Parental Perceptions of Family Adjustment in Childhood Disability: The Role of Parenting Stress, Parental Self-Esteem, and Positive Appraisal

by

Sandra N. Thompson

A Thesis submitted to the Faculty of Graduate Studies of

The University of Manitoba

in partial fulfilment of the requirements of the degree of

DOCTOR OF PHILOSOPHY

Department of Psychology

University of Manitoba

Winnipeg

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FACULTY OF GRADUATE STUDIES

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Of

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Acknowledgements

I would like to acknowledge the families who took part in this research project. I admire and appreciate their openness to share their experiences for research.

I would like to extend my gratitude to the Social Sciences and Humanities Research Council (SSHRC) for supporting this research.

For my advisor, Dr. Diane Hiebert-Murphy, I am truly thankful. I feel honoured to have worked with such an intelligent, insightful, and thoughtful person. And through it all, I so appreciated your sense of humour. Thank you for your tireless efforts to constantly improving this paper.

To my committee, Dr. Dr. Barry Trute, Dr. David Martin, Dr. Warren Eaton, I thank you for your patience, support, and guidance throughout this research project. I admire each one of you.

To my external examiner, Dr. Dick Sobsey, I would like to thank you for your thoughtful review of this research. I really appreciate your perspective.

Thank you to Dr. John Reddon for his assistance with the initial data analyses.

I am so appreciative for my own family. My husband, Jeff Smith has supported me seeing this through to completion. For this, I am forever grateful. And to my children, Liam and Abigail, you have been my inspiration.

And to my parents, Al and Louise Thompson, I thank you for instilling in me the confidence to complete such a project. I appreciate your guidance and support more than you will ever know.

Abstract

Research into stress and coping has been extensive in psychological literature. Numerous variables have been examined as important to positive adaptation, both in individuals and families. These investigations have been largely guided by theoretical knowledge. In particular, families with children with disabilities have been the focus of research to determine what factors are important for these families in coping with stress. The current study was based on data from the Family Strengths in Childhood Disability Project which collected data from families entering services for children with disabilities. The current study was comprised of 97 mothers and 61 fathers. Based on the Double ABC-X model of family stress (McCubbin & Patterson, 1983) this research examined the impact of parenting stress, positive appraisal, and parental self-esteem on parental perceptions of family adjustment. In addition, certain demographic variables were examined related to both parenting stress and family adjustment. Disability type was related to level of parenting stress for both mothers and fathers. Also, for both parents, parenting stress directly predicted perceived family functioning. Differences between mothers and fathers in the relationships between the variables of parenting stress, positive appraisal, parental self-esteem, and family adjustment were also found. For fathers, self-esteem and positive appraisal were not individually significant in directly predicting perceived family adjustment. Exploratory analyses revealed that father's positive appraisal neither mediated nor moderated the relationship between parenting stress and family adjustment. Although self-esteem did not predict family adjustment directly, it did moderate the relationship between parenting stress and family adjustment for fathers. For mothers, parental education, single parent status, and the child's disability type were all related to

perceived family outcome. Direct predictive relationships were also found for both self-esteem and positive appraisal on perceived family adjustment for mothers. In addition, mediating relationships between parenting stress and both positive appraisal and parental self-esteem on the outcome of family adjustment were identified for mothers. This study provides support for the role of self-esteem and positive appraisal in mediating the relationship between parenting stress and family adjustment for mothers. For fathers, the results suggest that self-esteem may impact on the relationship between parenting stress and family adjustment. The theoretical and practice implications of these findings including gender differences are discussed. Limitations of the current study are identified and directions for future research are suggested.

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Parental Perceptions of Family Adjustment in Childhood Disability: The Role of Parenting Stress, Positive Appraisal, and Parental Self-Esteem

INTRODUCTION

Families with a child with a disability are frequently faced with greater stressors than other families (Burton, Lethbridge, & Phillips, 2008). However, research has demonstrated that these families cope remarkably well considering the impact of the disability (Ronnau, 1999). Research has focused on variables important to coping with the stress of having a child with a disability, including demographic, coping, stress, and resource variables (Bruder, 2000). Family stress theory (in particular the Double ABC-X model of family stress as developed by McCubbin and Patterson, 1983) has provided a framework for these types of investigations.

Building on previous research which has identified stress as important to consider in families of children with disabilities (Beckman, 1991; Britner, Morog, Pianta, & Marvin, 2003; Cameron, Dobson, & Day, 1991; Erikson & Upshur, 1989; Frey, Greenberg, & Fewell, 1989; Hastings & Johnson, 2001; Kazak, 1989; Nagy & Ungerer, 1990; Singer & Farkas, 1989; Trute, 1990, 1995; Trute & Hauch, 1988), the current study examined the role of parenting stress, positive appraisal, and parental self-esteem on family adjustment for parents raising a child with a disability by conceptualizing the relationship between stressors, resources, perceptions, and outcome. The purpose of the research was to further our understanding of family adjustment by addressing four issues. First, in past research parenting stress has often been the primary outcome measure. This is a relative limitation within the family stress theory framework, which conceptualizes outcome as family adjustment. Therefore, the current research examined the impact of

parenting stress on the outcome of family adjustment. Second, while self-esteem related to parenting has been examined in previous research, the role of parental self-esteem as an important personal resource within this model has not been examined extensively. Third, the importance of positive cognitive appraisal within this model of coping was investigated and, importantly, this study included a measure designed specifically to assess family impact using cognitive appraisals about parenting