	-2.4	-4.6, -0.3	0.027
Cycle 4 Household equivalized income (scale 1-42)	15.6	18.3 (0.5)	-2.7	-4.5, -0.9	0.004

Note: weighted data, n= ~1350

4.1.3 Youth Characteristics

Characteristics of youth with and without a parent with disability (Cycle 8) are shown in Table 4.4. No significant differences were found in Cycle 8 between youth with a parent with disability compared to youth with parents without disability in terms of total number of siblings living in the household (B = 0.02, 95% CI -0.23, 0.27, p = 0.869). Results indicate that 43.8% of youth with a parent with disability are female in the sample compared to 49.7% of youth with parents without disability. Furthermore, 47.8% of youth with a parent with disability live with both biological parents. In comparison, 56.0% of youth with parents without disability live with both biological parents. Also, 28.0% of youth with a parent with disability compared to 25.6% of youth with parents without disability live with one biological parent. Finally, results show that 24.3% of youth with a parent with disability compared to 18.3% of youth with parents without disability do not live with a biological parent or the youth lives independently.

Table 4.4 Youth characteristics

	Total sample		**Parent with or without disability**			
			Parent (PMK or spouse) reported disability		Parent reported no disability	
	mean	% (SE)	mean	% (SE)	mean	% (SE)
Gender female (n = ~1350)		48.8		43.8		49.7
Aboriginal status		*		*		*
Cycle 8 total siblings living in household (n = ~1340)	0.9		0.9	(0.1)	0.9	(0.0)
Cycle 8 youth lives with both biological parents (n = ~1340)		54.7		47.8		56.0
Cycle 8 youth lives with one biological parent only (n = ~1340)		26.0		28.0		25.6
Cycle 8 youth does not live with biological parent/youth lives independently (n = ~1340)		19.3		24.3		18.3

Note: n are approximate values to meet Statistics Canada requirements (Statistics Canada, 2009a); *Data suppressed to meet Statistics Canada requirements (Statistics Canada, 2009a); weighted data

4.2 Youth Well-being: Bivariate Analyses

Linear or logistic regression analyses were employed to investigate the relationship between parental disability and youth well-being across dimensions. Results are reported in Tables 4.5 and 4.6. Counter to expectation, no association was found between parental disability and most indicators of youth well-being. Statistically significant ($p<.05$) associations were however found between parental disability and youth report computer ability and youth report writing ability. More specifically, youth with a parent with disability were more likely to report fair or poor computer ability, and less likely to report excellent writing ability compared to youth who did not have a parent with disability. It is however possible that the relationship between parental disability and youth well-being indicators was suppressed by confounding variables. Alternatively, parental disability may have a significant indirect effect, even if the direct effect is non-significant (Zhao et al., 2010). Structural equation modeling, the results of which are present below, arguably provides more accurate measure of association by taking multiple contextual factors into account.

Table 4.5 Cycle 8 youth well-being: Linear regression results

	Parent (PMK or spouse) reported disability		Parent reported no disability		Regression coefficient (B)	95% CI	P-value
	mean	SE	mean	SE			
Health: youth depression scale score (scale 0-36) (n = ~1330)	5.3	0.2	4.9	0.5	0.43	-0.65, 1.51	0.438
Education: youth literacy score (scale 0-36) (n = ~1030)	28.2	0.52	28.5	0.25	-0.21	-1.37, 0.96	0.730
Social support: youth social support score (scale 0-24) (n = ~1310)	19.7	0.16	19.9	0.29	-0.21	-0.85, 0.42	0.513
Happiness/life satisfaction: Youth general self-image score (scale 0-16) (n = ~1310)	14.0	0.23	14.1	0.09	-0.15	-0.64, 0.34	0.551

Table 4.6 Cycle 8 youth well-being: Logistics regression results

	Parent (PMK or spouse) reported disability	Parent reported no disability	Odds ratio	95% CI	P-value
	%	%			
Health: youth report excellent health vs. very good, good, fair, poor (n = ~1340)	26.4	33.0	0.73	0.47, 1.11	0.142
Education: youth report excellent computer ability vs. very good, good, fair, poor (n = ~1340)	32.0	29.7	1.12	0.70, 1.79	0.645
Education: youth report fair or poor computer ability vs. excellent, very good, good (n = ~1340)	15.1	6.7	2.47	1.33, 4.61	0.004
Education: youth report excellent writing ability vs. very good, good, fair, poor (n = ~1340)	11.9	20.1	0.54	0.31, 0.93	0.028
Education: youth report fair or poor writing ability vs. excellent, very good, good (n = ~1340)	15.6	12.6	1.28	0.69, 2.38	0.441
Education: youth report excellent reading ability vs. very good, good, fair, poor (n = ~1340)	22.4	29.4	0.69	0.43, 1.11	0.126
Education: youth report fair or poor reading ability vs. excellent, very good, good (n = ~1340)	10.6	7.3	1.50	0.68, 3.31	0.319
Education: youth report excellent communication ability (oral) vs. very good, good, fair, poor (n = ~1340)	13.4	20.6	0.60	0.35, 1.03	0.065
Education: youth report fair or poor communication ability (oral) vs. excellent, very good, good (n = ~1340)	11.5	11.9	0.96	0.49, 1.89	0.913
Education: youth report excellent ability to solve new problems vs. very good, good, fair, poor (n = ~1340)	6.9	11.8	0.56	0.28, 1.11	0.097

Education: youth report fair or poor ability to solve new problems vs. excellent, very good, good (n = ~1340)	10.8	8.0	1.37	0.64, 2.94	0.417
Education: youth report excellent mathematical ability vs. very good, good, fair, poor (n = ~1340)	16.9	23.6	0.66	0.37, 1.14	0.138
Education: youth report fair or poor mathematical ability vs. excellent, very good, good (n = ~1340)	26.6	32.1	0.77	0.49, 1.21	0.252
Education: youth report minimum education needed for work interest –high school diploma or less than high school vs. more than high school diploma (n = ~1220)	19.4	12.1	1.76	0.88, 3.49	0.108
Education: youth report minimum education needed for work interest – trade certify/diploma, apprenticeship, college or CEGEP, one or more university degrees vs. high school diploma or less (n = ~1220)	80.6	87.9	0.57	0.29, 1.13	0.108
Behaviours and risks: youth reported to have stolen item 1-5+ vs. not stolen items (n = ~1320)	11.7	10.9	1.09	0.53, 2.22	0.818
Behaviours and risks: youth reported to have attacked someone with intent of hurting them 1-5+ vs. not attached someone (n = ~1310)	8.9	7.9	1.13	0.27, 4.80	0.864
Behaviours and risks: youth reported to drive after drinking alcohol or taking drugs 1-5+ vs. not driving after alcohol or drugs (n = ~1310)	13.7	11.4	1.24	0.60, 2.55	0.556
Behaviours and risks: youth reported to be passenger when driver was drinking alcohol or taking drugs vs. not passenger when driver drinking alcohol or taking drugs (n = ~1310)	24.4	35.5	0.59	0.35, 0.99	0.046

Note: weighted data

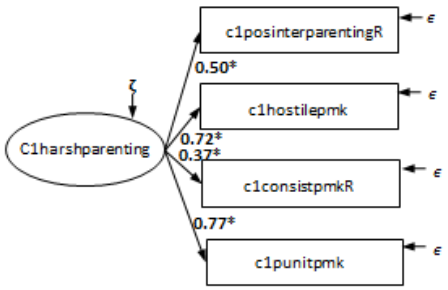
4.3 The Mediating Role of Economic Hardship: Family Investment Model and Family Stress Model

Structural equation modeling was employed to test the study hypothesis (i.e., The relationship between parental disability and youth well-being is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood). To begin, confirmatory factor analysis (CFA) was utilised to establish the measurement model for the latent variables: Cycle 1 parent report harsh parenting (C1harshparenting), Cycle 4 parent report harsh parenting (C4harshparenting), Cycle 4 child report harsh parenting (C4harshparentingchild), youth education (C8youtheducation), and youth

behaviours and risks (C8behrisks). Maximum likelihood estimation with missing values was utilized for all CFA completed. Due to software limitations, model fit indices were assessed from unweighted survey data. Parameter estimates were derived from applying National Longitudinal Survey of Children and Youth (NLSCY) survey weights (see section 3.3.2 for discussion on weighting data). Below are the results for each CFA completed.

4.3.1 Latent Variable: Cycle 1 Parent Report Harsh Parenting

The Cycle 1 parent report harsh parenting latent variable is composed of four variables: Cycle 1 positive interaction (scale 0-20, low score indicating positive interactions) (c1possinterparentingR), Cycle 1 hostile ineffective parenting (scale 0-25, high score indicating hostile/ineffective interactions) (c1hostilepmk), Cycle 1 consistent parenting (scale 0-20, low score indicating consistent parenting) (c1consistpmkR), and Cycle 1 punitive/aversive parenting (scale 0-19, high score indicating punitive/aversive interactions) (c1punitpmk). The model demonstrated adequate model fit for the overall sample as shown by Chi-square 'lack-of-fit' test (X^2 (*df*=2,) =29.11, p<.001), the Bentler Comparative Fit Index (CFI=0.961), the Stegier-Lind Root Mean Square Error of Approximation (RMSEA=0.101). Each CFA loading within the model was significant (p<0.001) (see Figure 4.2 Cycle 1 parent report harsh parenting latent variable).

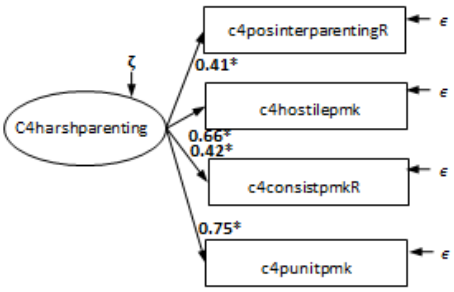


Note: parameter estimates standardized; *p<0.001

Figure 4.2 Cycle 1 parent report harsh parenting latent variable.

4.3.2 Latent Variable: Cycle 4 Parent Report Harsh Parenting

The Cycle 4 parent report harsh parenting latent variable is composed of four variables: Cycle 4 positive interaction (scale 0-20, low score indicating positive interactions) (c4possinterparentingR), Cycle 4 hostile ineffective parenting (scale 0-28, high score indicating hostile/ineffective interactions) (c4hostilepmk), Cycle 4 consistent parenting (scale 0-20, low score indicating consistent parenting) (c4consistpmkR), and Cycle 4 punitive/aversive parenting (scale 0-20, high score indicating punitive/aversive interactions) (c4punitpmk). The model demonstrated adequate model fit for the overall sample as shown by Chi-square 'lack-of-fit' test (X^2 (*df*=2,) =8.08, p<.05), the Bentler Comparative Fit Index (CFI=0.990), the Stegier-Lind Root Mean Square Error of Approximation (RMSEA=0.049). Each CFA loading within the model was significant (p<0.001) (see Figure 4.3 Cycle 4 parent report harsh parenting latent variable).



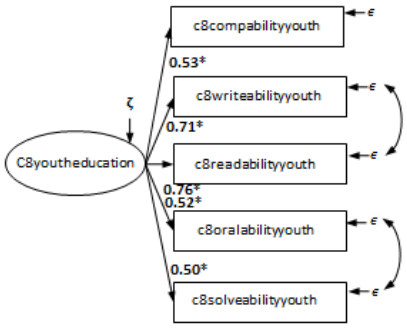
Note: parameter estimates standardized; *p<0.001

Figure 4.3 Cycle 4 parent report harsh parenting latent variable.

4.3.3 Latent Variable: Youth Education

The youth education latent variable is composed of five variables: youth report ability to use a computer (c8compabilityyouth), youth report ability to write (c8writeabilityyouth), youth report ability to read (c8readabilityyouth), youth report ability of oral communication (c8oralabilityyouth), and youth report ability to solve new problems (c8solveabilityyouth). First run of the CFA model indicated (through modification indices) that model fit may be improved through the covariation of errors for c8readabilityyoutth with c8writeabilityyouth, and c8oralabilityouth with c8solveabilityyouth.

Covariation of errors was added to the model after confirming this was theoretically sound. The final CFA model demonstrated adequate model fit for the overall sample as shown by Chi-square 'lack-of-fit' test (X^2 (*df*=3,) =13.75, p<.01), the Bentler Comparative Fit Index (CFI=0.993), the Stegier-Lind Root Mean Square Error of Approximation (RMSEA=0.052). Each CFA loading within the model was significant (p<0.001) (see Figure 4.4 Youth education latent variable).

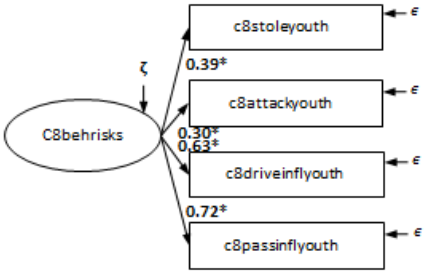


Note: parameter estimates standardized; *p<0.001

Figure 4.4 Youth education latent variable.

4.3.4 Latent Variable: Youth Behaviours and Risks

The youth behaviours and risks latent variable is composed of four variables: youth report stolen items (c8stoleyouth), youth report attacked someone with intent of hurting him/her (c8attackyouth), youth report drive vehicle after drinking alcohol or taking drugs (c8driveinflyouth), youth report passenger in vehicle after driver was drinking alcohol or taking drugs (c8passinflyouth). The model demonstrated adequate model fit for the overall sample as shown by Chi-square 'lack-of-fit' test (X^2 (*df*=2,) =12.78, p<.01), the Bentler Comparative Fit Index (CFI=0.979), the Stegier-Lind Root Mean Square Error of Approximation (RMSEA=0.064). Each CFA loading within the model was significant (p<0.001) (see Figure 4.5 Youth behaviours and risks latent variable).



Note: parameter estimates standardized; *p<0.001

Figure 4.5 Youth behaviours and risks latent variable.

4.3.5 Youth Well-being and the Family Investment Model and Family Stress Model

Structural equation modeling was employed to fit each of the full models, investigating the relationship between parental disability and youth well-being with mediating variables from the family investment model and family stress model, to the data. Each of the variables (latent and observed) included for youth well-being were studied within a separate structural equation model. Maximum likelihood estimation with missing values was utilized for all full structural equation models. Similar to the confirmatory factor analyses, model fit indices were assessed from unweighted survey data, whereas parameter estimates were derived from applying National Longitudinal Survey of Children and Youth (NLSCY) survey weights (see Section 3.3.2 for discussion on weighting data). Below are the results for each of the youth well-being dimensions (i.e., health, education, social support, happiness/life satisfaction, and behaviours and risks).

The results are reported in sections 4.3.5.1 through to 4.3.5.5. Overall, or taken together, the results suggest that the family stress and investment models fit the data well, explaining in part or whole, the relationships between economic exposures in early and middle childhood and youth well-being. Overall, parental disability contributed little to the predication of youth well-being, although a statistically significant direct effect of parental disability on youth report of career education needed for planned career was found. Furthermore, statistically significant indirect effects were found between parental disability and youth depression, youth education, youth literacy, and youth social support for models

containing all parent report mediating variables. Most statistically significant indirect effects were found through investment model pathways. More specifically, parent disability (c1arpmkspousechild45) → Cycle 1 equivalized income (c1equivincomescale3) → Cycle 1 parent hope of how far child will go in school (c1farschool2) → Cycle 4 parent hope of how far child will go in school (c4farschool2) → youth education (C8youtheducation); youth literacy (c8lityouth); youth social support (c8socsuppyouth). These results indicate that the relationship between parental disability and youth well-being (education, literacy, and social support) are mediated by economic hardship leading to decreased parental investments in early and middle childhood.

4.3.5.1 Youth health.

Structural equation modeling was employed to test the hypothesis that economic hardship in early (Cycle 1) and middle (Cycle 4) childhood, and in turn, family stress processes and parental investments, mediate the relationship between parental disability and youth general health (i.e., general health reported by youth in Cycle 8, variable: c8genhealthyouthR). Two separate models were run for the youth general health variable. The first model included all mediating variables which were parent report and the second model included mediating variables which were a combination of parent and child report. For the first model run (all parent report mediating variables), the Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=159) =581.38, p<0.001), however, other fit indices suggest adequate model fit (CFI=0.902; RMSEA=0.044). Figure 4.6 represents the structural model including weighted standardized coefficients. Also shown below in Table 4.7 is the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth general health (c8genhealthyouthR). Overall, results indicate that parental disability had no statistically significant direct or indirect effect on youth general health. Although the indirect effect of parental disability on youth general health was not found to be statistically significant, this model still provides support for the family stress and investment models. Results demonstrate some statistically significant pathways from economic hardship to stress processes and parental investments. For example, Cycle 1 family stress processes included statistically significant pathways from economic hardship to parent mental health to family functioning and

subsequently to parent report harsh parenting. The pathway from parent mental health to parent report harsh parenting in Cycle 1 was also statistically significant (See Figure 4.6).

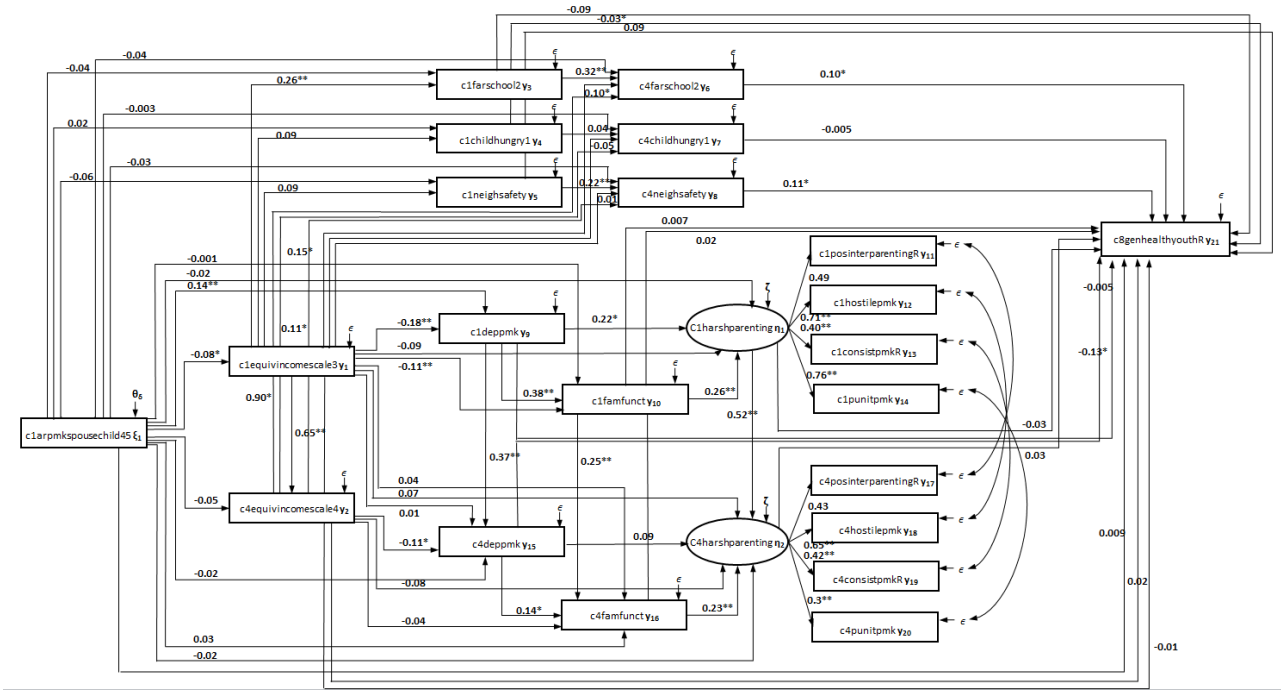


Figure 4.6 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth general health (c8genhealthyouthR)**. Model includes **parent report** mediating variables. *p<0.05, **p<0.01

Table 4.7 Weighted decomposition of effects: Direct, indirect, and total effects for youth general health (c8genhealthyouthR) pathways (Note: model includes parent report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth general health (c8genhealthyouth)	← Cycle 1 equivalized income (c1equivincomescale3)	ns	ns	ns	ns	ns	ns
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	0.003 (0.002)	0.036*	ns	ns
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	0.054 (0.027)	0.033*	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	-0.121 (0.047)	-0.030*	ns	ns	-0.122 (0.046)	-0.030**
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	0.016 (0.006)	0.024*	0.073 (0.030)	0.112*
	← Cycle 4 parent hope of how far chid will go in school (c4farschool2)	0.152 (0.067)	0.102*	no path	no path	0.152 (0.067)	0.102*
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	0.059 (0.023)	0.109*	no path	no path	0.059 (0.023)	0.109*
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	-0.021 (0.009)	-0.129*	ns	ns	-0.020 (0.009)	-0.123*
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	ns	ns	ns	ns
	← Cycle 4 harsh parenting (C4harshparenting)	ns	ns	no path	no path	ns	ns
	← Parent disability (c1arpmkspousechild45)	ns	ns	ns	ns	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

For the second model run utilising the youth general health variable, mediating pathways between parental disability and youth general health (i.e., general health reported by youth in cycle 8, variable:

c8genhealthyouthR) included a combination of parent and child report variables. This included Cycle 4 child report of stimulation of learning and Cycle 4 child report harsh parenting. Again, the Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=124) =560.814, p<0.001), however, other indices suggest adequate model fit (CFI=0.852; RMSEA=0.051). Figure 4.7 represents the structural model including weighted standardized coefficients. Also shown below in Table 4.8 is the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth general health (c8genhealthyouthR). Results demonstrate that the direct and indirect effects of parental disability on youth general health were not statistically significant. Again, although the indirect effect of parental disability on youth general health was not found to be statistically significant, this model still provides support for the family stress and investment models. Results demonstrate some statistically significant pathways from economic hardship to stress processes and parental investments. Although, it should be noted that the pathways between Cycle 4 parent mental health and Cycle 4 child report harsh parenting, and Cycle 4 family functioning and Cycle 4 child report harsh parenting, were found to be not statistically significant. This differs from the results found in the model above, which utilised all parent report mediating variables. Also notably, there is a statistically significant pathway between Cycle 4 child report harsh parenting and youth general health, whereas there was no statistically significant pathway between Cycle 4 parent report harsh parenting and youth general health in the model run above (Figure 4.6).

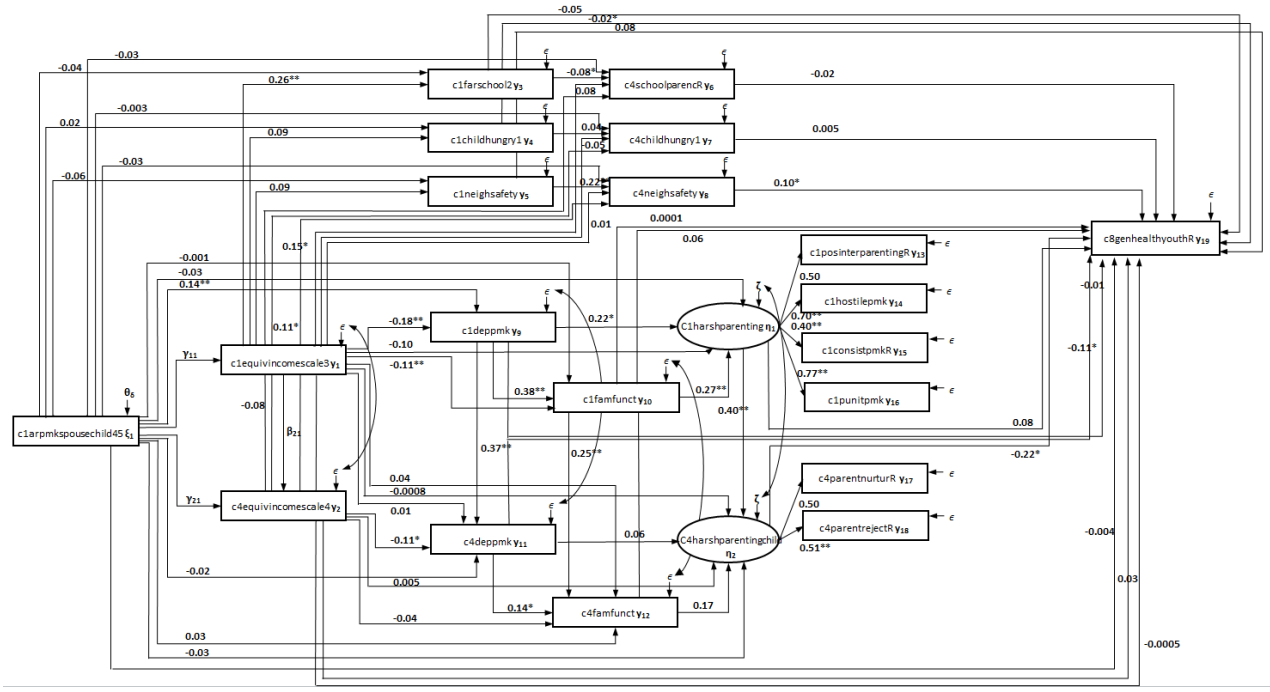


Figure 4.7 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth general health (c8genhealthyouthR)**. Model includes **parent and child report** mediating variables. *p<0.05, **p<0.01

Table 4.8 Weighted decomposition of effects: Direct, indirect, and total effects for youth general health (c8genhealthyouthR) pathways (Note: model includes parent and child report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth general health (c8genhealthyouthR)	← Cycle 1 equivalized income (c1equivincomescale3)	ns	ns	ns	ns	ns	ns
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	ns	ns	ns	ns
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	ns	ns	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	-0.102 (0.041)	-0.025*	ns	ns	-0.101 (0.041)	-0.025*
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	0.014 (0.006)	0.022*	0.067 (0.030)	0.103*
	← Cycle 4 parents encourage child to do well in school (c4schoolparencR)	ns	ns	no path	no path	ns	ns
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	0.054 (0.023)	0.100*	no path	no path	0.054 (0.023)	0.100*
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	-0.018 (0.009)	-0.111*	ns	ns	-0.020 (0.009)	-0.123*
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	-0.052 (0.024)	-0.090*	ns	ns
	← Cycle 4 harsh parenting (C4harshparentingchild)	-0.091 (0.039)	-0.225*	no path	no path	-0.091 (0.039)	-0.225*
	← Parent disability (c1arpmkspousechild45)	ns	ns	ns	ns	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

Structural equation modeling was then utilised to test the hypothesis that economic hardship in early (Cycle 1) and middle childhood (Cycle 2), and in turn, family stress processes and parental investment, mediate the relationship between parental disability and youth depression (i.e., depression score reported by youth in cycle 8, variable: c8depscaleyouth). Two separate models were run for the youth depression variable. The first model included all mediating variables which were parent report and the second model included mediating variables which were a combination of parent and child report. For the first model (all parent report mediating variables), the Chi-square 'lack-of-fit' test (unweighted data), the model was statistically significant (X^2 (*df*=159) =581.788, p<0.001), however, other fit indices suggest adequate model fit (CFI=0.902; RMSEA=0.044). The structural model with weighted standardized coefficients is presented in Figure 4.8. Table 4.9 reports the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth depression (c8depscaleyouth). The direct effect of parent disability on youth depression was not statistically significant, however, a statistically significant indirect effect of parental disability on youth depression was found. This result suggests that the effect of parental disability on youth depression was fully mediated. Similar to the first model run utilisng all parent report mediating variables (Figure 4.6), this model provides support for the family stress and investment models. Results demonstrate some statistically significant pathways from economic hardship to stress processes and parental investments.

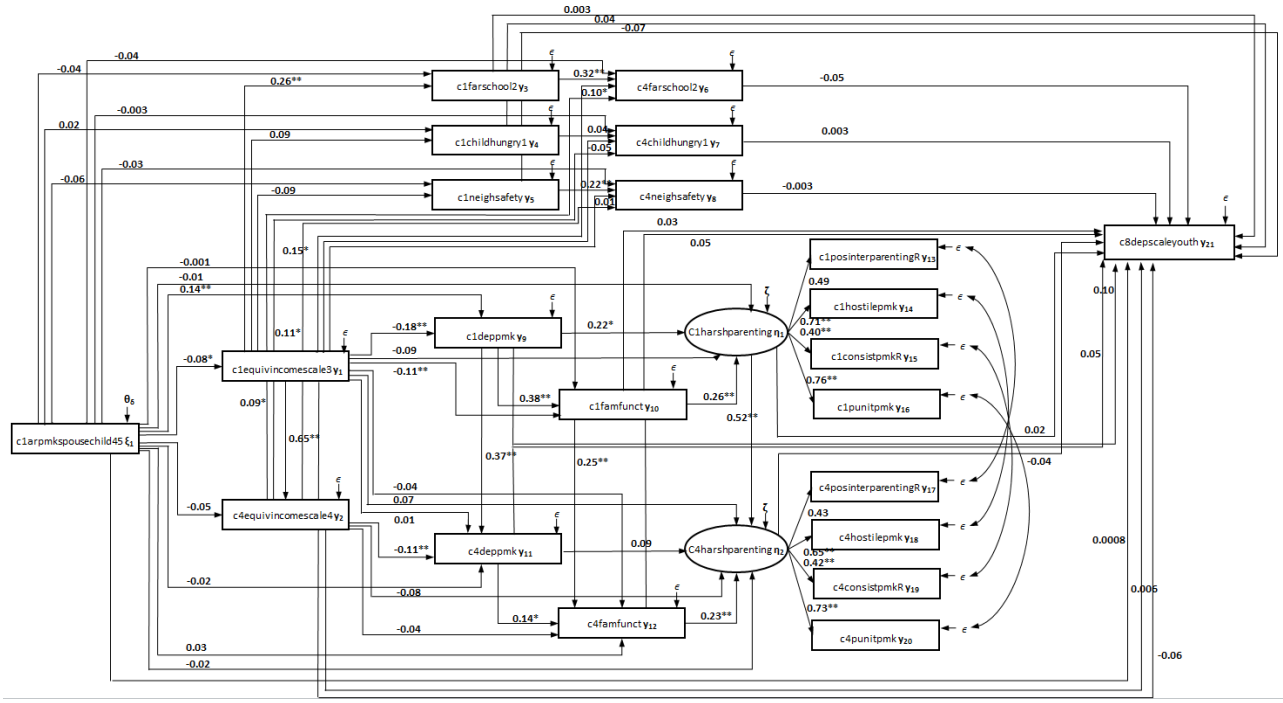


Figure 4.8 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth depression (c8depscaleyouth)**. Model includes **parent report** mediating variables. *p<0.05, **p<0.01

Table 4.9 Weighted decomposition of effects: Direct, indirect, and total effects for youth depression (c8depscaleyouth) pathways (Note: model includes parent report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth depression (c8depscaleyouth)	← Cycle 1 equivalized income (c1equivincomescale3)	ns	ns	ns	ns	ns	ns
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	ns	ns	ns	ns
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	ns	ns	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	ns	ns	ns	ns	ns	ns
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent hope of how far chid will go in school (c4farschool2)	ns	ns	no path	no path	ns	ns
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	ns	ns	ns	ns
	← Cycle 4 harsh parenting (C4harshparenting)	ns	ns	no path	no path	ns	ns
	← Parent disability (c1arpmkspousechild45)	ns	ns	0.407 (0.154)	0.030**	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

For the second model run utilising the youth depression variable, mediating pathways between parental disability and youth depression (i.e., depression score reported by youth in cycle 8, variable: c8depscaleyouth) included a combination of parent and child report variables. This included Cycle 4 child report stimulation of learning and Cycle 4 child report harsh parenting. The Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=124) =560.181, p<0.001), however, other fit indices suggest adequate model fit (CFI=0.853; RMSEA=0.051). Below, Figure 4.9 represents the structural model including weighted standardized coefficients. Also, in Table 4.10 the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth depression (c8depscaleyouth) are displayed. Results show that the direct and indirect effects of parental disability on youth depression were not statistically significant. Although this indirect effect was found to not be statistically significant, this model still provides support for the family stress and investment models. Results demonstrate some statistically significant pathways from economic hardship to stress processes and parental investment. Although, it should be noted that dissimilar to the model run on youth general health utilising Cycle 4 child report harsh parenting (Figure 4.7), this model did not demonstrate a statistically significant pathway between Cycle 4 child report harsh parenting and the youth well-being outcome (in this case youth depression).

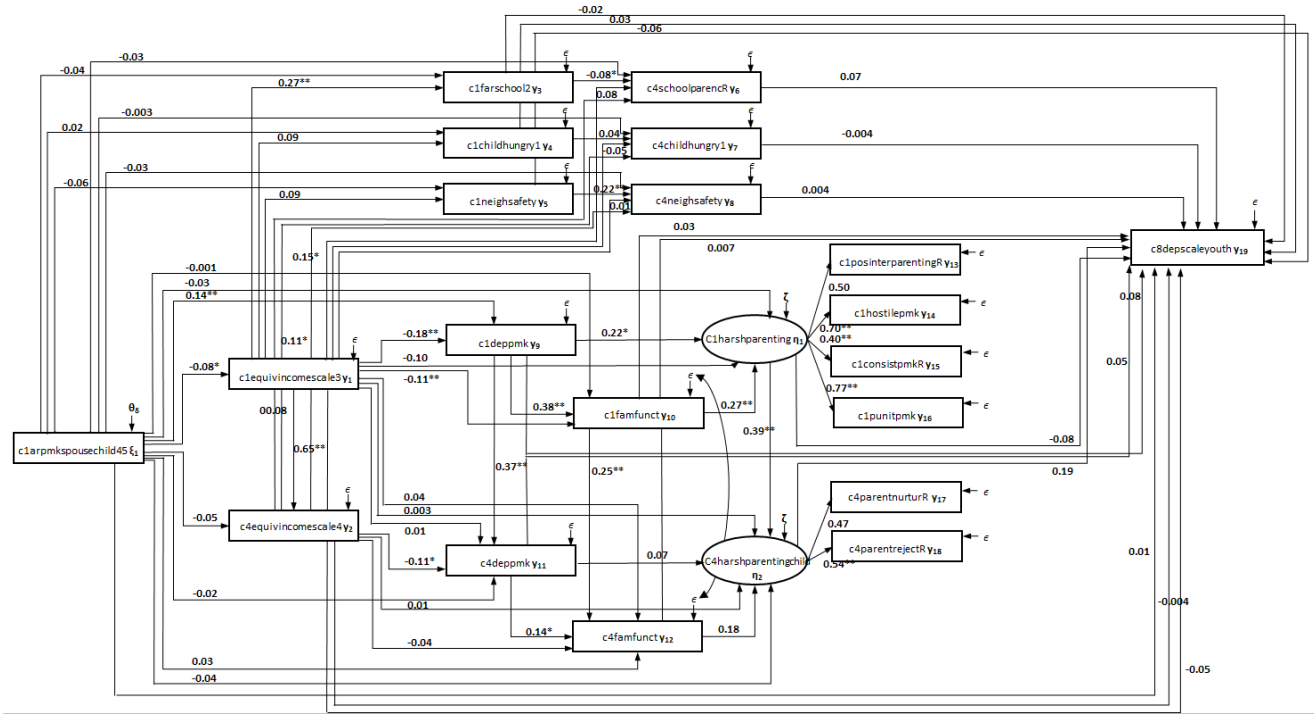


Figure 4.9 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth depression (c8depscaleyouth)**. Model includes **parent and child report** mediating variables. *p<0.05, **p<0.01

Table 4.10 Weighted decomposition of effects: Direct, indirect, and total effects for youth depression (c8depscaleyouth) pathways (Note: model includes parent and child report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth depression (c8depscaleyouth)	← Cycle 1 equivalized income (c1equivincomescale3)	ns	ns	ns	ns	ns	ns
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	ns	ns	ns	ns
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	ns	ns	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	ns	ns	ns	ns	ns	ns
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parents encourage child to do well in school (c4schoolparencR)	ns	ns	no path	no path	ns	ns
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	0.102 (0.048)	0.106*
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	ns	ns	ns	ns
	← Cycle 4 harsh parenting (C4harshparentingchild)	ns	ns	no path	no path	ns	ns
	← Parent disability (c1arpmkspousechild45)	ns	ns	ns	ns	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

4.3.5.2 Youth education.

Structural equation modeling was employed to test the hypothesis that economic hardship in early (Cycle 1) and middle (Cycle 4) childhood, and in turn, family stress processes and parental investments, mediate the relationship between parental disability and youth education (i.e., latent variable: C8youtheducation). Two models were run for the youth education variable. The first model included all mediating variables which were parent report and the second model included mediating variables which were a combination of parent and child report. For the first model run (all parent report mediating variables), the Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=246) =721.539, p<0.001), however, other fit indices demonstrated adequate model fit (CFI=0.920; RMSEA=0.038). Figure 4.10 represents the structural model including weighted standardized coefficients. Also, Table 4.11 displays the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth education (C8youtheducation). The direct effect of parental disability on youth education was not statistically significant. Although there was no statistically significant direct effect, parent disability did have a significant indirect effect on youth education through one of the hypothesised investment model pathways: parent disability (c1arpmkspousechild45) → cycle 1 equivalized income (c1equivincomescale3) → cycle 1 parent hope of how far child will go in school (c1farschool2) → cycle 4 parent hope of how far chid will go in school (c4farschool2) → youth education (C8youtheducation). Parent hope of how far his/her child will go in school is categorized as stimulation of learning within the family investment model. Also, as shown with previous models utilising parent report mediating variables, this model provides further support for the family stress and investment models through some addition statistically significant pathways from economic hardship to stress processes and parental investments.

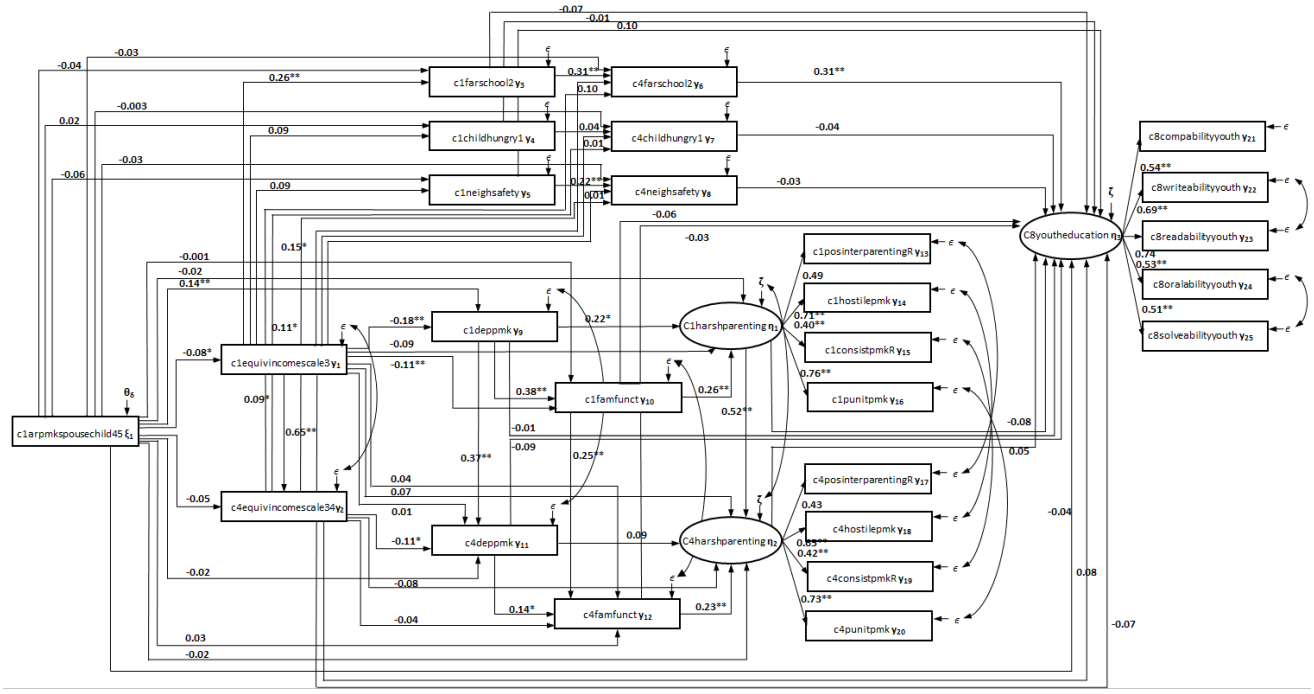


Figure 4.10 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth education (C8youtheducation)**. Model includes **parent report** mediating variables. *p<0.05, **p<0.01

Table 4.11 Weighted decomposition of effects: Direct, indirect, and total effects for youth education (C8youtheducation) pathways (Note: model includes parent report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth education (C8youtheducation)	← Cycle 1 equivalized income (c1equivincomescale3)	ns	ns	0.010 (0.003)	0.144**	ns	ns
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	ns	ns	ns	ns
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	0.134 (0.032)	0.099**	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	ns	ns	ns	ns	ns	ns
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	0.016 (0.006)	0.024*	ns	ns
	← Cycle 4 parent hope of how far chid will go in school (c4farschool2)	0.383 (0.061)	0.313**	no path	no path	0.383 (0.061)	0.313**
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	-0.011 (0.005)	-0.076*	ns	ns
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	ns	ns	ns	ns
	← Cycle 4 harsh parenting (C4harshparenting)	ns	ns	no path	no path	ns	ns
	← Parent disability (c1arpmkspousechild45)	ns	ns	-0.074 (0.035)	-0.037*	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

For the second model run utilising the youth education latent variable, mediating pathways between parental disability and youth education (i.e., latent variable: C8youtheducation) included a

combination of parent and child report harsh parenting. This included Cycle 4 child report stimulation of learning and Cycle 4 child report harsh parenting. The Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=203) =681.684, p<0.001), however, other fit indices suggest adequate model fit (CFI=0.895; RMSEA=0.042). Figure 4.11 represents the structural model including weighted standardized coefficients. Also, in Table 4.12 the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth education (C8youtheducation) are displayed. Results demonstrate that the direct and indirect effects of parental disability on youth education were not statistically significant. Although this indirect effect was not statistically significant, this model still provides support for the family stress and investment models. Results demonstrate some statistically significant pathways from economic hardship to stress processes and parental investments. Notably, there is a statistically significant pathway between Cycle 4 child report harsh parenting and youth education.

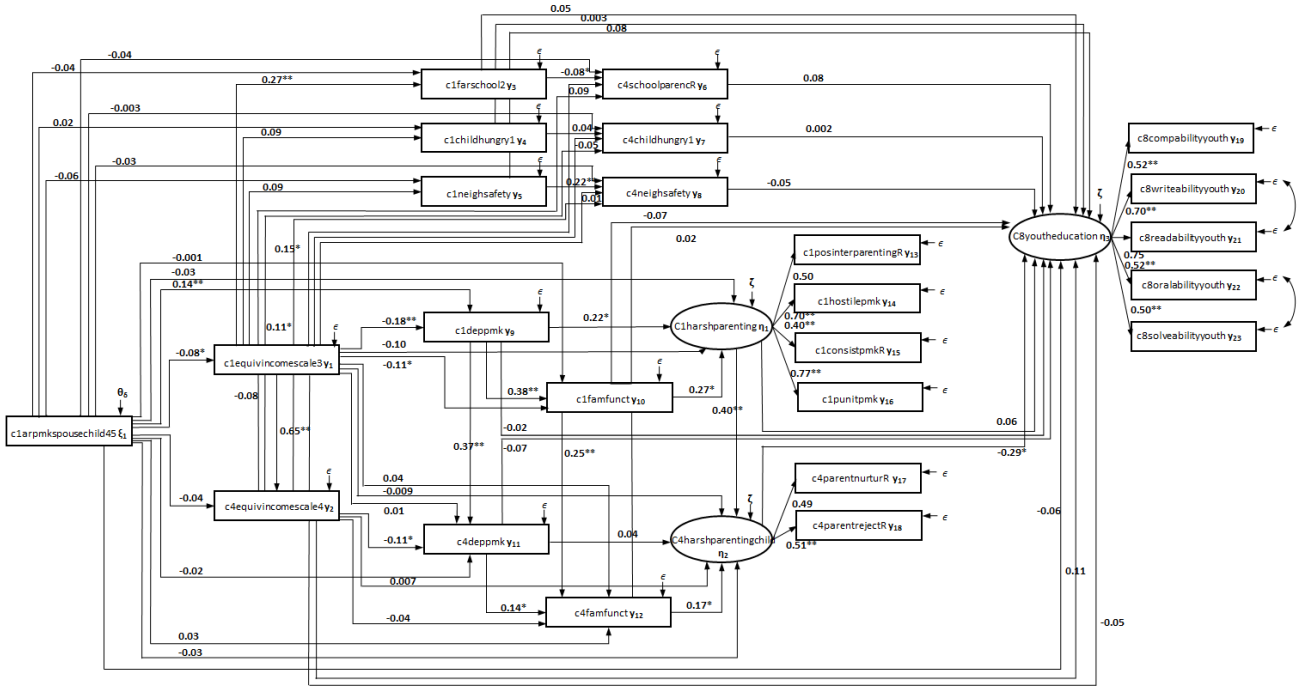


Figure 4.11 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth education (C8youtheducation)**. Model includes **parent and child report** mediating variables. *p<0.05, **p<0.01

Table 4.12 Weighted decomposition of effects: Direct, indirect, and total effects for youth education (C8youtheducation) pathways (Note: model includes parent and child report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth education (c8youtheducation)	← Cycle 1 equivalized income (c1equivincomescale3)	ns	ns	0.008 (0.003)	0.122*	ns	ns
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	ns	ns	ns	ns
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	ns	ns	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	ns	ns	ns	ns	ns	ns
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parents encourage child to do well in school (c4schoolparencR)	ns	ns	no path	no path	ns	ns
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	-0.011 (0.005)	-0.078*	ns	ns
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	-0.056 (0.027)	-0.114*	ns	ns
	← Cycle 4 harsh parenting (C4harshparentingchild)	-0.097 (0.042)	-0.285*	no path	no path	-0.097 (0.042)	-0.285*
	← Parent disability (c1arpmkspousechild45)	ns	ns	ns	ns	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

Structural equation modeling was employed to test the hypothesis that economic hardship in early (Cycle 1) and middle (Cycle 4), and in turn, family stress processes and parental investments, mediate the relationship between parental disability and youth literacy (i.e., classical score for youth literacy assessment, variable: c8lityouth). Two models were run for the youth literacy variable. The first model included all mediating variables which were parent report and the second model included mediating variables which were a combination of parent and child report. For the first model run (all parent report mediating variables), the Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=159) =605.670, p<0.001), however, other fit indices suggest adequate model fit (CFI=0.898; RMSEA=0.045). Figure 4.12 displays the structural model including weighted standardized coefficients. Table 4.13 below shows the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth literacy (c8lityouth). Results indicate that parental disability had no statistically significant direct effect on youth literacy. But parent disability did have a statistically significant indirect effect on youth literacy through the hypothesised investment model pathway: parent disability (c1arpmkspousechild45) → cycle 1 equivalized income (c1equivincomescale3) → cycle 1 parent hope of how far child will go in school (c1farschool2) → cycle 4 parent hope of how far child will go in school (c4farschool2) → youth literacy (c8lityouth). Also, this model provides further support for the family stress and investment models through some additional statistically significant pathways from economic hardship to stress processes and parental investments.

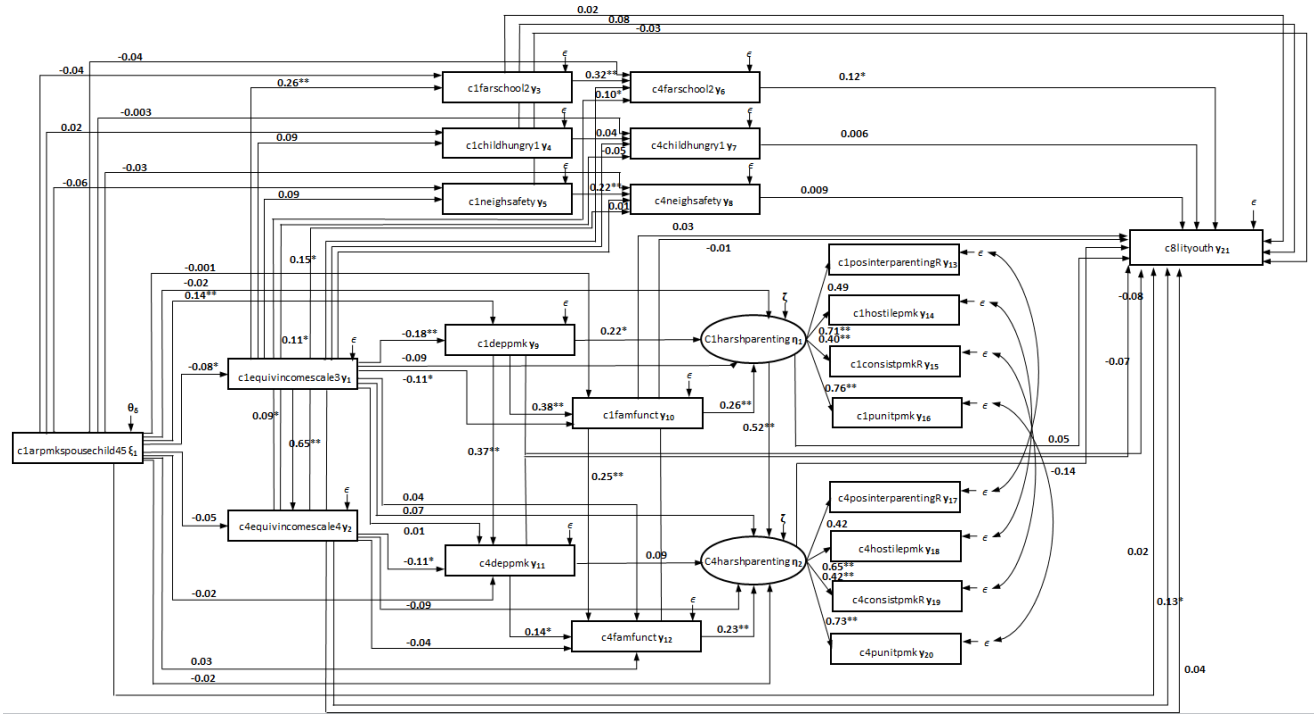


Figure 4.12 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth literacy (c8lityouth)**. Model includes **parent report** mediating variables. *p<0.05, **p<0.01

Table 4.13 Weighted decomposition of effects: Direct, indirect, and total effects for youth literacy (c8lityouth) pathways (Note: model includes parent report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth education (c8lityouth)	← Cycle 1 equivalized income (c1equivincomescale3)	0.062 (0.024)	0.129*	0.043 (0.018)	0.089*	0.104 (0.019)	0.217**
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	0.020 (0.009)	0.038*	ns	ns
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	0.371 (0.156)	0.039*	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	ns	ns	ns	ns	ns	ns
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent hope of how far chid will go in school (c4farschool2)	1.056 (0.422)	0.122*	no path	no path	1.056 (0.422)	0.122*
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	-0.111 (0.042)	-0.113*
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	ns	ns	ns	ns
	← Cycle 4 harsh parenting (C4harshparenting)	ns	ns	no path	no path	ns	ns
	← Parent disability (c1arpmkspousechild45)	ns	ns	-0.0532 (0.225)	-0.038*	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

For the second model run utilising the youth literacy variable (i.e., classical score for youth literacy assessment, variable: c8lityouth) included a combination of parent and child report variables.

This included Cycle 4 child report of stimulation of learning and Cycle 4 child report harsh parenting. The Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=124) =571.031, p<0.001), however, other fit indices suggest adequate model fit (CFI=0.851; RMSEA=0.052). Figure 4.13 represents the structural model including weighted standardized coefficients. The weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth literacy (c8lityouth) are displayed in Table 4.14. Results demonstrate that the direct and indirect effects of parental disability on youth literacy are not statistically significant. Although this indirect effect was not statistically significant, this model still provides support for the family stress and investment models by demonstrating some statistically significant pathways from economic hardship to stress processes and parental investments.

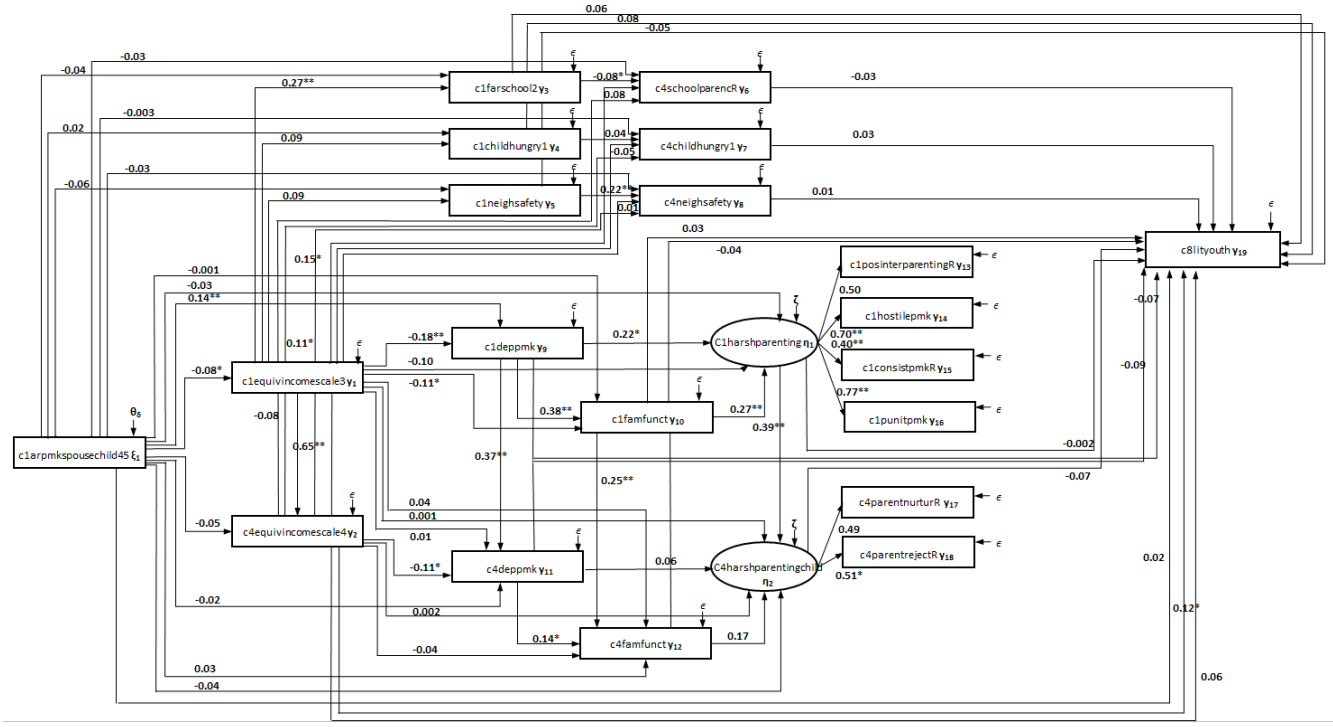


Figure 4.13 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth literacy (c8lityouth)**. Model includes **parent and child report** mediating variables. *p<0.05, **p<0.01

Table 4.14 Weighted decomposition of effects: Direct, indirect, and total effects for youth literacy (c8lityouth) pathways (Note: model includes parent and child report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth education (c8lityouth)	← Cycle 1 equivalized income (c1equivincomescale3)	0.058 (0.024)	0.121*	0.041 (0.018)	0.085*	0.099 (0.019)	0.207**
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	ns	ns	ns	ns
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	ns	ns	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	ns	ns	ns	ns	ns	ns
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parents encourage child to do well in school (c4schoolparencR)	ns	ns	no path	no path	ns	ns
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	-0.110 (0.042)	-0.111*
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	ns	ns	ns	ns
	← Cycle 4 harsh parenting (C4harshparentingchild)	ns	ns	no path	no path	ns	ns
	← Parent disability (c1arpmkspousechild45)	ns	ns	ns	ns	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

Structural equation modeling was employed to test the hypothesis that economic hardship in early (Cycle 1) and middle (Cycle 4) childhood, and in turn, family stress processes and parental investments, mediate the relationship between parental disability and youth career education (i.e., education needed for planned career, variable: c8careeredyouth). Two separate models were run for the youth general health variable. The first model included all mediating variables which were parent report and the second model included mediating variables which were a combination of parent and child report. For the first model run (all parent report mediating variables), the Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=159) =585.903, p<0.001), however, additional fit indices suggest adequate model fit (CFI=0.904; RMSEA=0.044). Figure 4.14 displays the structural model including weighted standardized coefficients. Table 4.15 shows the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth career education (c8careeredyouth). Results indicate that parental disability had a statistically significant direct effect on youth career education. It is important to note that although this direct effect is statistically significant, the standardized coefficient is small (β=-0.09). Results also indicate that parent disability did not have a significant indirect effect on youth career education. Although there was no statistically significant indirect effect found, this model still provides support for the family stress and investment models as demonstrated through some statistically significant pathways from economic hardship to stress processes and parental investments. Notably, the pathway between parent report harsh parenting in Cycle 4 and youth career education was statistically significant.

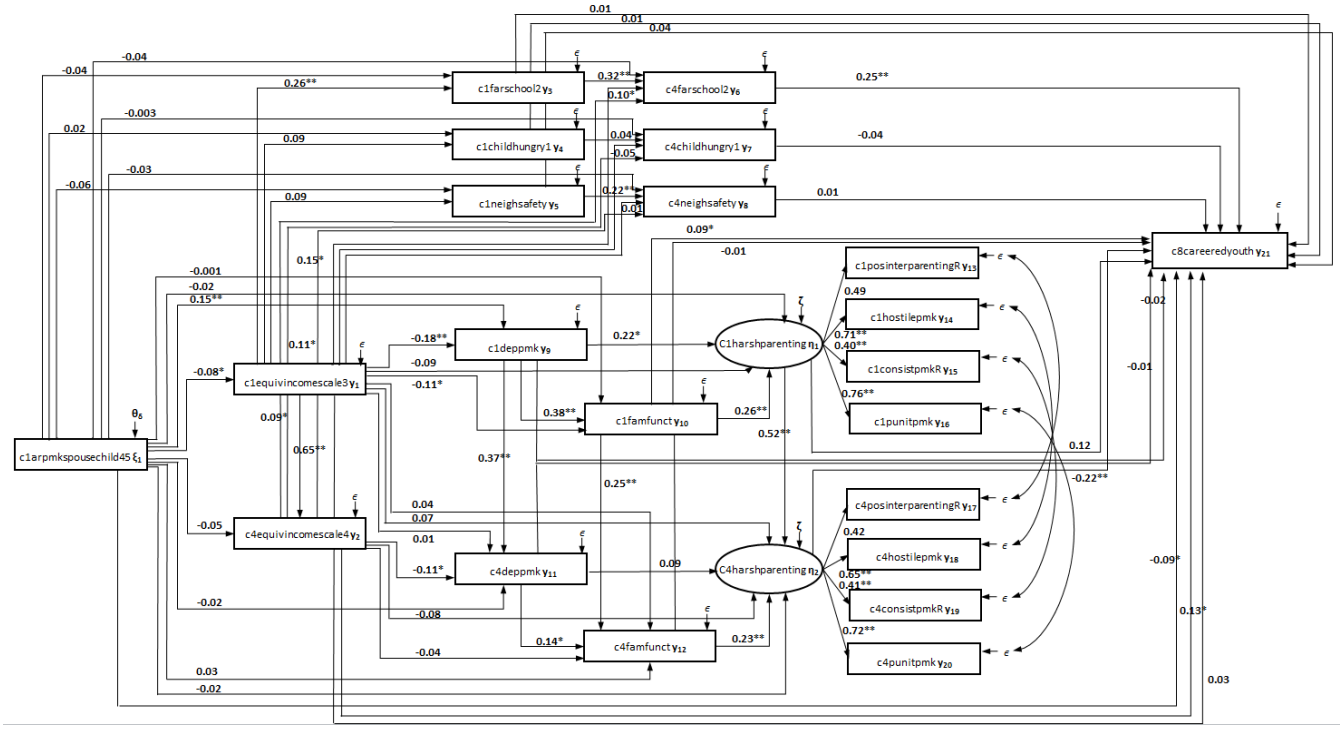


Figure 4.14 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth career education (c8careeredyouth)**. Model includes **parent report** mediating variables. *p<0.05, **p<0.01

Table 4.15 Weighted decomposition of effects: Direct, indirect, and total effects for youth career education (c8careeredyouth) pathways (Note: model includes parent report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth education (c8careeredyouth)	← Cycle 1 equivalized income (c1equivincomescale3)	0.016 (0.007)	0.128*	ns	ns	0.026 (0.005)	0.202**
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	ns	ns	ns	ns
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	0.202 (0.050)	0.080**	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	ns	ns	ns	ns	ns	ns
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent hope of how far chid will go in school (c4farschool2)	0.580 (0.103)	0.254**	no path	no path	0.580 (0.103)	0.254**
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 1 family functioning (c1famfunct)	0.021 (0.010)	0.088*	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	-0.014 (0.005)	-0.050*	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	-0.104 (0.036)	-0.114**	ns	ns
	← Cycle 4 harsh parenting (C4harshparenting)	-0.266 (0.086)	-0.219**	no path	no path	-0.266 (0.086)	-0.219**
	← Parent disability (c1arpmkspousechild45)	-0.334 (0.160)	-0.090*	ns	ns	-0.456 (0.177)	-0.123*

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

For the second model run utilising the youth career education variable, mediating pathways between parental disability and youth career education (i.e., career education needed for planned career,

variable: c8careeredyouth) included a combination of parent and child report variables. This included Cycle 4 child report of stimulation of learning and Cycle 4 child report harsh parenting. The Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=124) =557.260, p<0.001), however, fit indices suggest adequate model fit (CFI=0.856; RMSEA=0.051). Figure 4.15 shows the structural model including weighted standardized coefficients. The weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth career education (c8careerdyouth) are displayed in Table 4.16. Results demonstrate that the direct effect of parental disability on youth career education was statistically significant. It is important to note that although this direct effect is statistically significant, the standardized coefficient is small (β=-0.107). This differed from the indirect effect between parent disability and youth career education which was found to not be statistically significant. Although there was no statistically significant indirect effect found, this model still provides support for the family stress and investment models as demonstrated through some statistically significant pathways from economic hardship to stress processes and parental investments.

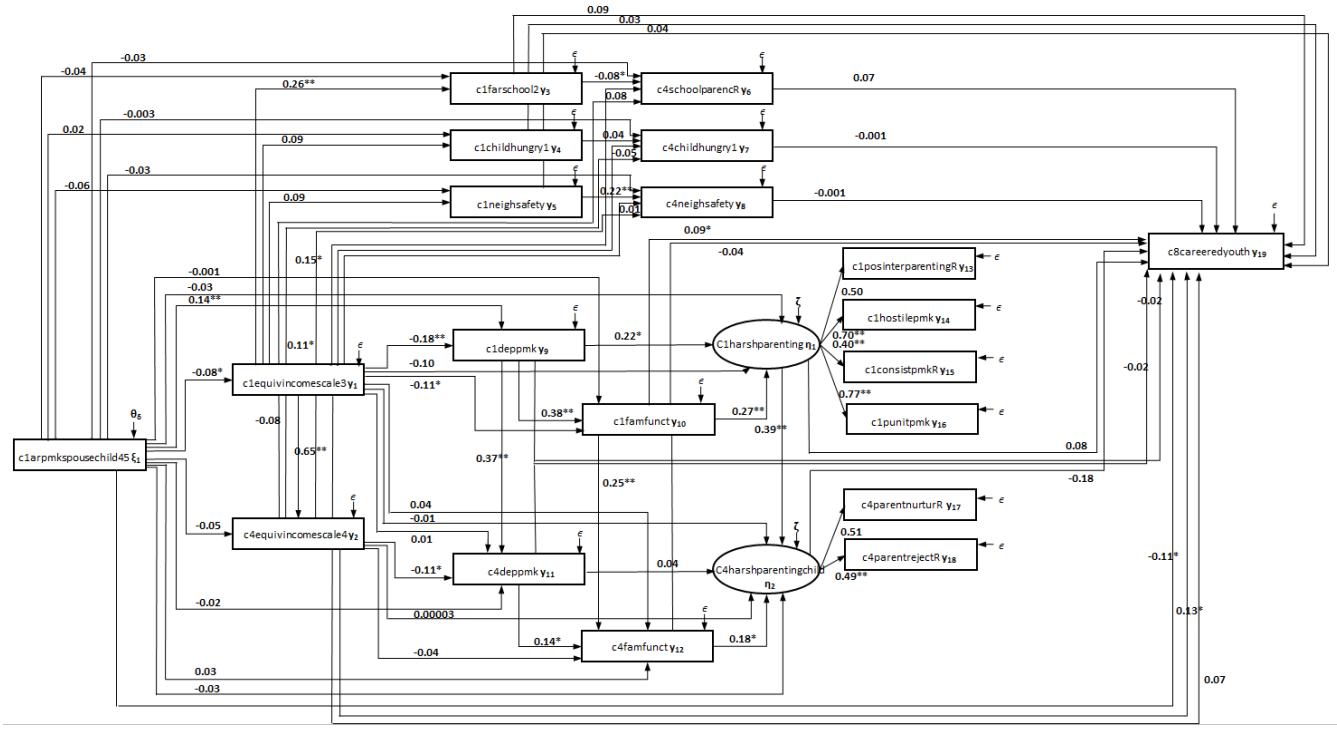


Figure 4.15 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth career education (c8careeredyouth)**. Model includes **parent and child report** mediating variables. *p<0.05, **p<0.01

Table 4.16 Weighted decomposition of effects: Direct, indirect, and total effects for youth career education (c8careeredyouth) pathways (Note: model includes parent and child report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth education (c8careeredyouth)	← Cycle 1 equivalized income (c1equivincomescale3)	0.017 (0.007)	0.132*	ns	ns	0.025 (0.005)	0.200**
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	ns	ns	ns	ns
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	ns	ns	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	ns	ns	ns	ns	ns	ns
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parents encourage child to do well in school (c4schoolparencR)	ns	ns	no path	no path	ns	ns
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 1 family functioning (c1famfunct)	0.023 (0.011)	0.093*	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	ns	ns	ns	ns
	← Cycle 4 harsh parenting (C4harshparentingchild)	ns	ns	no path	no path	ns	ns
	← Parent disability (c1arpmkspousechild45)	-0.395 (0.171)	-0.107*	ns	ns	-0.481 (0.178)	-0.130*

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

4.3.5.3 Youth social support.

Structural equation modeling was employed to test the hypothesis that economic hardship in early (Cycle 1) and middle (Cycle 4) childhood, and in turn, family stress processes and parental investments, mediate the relationship between parental disability and youth social support youth social support (i.e., social support score, variable: c8socsuppyouth). Two separate models were run for the youth general health variable. The first model included all mediating variables which were parent report and the second model included mediating variables which were a combination of parent and child report. For the first model run (all parent report mediating variables), the Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=159) =582.998, p<0.001), however, other fit indices suggest adequate model fit (CFI=0.903; RMSEA=0.044). Figure 4.16 displays the structural model including weighted standardized coefficients. Table 4.17 below shows the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth social support (c8socsuppyouth). Results indicate that parental disability had no statistically significant direct effect on youth social support. But a significant indirect effect between disability and youth social support was found. The significant indirect effect was found through the following pathway: parent disability (c1arpmkspousechild45) → cycle 1 equivalized income (c1equivincomescale3) → cycle 1 parent hope of how far child will go in school (c1farschool2) → cycle 4 parent hope of how far chid will go in school (c4farschool2) → youth social support (c8socsuppyouth). Also, this model provides further support for the family stress and investment models through some additional statistically significant pathways from economic hardship to stress processes and parental investments.

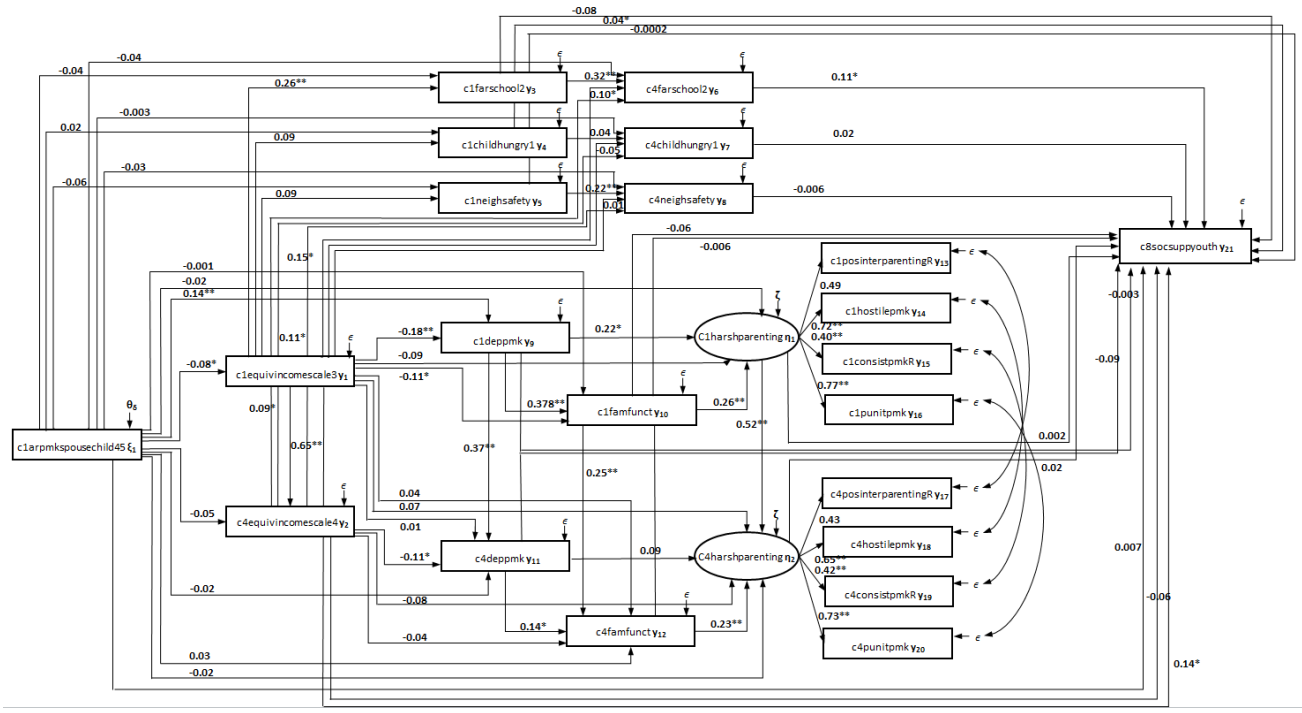


Figure 4.16 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth social support (c8socsuppyouth)**. Model includes **parent report** mediating variables. *p<0.05, **p<0.01

Table 4.17 Weighted decomposition of effects: Direct, indirect, and total effects for youth social support (c8socsuppyouth) pathways (Note: model includes parent report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth social support (c8socsuppyouth)	← Cycle 1 equivalized income (c1equivincomescale3)	ns	ns	0.039 (0.014)	0.126**	ns	ns
	← Cycle 4 equivalized income (c4equivincomescale4)	0.048 (0.021)	0.143*	ns	ns	0.052 (0.021)	0.154*
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	0.219 (0.100)	0.035*	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	0.635 (0.255)	0.041*	ns	ns	0.649 (0.259)	0.042*
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent hope of how far chid will go in school (c4farschool2)	0.622 (0.265)	0.110*	no path	no path	0.622 (0.265)	0.110*
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	ns	ns	ns	ns
	← Cycle 4 harsh parenting (C4harshparenting)	ns	ns	no path	no path	ns	ns
	← Parent disability (c1arpmkspousechild45)	ns	ns	-0.262 (0.117)	-0.029*	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

For the second model run utilising the youth social support variable, mediating pathways between parental disability and youth social support (i.e., social support score, variable: c8socsuppyouth) included a combination of parent and child report variables. This included Cycle 4 child report of stimulation of learning and Cycle 4 child report harsh parenting. The Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=124) =554.268, p<0.001), however, other fit indices suggest adequate model fit (CFI=0.856; RMSEA=0.051). Below, Figure 4.17 shows the structural model including weighted standardized coefficients. Table 4.18 displayed the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth social support (c8socsuppyouth). Results demonstrate that the direct and indirect effects of parental disability on youth social support were not statistically significant. Although the indirect effect of parental disability on youth general health was not found to be statistically significant, this model again provides support for the family stress and investment models as results demonstrate some statistically significant pathways from economic hardship to stress processes and parental investments. One statistically significant pathway to be noted is from Cycle 4 child report harsh parenting to youth social support.

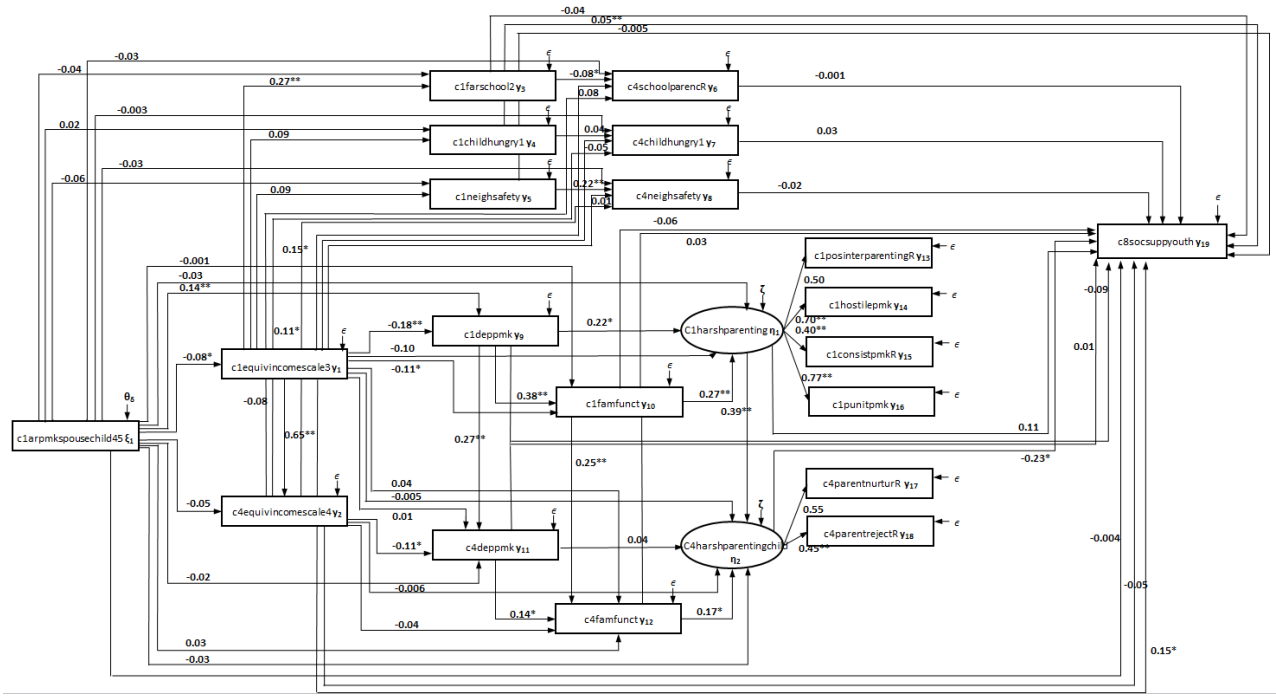


Figure 4.17 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth social support (c8socsuppyouth)**. Model includes **parent and child report** mediating variables. *p<0.05, **p<0.01

Table 4.18 Weighted decomposition of effects: Direct, indirect, and total effects for youth social support (c8socsuppyouth) pathways (Note: model includes parent and child report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth social support (c8socsuppyouth)	← Cycle 1 equivalized income (c1equivincomescale3)	ns	ns	0.036 (0.016)	0.114*	ns	ns
	← Cycle 4 equivalized income (c4equivincomescale4)	0.050 (0.022)	0.150*	ns	ns	0.052 (0.021)	0.153*
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	ns	ns	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	0.732 (0.242)	0.047**	ns	ns	0.752 (0.246)	0.048**
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parents encourage child to do well in school (c4schoolparencR)	ns	ns	no path	no path	ns	ns
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	-0.199 (0.087)	-0.089*	ns	ns
	← Cycle 4 harsh parenting (C4harshparentingchild)	-0.321 (0.120)	-0.231*	no path	no path	-0.321 (0.120)	-0.231*
	← Parent disability (c1arpmkspousechild45)	ns	ns	ns	ns	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

4.3.5.4 Youth happiness/life satisfaction.

Structural equation modeling was employed to test the hypothesis that economic hardship in early (Cycle 1) and middle (Cycle 4) childhood, and in turn, family stress processes and parental investments, mediate the relationship between parental disability and youth happiness/life satisfaction (i.e., general self-image score, variable: c8selfimageyouth). Two separate models were run for the youth general health variable. The first model included all mediating variables which were parent report and the second model included mediating variables which were a combination of parent and child report. For the first model run (all parent report mediating variables), the Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=159) =587.199, p<0.001), however, other fit indices suggest adequate model fit (CFI=0.900; RMSEA=0.045). Figure 4.18 displays the structural model including weighted standardized coefficients. Table 4.19 below shows the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth happiness/life satisfaction (c8selfimageyouth). Overall, results indicate that parental disability had no statistically significant direct or indirect effect on youth happiness/life satisfaction. Although the indirect effect of parental disability on youth happiness/life satisfaction was not statistically significant, again this model demonstrates support for the family stress and investment models. Results demonstrate some statistically significant pathways from economic hardship to stress processes and parental investments.

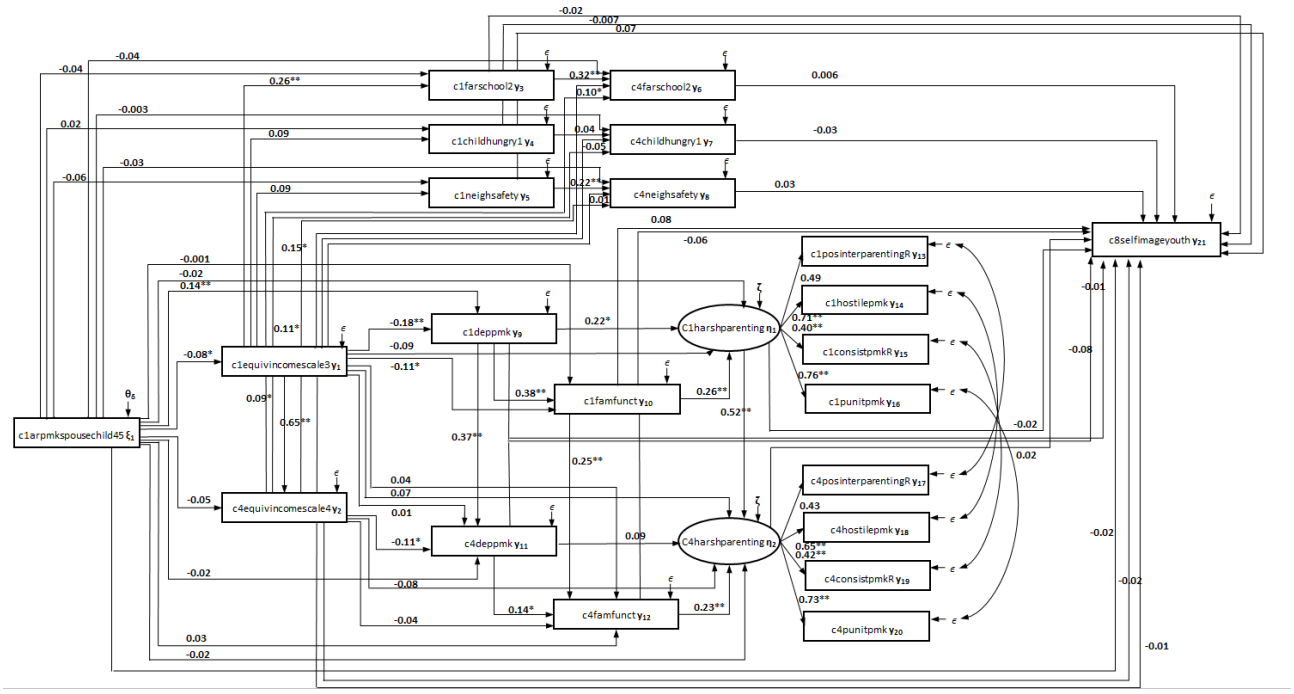


Figure 4.18 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth happiness/life satisfaction (c8selfimageyouth)**. Model includes **parent report** mediating variables. *p<0.05, **p<0.01

Table 4.19 Weighted decomposition of effects: Direct, indirect, and total effects for youth happiness/life satisfaction (c8selfimageyouth) pathways (Note: model includes parent report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth happiness/life satisfaction (c8selfimgeyouth)	← Cycle 1 equivalized income (c1equivincomescale3)	ns	ns	ns	ns	ns	ns
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	ns	ns	ns	ns
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	ns	ns	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	ns	ns	ns	ns	ns	ns
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	ns	ns	0.120 (0.059)	0.076*
	← Cycle 4 parent hope of how far chid will go in school (c4farschool2)	ns	ns	no path	no path	ns	ns
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	ns	ns	ns	ns
	← Cycle 4 harsh parenting (C4harshparenting)	ns	ns	no path	no path	ns	ns
	← Parent disability (c1arpmkspousechild45)	ns	ns	ns	ns	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

For the second model run utilising the youth happiness/life satisfaction variable, mediating pathways between parental disability and youth happiness/life satisfaction (i.e., general self-image score,

variable: c8selfimageyouth) include a combination of parent and child report variables. This included Cycle 4 child report of stimulation of learning and Cycle 4 child report harsh parenting. Again, the Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=124) =554.193, p<0.001), however, other fit indices demonstrated adequate model fit (CFI=0.854; RMSEA=0.051). Below, Figure 4.19 shows the structural model including weighted standardized coefficients. Table 4.20 displayed the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth happiness/life satisfaction (c8selfimageyouth). Again, results demonstrate that the direct and indirect effects of parental disability on youth happiness/life satisfaction were not statistically significant. Although the indirect effect was not statistically significant, the model run provides support again for the family stress and investment models through some statistically significant pathways from economic hardship to stress processes and parental investments. Notably, there was a statistically significant pathway between Cycle 4 child report harsh parenting and youth happiness/life satisfaction.

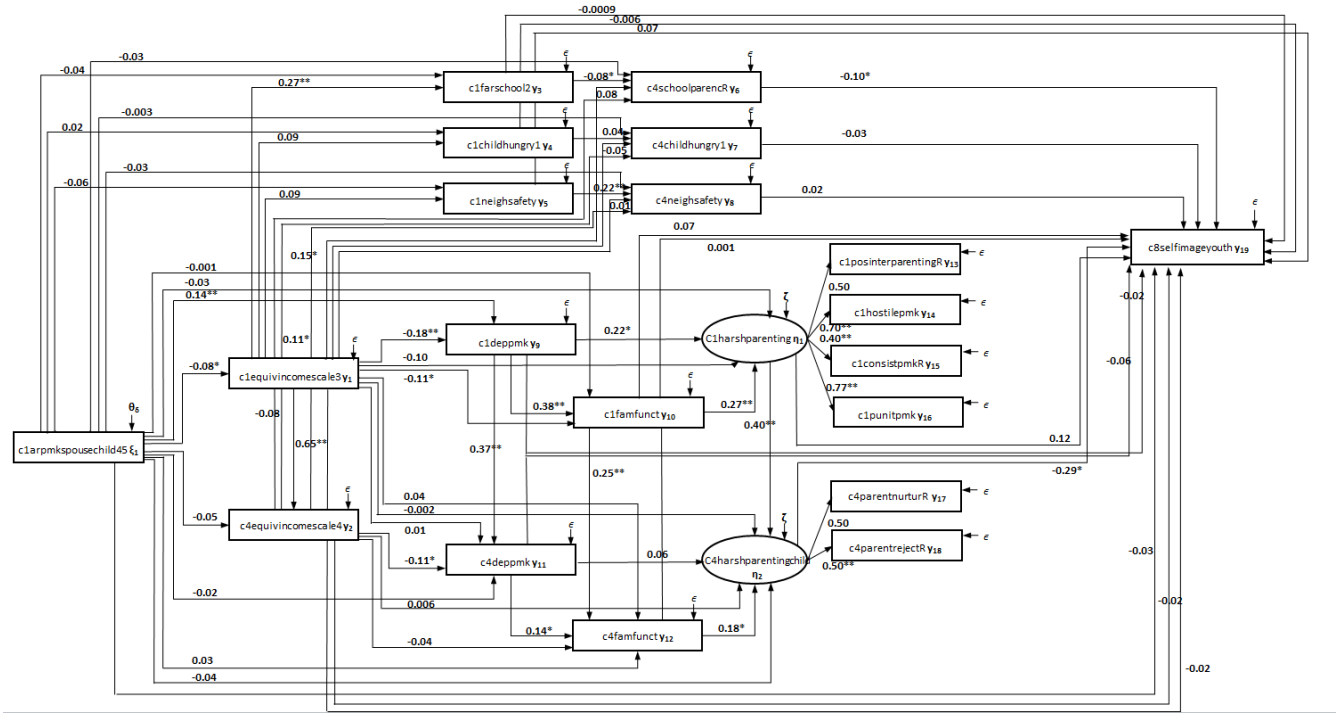


Figure 4.19 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth happiness/life satisfaction (c8selfimageyouth)**. Model includes **parent and child report** mediating variables. *p<0.05, **p<0.01

Table 4.20 Weighted decomposition of effects: Direct, indirect, and total effects for youth happiness/life satisfaction (c8selfimageyouth) pathways (Note: model includes parent and child report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth happiness/life satisfaction (c8selfimageyouth)	← Cycle 1 equivalized income (c1equivincomescale3)	ns	ns	ns	ns	ns	ns
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	ns	ns	ns	ns
	← Cycle 1 parent hope of how far child will go in school (c1farschool2)	ns	ns	ns	ns	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	ns	ns	ns	ns	ns	ns
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parents encourage child to do well in school (c4schoolparencR)	-0.399 (0.142)	-0.096*	no path	no path	-0.399 (0.142)	-0.096
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	-0.166 (0.069)	-0.117*	ns	ns
	← Cycle 4 harsh parenting (C4harshparentingchild)	-0.289 (0.111)	-0.295*	no path	no path	-0.290 (0.111)	-0.295*
	← Parent disability (c1arpmkspousechild45)	ns	ns	ns	ns	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results
*p<0.05, **p<0.01

4.3.5.5 Youth behaviours and risks.

Structural equation modeling was employed to test the hypothesis that economic hardship in early (Cycle 1) and middle (Cycle 4) childhood, and in turn, family stress processes and parental investments, mediate the relationship between parental disability and youth behaviours and risks (i.e., latent variable: C8behrisks). Two separate models were run for the youth general health variable. The first model included all mediating variables which were parent report and the second model included mediating variables which were a combination of parent and child report. For the first model run (all parent report mediating variables), the Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (df=224) =685.685, $p<0.001$), however, other fit indices suggest adequate model fit (CFI=0.905; RMSEA=0.039). Figure 4.20 represents the structural model including weighted standardized coefficients. Also, Table 4.21 displays the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth behaviours and risks (C8behrisks). Overall, results indicate that parental disability had no statistically significant direct or indirect effect on youth behaviours and risks. Although no statistically significant indirect was found, this model again demonstrates support for the family stress and investment models. Results demonstrate some statistically significant pathways from economic hardship to stress processes and parental investments.

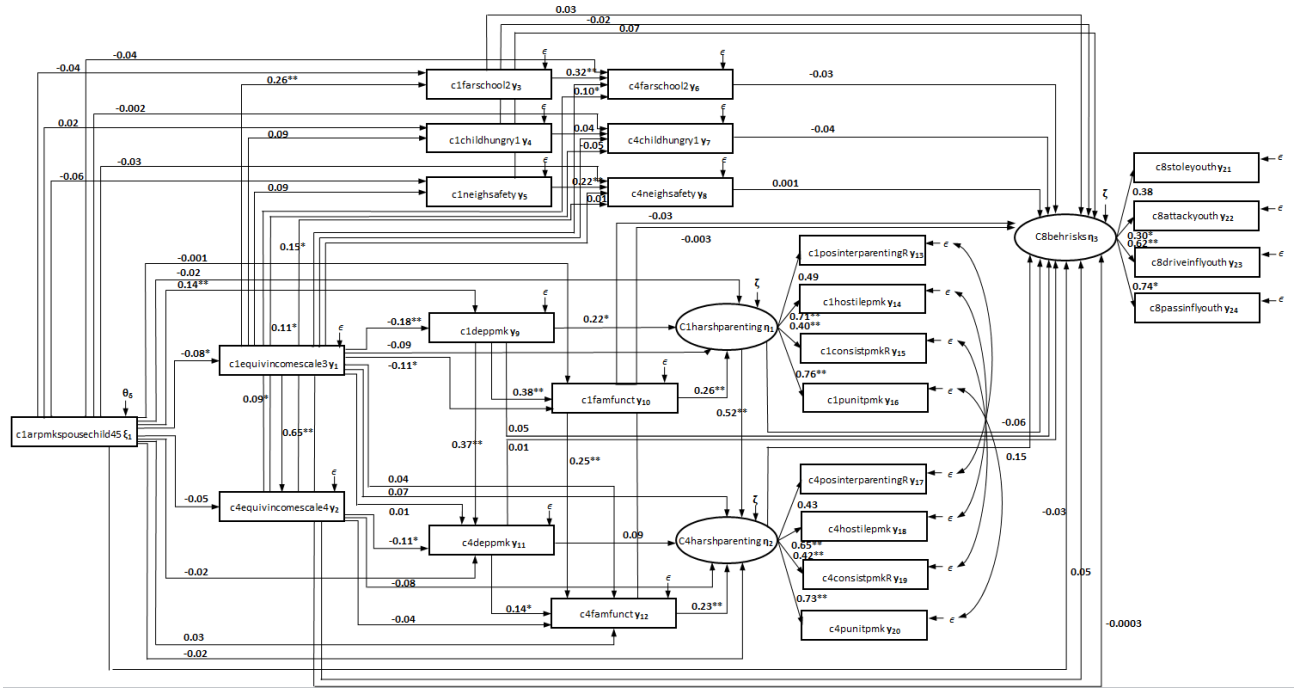


Figure 4.20 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth behaviours and risks (C8behrisks)**. Model includes **parent report** mediating variables. *p<0.05, **p<0.01

Table 4.21 Weighted decomposition of effects: Direct, indirect, and total effects for youth behaviours and risks (C8behrisks) pathways (Note: model includes parent report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth behaviours and risks (C8behrisks)	← Cycle 1 equivalized income (c1equivincomescale3)	ns	ns	ns	ns	ns	ns
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	ns	ns	ns	ns
	← Cycle 1 parent hope of how far child will go in school (c1farschool2)	ns	ns	ns	ns	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	ns	ns	ns	ns	ns	ns
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent hope of how far child will go in school (c4farschool2)	ns	ns	no path	no path	ns	ns
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	ns	ns	ns	ns
	← Cycle 4 harsh parenting (C4harshparenting)	ns	ns	no path	no path	ns	ns
	← Parent disability (c1arpmkspousechild45)	ns	ns	ns	ns	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results.
*p<0.05, **p<0.01

For the second model run utilising the youth behaviours and risks latent variable, mediating pathways between parental disability and youth behaviours and risks (i.e., latent variable: C8behrisks)

included a combination of parent and child report variables. This included Cycle 4 child report of stimulation of learning and Cycle 4 child report harsh parenting. Again, the Chi-square 'lack-of-fit' test (unweighted data) was statistically significant (X^2 (*df*=183) =653.430, p<0.001), however, other fit indices demonstrated adequate model fit (CFI=0.865; RMSEA=0.044). Below, Figure 4.21 shows the structural model including weighted standardized coefficients. Table 4.22 displays the weighted decomposition of effects (i.e., direct, indirect, and total effects) for pathways to youth behaviours and risks (C8behrisks). Results demonstrate that the direct and indirect effects of parental disability on youth behaviours and risks were not statistically significant. Again, although a statistically significant indirect effect was not present, this model provides support for the family stress and investment models. Results show some statistically significant pathways from economic hardship to stress processes and parental investments.

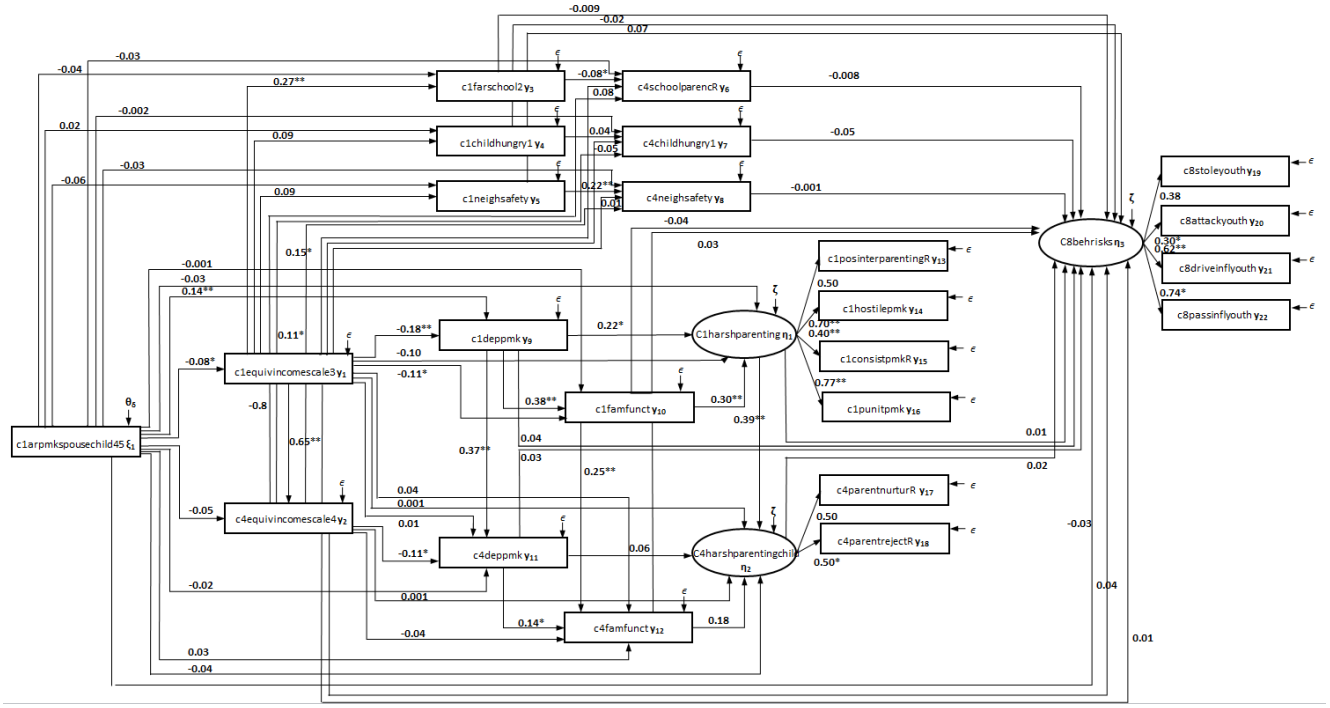


Figure 4.21 Weighted standardized coefficients for tested mediating pathways (parental investments and family stress processes) between parental disability and **youth behaviours and risks (C8behrisks)**. Model includes **parent and child report** mediating variables. *p<0.05, **p<0.01

Table 4.22 Weighted decomposition of effects: Direct, indirect, and total Effects for youth behaviours and risks (C8behrisks) pathways (Note: model includes parent and child report mediating variables)

Pathway		**Direct effect**		**Indirect effect**		**Total effects**	
		B (SE)	β	B (SE)	β	B (SE)	β
Youth behaviours and risks (C8behrisks)	← Cycle 1 equivalized income (c1equivincomescale3)	ns	ns	ns	ns	ns	ns
	← Cycle 4 equivalized income (c4equivincomescale4)	ns	ns	ns	ns	ns	ns
	← Cycle 1 parent hope of how far chid will go in school (c1farschool2)	ns	ns	ns	ns	ns	ns
	← Cycle 1 child experienced being hungry (c1childhungry1)	ns	ns	ns	ns	ns	ns
	← Cycle 1 neighbourhood safety (c1neighsafety)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parents encourage child to do well in school (c4schoolparencR)	ns	ns	no path	no path	ns	ns
	← Cycle 4 child experienced being hungry (c4childhungry1)	ns	ns	no path	no path	ns	ns
	← Cycle 4 neighbourhood safety (c4neighsafety)	ns	ns	no path	no path	ns	ns
	← Cycle 1 parent mental health problems (c1deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 1 family functioning (c1famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 4 parent mental health problems (c4deppmk)	ns	ns	ns	ns	ns	ns
	← Cycle 4 family functioning (c4famfunct)	ns	ns	ns	ns	ns	ns
	← Cycle 1 harsh parenting (C1harshparenting)	ns	ns	ns	ns	ns	ns
	← Cycle 4 harsh parenting (C4harshparentingchild)	ns	ns	no path	no path	ns	ns
	← Parent disability (c1arpmkspousechild45)	ns	ns	ns	ns	ns	ns

Note B=unstandardized coefficient, standard error=SE, Confidence interval for B=CI, β=standardized coefficient, ns=nonsignificant results.
*p<0.05, **p<0.01

4.4 Summary of Findings

The study sample consisted of approximately 1,350 children (weighted population size approximately 637,400). Of these children, it was found that 15.6% had at least one parent with disability (95% CI 0.130, 0.187). Analysis of household characteristics demonstrated that parental disability was associated with lower household income in Cycle 4 and lower equivalized income in Cycles 1 and 4. Structural equation modeling was utilised to test the study hypothesis (i.e., The relationship between parental disability and youth well-being is partially mediated by economic hardship leading to decreased parental investments and poorer parent mental health and in turn decreased family functioning and increased harsh parenting in early and middle childhood). Overall, results suggest that the family stress and investment models fit the data well, explaining, in part or whole, the relationship between economic exposures in early and middle childhood and youth well-being. Results indicate that, taken as a whole, parental disability did not consistently predict youth well-being. A statistically significant direct effect of parental disability on youth report of career education needed was found. In addition, for models containing all parent report mediating variables, statistically significant indirect effects of parental disability on youth depression, youth education, youth literacy, and youth social support were found. Most statistically significant indirect effects were found through investment model pathways. These results provide support for the investment model, as they indicate that the relationship between parental disability and youth well-being (education and social support) are mediated by economic hardship leading to decreased parental investments in early and middle childhood. The models run also provide additional support for the family stress and investment models as results indicate some statistically significant pathways from economic hardship to family stress processes and parental investments. Of these pathways, it was found that the pathway from Cycle 4 child report harsh parenting to youth general health, youth education, youth social support, and youth happiness/life satisfaction were statistically significant, but only one pathway from Cycle 4 parent report harsh parenting to youth well-being was statistically significant (i.e., youth career education).

The following chapter will discuss these findings in the context of current literature. Study strengths and limitations will also be included within the following chapter. This will be followed up an overview of study implications and directions for future research.

Chapter 5: Discussion

The extant literature suggests that children brought up by parents with disability face an increased risk of poorer well-being, including but not limited to developmental delays and mental health issues. The available data are however limited and the nature of the relationship between parental disability and child/youth well-being remains under-theorised. Extant knowledge, or 'what we think we know' about the experiences and well-being of children and youth brought up by parents with disability, is based largely on proxy report (i.e., others speaking for the child/youth), clinical samples (although some population-based data are now emerging), cross-sectional data, and a limited range of indicators. Utilising the most recent population-based longitudinal data on the development and well-being of Canadian children, the National Longitudinal Survey of Children and Youth (NLSCY), this study investigated explanatory mechanisms, i.e., theoretical pathways linking parental disability to poorer youth well-being. Specifically, using structural equation modeling to fit complex models to the data, this study investigated the mediating role of economic hardship, family stress processes, and parental investments. Taking a human rights-based approach, this study investigated the relationship between parental disability and multiple dimensions of youth well-being: health, education social support, happiness/life satisfaction, and behaviours and risks. Further, consistent with the human rights based approach, youth report rather than proxy measures of well-being were used.

5.1 Family and Household Characteristics

The study sample included approximately 1350 children (weighted population size approximately 637,400) in relation to whom data were collected in early childhood (age 4-5 years), middle childhood (age 10-11 years) and youth (age 18-19 years). In early childhood, 15.6% of these children had a parent with disability, defined as responding yes (sometimes or often) to having an activity restriction at home, school, work, or other activities (e.g., transportation or leisure) due to a long-term physical condition, mental condition or health problem. Furthermore, Person Most Knowledgeable (PMK) reported disability included 9.0% (95% CI 0.07, 0.12) of the sample and Spouse of PMK reported disability included 10.4% (95% CI 0.08, 0.13) of the sample. The proportion of parental disability found in this

sample is compatible to previous research (Šumilo et al., 2012; Hogan et al., 2007; Neely-Barnes et al., 2014). For example, utilizing data from the UK Millennium Cohort Study, Šumilo et al. (2012) found that 9.4% of women who had a child in 2000-2002 reported having a limiting long standing illness. In the US, Hogan et al. (2007) utilised population data from the National Longitudinal Survey of Youth 1997 and found that the proportion of maternal and paternal disability (i.e., long-term health problem or condition limiting employment) was 12.2% and 11.6%, respectively (Hogan et al. 2007).

Analysis of the characteristics of parents with disability compared to parents without disability reveal similarities and differences in Cycle 1 (children 4-5 years old). In both groups, the PMK were mostly female (PMK with disability = 92.8%, PMK without disability = 94.2%), whereas the spouse of the PMK were mostly male (spouse with disability = data suppressed to meet Statistics Canada requirements; spouse without disability = 6.1% female). No statistically significant differences were found in relation to gender of parents with disability and parents without disability. Furthermore, 89% of PMK with disability and 92% of PMK without disability reported being the biological mother of the child. Whereas 94.2% of spouse with disability compared to 88.9% of spouse without disability reported being the biological father to the child. No statistically significant differences were found regarding the relationship to the child for parents with disability compared to parents without disability. Parents with disability (PMK and spouse) were of similar age to parents without disability. Utilising population-based data, Šumilo et al. (2012) found similar results. Specifically, no statistically significant difference in the age of women with a limiting longstanding illness compared to women without a limiting longstanding illness who had given birth in 2000-2002 was found.

On aggregate, households headed by parents with disability had lower equivalized incomes when measured in Cycles 1 (child age 4-5 years) and 4 (child age 10-11). Socioeconomic inequalities have been demonstrated in multiple studies relating to parents with disability (e.g., Bergeron et al. 2012; Blackford, 1999; Emerson & Brigham, 2013; Emerson & Brigham, 2014; Hindmarsh et al., 2014; Hindmarsh et al., 2017; Hogan et al., 2007; Powell et al., 2016; Šumilo et al., 2012). For example, Šumilo et al. (2012) found that disability was associated with risk of poverty for women with a limiting

longstanding illness who had given birth. Also, in a study utilizing data from the Millennium Cohort Study in the UK, Hindmarsh et al. (2014) found that 62.2% of mothers with intellectual disability reported less than 60% the national median of equivalent household income, compared to 35.9% of mothers with no intellectual disability.

A potential contributing factor to the lower equivalized incomes found in this study may include lower levels of employment for spouses (of PMK) with disability. Lower employment levels of parents with disability were also found for parents with an intellectual disability in England. Emerson and Brigham (2013) found that 54% of 2 parent households with a parent with an intellectual disability, the main wage earner was not employed, compared to only 6% of 2 parent households with no parent with intellectual disability (n = 46,023 households) (Emerson & Brigham, 2013). Statistics Canada (2012) has investigated education attainment of persons with disability and persons without disability at age 25-64 years. While findings demonstrate no differences between persons with disability and persons without disability obtaining a postsecondary certificate or diploma (less than bachelor's level) (39.5% of persons with disability and 38.2% of persons with disability), lower education attainment was demonstrated in terms of a university certificate, diplomas or degree. More specifically, Statistics Canada (2012) found that 13.9% of persons with disability compared to 26.7% of persons without disabilities have obtained a university certificate, diploma or degree at a minimum of a bachelor's level.

5.2 Parental Disability and Youth Well-being

Based on a review of extant literature, youth brought up by parents with disability were expected to report poorer well-being. Although methodologically limited, the results of previous studies suggest that, on average, children of parents with disability are more likely to experience developmental delay, accidents and injuries, respiratory health conditions, and emotional-behavioural problems (Brown, Cobigo, Lunsky, et al., 2016; Emerson & Brigham, 2014; Keltner et al., 1999; McConnell et al., 2003; Mitra et al., 2015; Neely-Barnes et al., 2014; Powell & Parish, 2017; Šumilo et al., 2012). In this study however, the association between parental disability and youth well-being was not strong. For example, the current study's structural equation modeling results demonstrate no statistically significant association

found between parental disability and the measure of youth general health, happiness/life satisfaction, and behaviours and risks.

These results are not entirely incongruent with prior research. Several other studies found little or no association between parental disability and measure/indicators of child/youth well-being. Hogan et al. (2007), for example, found no statistical significant association between maternal or paternal disability and youth assessments of their relationship with their parent: Youth of parents with disabilities were no more or less likely than other youth to think highly of their parents or enjoy spending time with them. Powell et al. (2016) found that children with mothers with intellectual disability in the US were no more or less likely to experience fair or poor health, by comparison with children of mothers without intellectual disability.

Additional results of structural equation modeling show that parental disability did have a significant direct or indirect effect on youth depression, education, report of career education needed for planned career, literacy, and social support. Whether the effects can be described as 'clinically significant' is open to interpretation. Similar statistically significant standardized coefficients were found in a study utilising the NLSCY and employing structural equation modeling to investigate the effect socioeconomic context has on child verbal and behavioural development. Kohen et al. (2008) found statistically significant pathways ranging from 0.02 to 0.47. The current study demonstrates statistically significant coefficients ranging from 0.02 to 0.31.

There is little comparable data on the 'educational outcomes' for youth brought up by parents with disability. However, previous studies have found that these children may have somewhat less supportive learning environments (i.e., less parental investments). In the United States, Hogan et al. (2007) found that youth of mothers with disability were less likely to have parents take part in their school work and their home was not as enriching as youth with mothers without disability. Analysing data from the Wisconsin Longitudinal Study, Taylor et al. (2010) found that children with parents with mild intellectual disability completed less education than the average. The researchers also found that

parents with mild intellectual disability had lower expectations of their children to complete schooling, which predicted educational attainment.

5.3 Mediating pathways

Previous research suggests that poorer well-being in children and youth brought up by parents with disability may be at least partially explained by relative socioeconomic disadvantage (e.g., Emerson & Brigham, 2014; Powell & Parish, 2017). Conger and Donnellan (2007) propose two explanatory models, linking economic hardship to poorer child well-being. These are the family stress models of economic hardship and the family investment model. In this study, the models were integrated and operationalised, with indicators derived from the NLSCY. The results from the structural equation modeling, reported in sections 4.3.5.1 to 4.3.5.5, suggest that the integrated models fit the data well. The effects of parental disability (i.e., when an effect was found) on multiple indicators of youth well-being were fully mediated by economic hardship (equivalized household income) through parental investments. Notably, the pathways from parental disability to indicators of youth education, literacy, and social support were mediated by economic hardship in early childhood, and the influence this had on the educational expectations of parents for their child (i.e., parent hope of how far child will go in school, early and middle childhood measures). These results are consistent with previous research utilising the family investment model to predict child well-being outcomes (e.g., Coddingston et al., 2014; Sosu & Schmidt, 2017; Linver et al., 2002; Yeung et al., 2002). These findings are also consistent with previous research, described above, suggesting that parental education expectations at least partially mediate the relationship between parental disability and child educational attainment (Taylor et al., 2010). It may be valuable for future research to investigate these findings further. For example, including mediating variables such as educational resources in the home may provide additional information pertaining to the impact of the learning environment.

The results of the study afford partial support for the family stress model. For example, equivalized household income in early childhood had a statistically significant direct effect on parent mental health (early childhood), and subsequently to family functioning (early childhood), and parent

report harsh parenting (early childhood). These effects have been observed in multiple studies (e.g., Kohen et al., 2008; Lee et al., 2011; Conger, Wallace, Sun et al., 2002; Bøe et al., 2014; Newland et al., 2013; Nepal et al., 2016; Simons et al., 2016). Notably, similar to a study conducted by Aunos and Feldman (2008) investigating behaviour outcomes of children of mothers with intellectual disability, this study found a relationship between early childhood parent mental health and parenting practices. In the current study, it should be noted that the effects of middle childhood parent mental health on parent or child report harsh parenting (middle childhood) were not statistically significant. Although, the effects of middle childhood parent mental health on family functioning (middle childhood) and subsequently parent or child report harsh parenting (middle childhood) were statistically significant for most models. Further research investigating the impact of parenting practices on youth well-being outcomes may be beneficial. For example, testing variables included in the latent variables harsh parenting (child and parent report) separately (e.g., low positive interaction, hostile ineffective parenting, consistent parenting, punitive/aversive interactions) may provide additional information.

This study ran two sets of structural equation models for each youth well-being indicator studied. The first model utilised all parent report mediating variables, while the second model utilised parent report mediating variables and child report mediating variables where possible. Child report mediating variables included: middle childhood indicator of simulation of learning (i.e., my parents encourage me to do well at school) and middle childhood indicator of harsh parenting (i.e., low parental nurturance and high parental rejection). Notably, it was found that when a statistically significant effect existed from harsh parenting to the youth well-being indicator, it was most often from child report of harsh parenting rather than parent report of harsh parenting. More specifically, a statistically significant direct effect from child report of harsh parenting (middle childhood) to youth general health, education, social support and happiness/life satisfaction existed. Whereas, a statistically significant direct effect from parent report of harsh parenting (early or middle childhood) only existed for youth report of career education needed for planned career. These results demonstrate the potential difference between parent and child report constructs.

Differences between parent and child report have been demonstrated in the literature. For example, Sweeting (2001) found differences between parent report and child report (11 years of age) of family life (i.e., family time and parent-child conflict). The author proposes that single informant data pertaining to family research produces limitations. Additionally, differences have been found between the responses of parents compared to children relating to the report of child well-being (e.g., Bowers et al., 2019; Klassen, et al., 2006; Sweeting & West, 1998). As previously discussed, the United Nations Convention on the Rights of the Child (CRC) highlights the need to respect the views of the child (UNICEF, 2014b). More specifically, Article 12.1 of the convention asserts that "States Parties shall assure to the child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child." In order to uphold the rights proposed in the CRC and increase knowledge of mediating processes and child/youth well-being, child/youth report in this area of study is needed moving forward.

5.4 Strengths and Limitations

One of the strengths of the study was the use of population-based data. The use of population-based data to investigate the development and well-being of children of parents with disability is quite recent: Earlier work relied on samples recruited through service providers introducing a clinical bias. Population-based data may produce a means to employ more robust methods of analysis (Llewellyn & Hindmarsh, 2015). Another strength of the study is the use of longitudinal data. Limited by cross-sectional data, most studies to date have been correlational, relying on theory to infer causality. With longitudinal data, this study could establish temporal precedence as well as correlation, as two conditions for causal inference. This study is the first to use Canadian longitudinal population-based data to study pathways between parent disability and multiple dimensions of youth well-being at 18-19 years.

A third strength of the study was the use of the United Nations Convention on the Rights of the Child (United Nations, 2006). This was utilised as an organising framework for the selection of a comprehensive (i.e., as comprehensive as possible given the limitations of the NLSCY outlined below)

indicators of youth well-being. In keeping with the human rights based approach, another major strength of the study was use of youth report data. This begins to address a major gap in the knowledge as few studies to data have collected well-being data directly from youth brought up by parents with disability.

Yet another strength of the study was the utilisation of structural equation modeling (SEM) to fit complex models to the data. SEM provides advances in statistical analysis as it allows researchers to test various assumptions regarding causal direction and allows for multiple sequential regressions to be fit simultaneously (allowing for greater parsimony and thus more precise estimates, smaller standard errors and less bias) (Fabrigar et al., 2010; Iacobucci, 2009). The use of SEM to study the well-being of children/youth of parents with disability is still rarely utilised. In Australia, Wade et al. (2011, 2015) utilised structural equation modeling to study the contextual influences on parenting practices and subsequently child well-being of parents with intellectual disability.

Although the study has many strengths, it was also limited in a number of ways. Firstly, the way in which core constructs- including parental disability, economic hardship, parental investments, and family stress processes- were operationally defined was limited by the available data. Working forwards from theory, and backwards from the data, indicators had to be chosen. For example, the NLSCY provides limited data on child report of parenting. The survey does include scales of child report parental nurturance and parental rejection in Cycle 4, but these limited scales may not fully encompass a well-rounded measure of harsh parenting. Thartori et al. (2019) measured harsh parenting utilizing multiple physical and verbal indicators which were not present in the current study. Furthermore, the NLSCY provided limited data on the mental health of parents. Conger and Donnellan (2007) suggest that, within the family stress model of economic hardship, economic pressure may lead to emotional and behavioural difficulties in parents. This may include a number of elements, such as depression, anger, anxiety, antisocial behaviour. For the current study mental health of parents was limited to a measure of depression.

Another limitation was inconsistency in the data collection procedures across cycles. For example, in Cycle 2 of the NLSCY a portion of the participants were not followed up from Cycle 1 due to

funding constraints (Statistics Canada, 1997). Additional research utilizing longitudinal population based data to investigate the well-being of children/youth with parents with disability is needed. It may be beneficial for this research to include measures of well-being throughout childhood. This may increase understanding of the impact specific mechanisms (e.g., family stress processes) have at different stages of childhood.

There are also limitations related to how parental disability was defined. Parental disability was defined in a way that is congruent with how disability has been defined in other population-based studies. However, parent disability was only measured in Cycle 1. Parents (PMK or PMK spouse) who did not report disability in Cycle 1 may have later acquired disability (as measured in this study). Similarly, some parents with disability in Cycle 1 may have been unaffected (i.e., report no disability in Cycle 4). As a result, the measured effects of parental disability on youth well-being may have been suppressed.

Finally, the analytic approach was limited by the available statistics software. For example, the multiple fit indices needed to assess model fit are not produced in Stata 15 when data are weighted. Thus model fit was assessed through unweighted data whereas standardised path coefficients were weighted. Although not ideal, the benefits of utilising weighted standardised coefficients outweigh the drawbacks of producing unweighted standardized coefficients. Weights provided by Statistics Canada adjust for child age, sex, and province of residence, as well as missing data (Statistics Canada, 2009a). Applying the sample weights therefore produces more robust and generalizable findings.

5.5 Study Implications

Parents with disability confront multiple challenges in terms of maintaining custody of their children and having access to appropriate support and services needed for parenting (e.g., McConnell et al., 2002; Booth et al., 2006; McConnell et al., 2011; Swain & Cameron, 2003; MacIntyre & Stewart, 2011; Bergeron et al., 2012). This study provides evidence for the importance of taking economic hardship into account for policy and intervention programs. Multiple studies have demonstrated the benefit of early intervention on child development for families that experience low income (e.g., Cates et al., 2016; Blair & Raver, 2016; Wallander et al., 2014; Bierman et al., 2017; Li et al., 2013). Supporting

families with parents with disability when children are young by ameliorating economic hardship may assist in decreasing risk of poorer child/youth well-being. Further research is needed, ideally employing an experimental design, to investigate strategies intended to ameliorate economic hardship and increase investments throughout childhood for children being brought up by parents with disability.

It would be valuable for future research investigating the well-being of children brought up by parents with disability to focus on the impact additional areas of environmental hardship may have on these families. For example, previous research has demonstrated that parents with disability may be at increased risk of limited social support (e.g., Lipson & Rogers, 2000; Wołowicz-Ruszkowska, 2016; Emerson & Brigham, 2013; Feldman et al., 2002; Feldman et al., 2012). But research investigating the impact and link between parent social support and child/youth well-being is still limited. Of the research that has been completed, a link between social support of parents with disability and parent mental health and stress has been demonstrated (McConnell et al., 2008b; Kroese et al., 2002; Feldman et al., 2002). Furthermore, a study completed in Canada utilising the Canadian Incidence Study of Reported Child Abuse and neglect (CIS-2003) suggests that parent mental health was a mediator in the link between social support and child functioning (Feldman et al., 2012). This study sample included parents with intellectual disability and their children involved in the child protection system. Researchers have also demonstrated that programs for mothers with intellectual disability intended to decrease psychosocial risk (i.e., the Supported Learning Program) may be subsequently effective in decreasing depression, anxiety, and stress (McConnell et al., 2016). Investigating the impact of multiple areas of environmental hardship may be beneficial for informing programs and services provided to families headed by parents with disability.

Decreasing the risk of economic hardship for all children may also improve the well-being of children brought up by parents with disability. Child well-being has been compared across countries by report cards produced by UNICEF (United Nations International Children's Emergency Fund) (UNICEF, 2018a). UNICEF report card 15, the most recent report on child well-being, focuses on educational outcomes (UNICEF, 2018b). This report card states that overall Canada ranked 9th out of 38 countries

and demonstrates that educational inequality decreases as children in Canada advance in the school system (UNICEF, 2018c). In order to improve educational inequality, UNICEF suggests focusing on income inequality, child poverty, high quality early care and learning, and inclusive learning (2018a). Reducing child poverty within a nation is complex and multiple factors need to be considered (e.g., unemployment, income, lone-parenting, social expenditures) (UNICEF, 2000). UNICEF suggests that in order for poverty reduction to move forward it is important that an integrated approach of 'economic priorities' and 'social needs' be considered (2000).

5.6 Conclusion

Overall, this study has provided new insight into the well-being of youth of parents with disability. This study has found similarities and differences between the well-being of youth with and without parents with disability. Through an in-depth analysis of pathways mediating the relationship between parental disability and youth well-being, this study provides support for the potential impact of economic hardship and parental investments and youth outcomes. Further research is still needed to investigate the potential influence of additional areas of environmental hardship, such as the impact of parent perceived social support on youth well-being. This research is vital for developing effective policy and support for families headed by parents with disability.

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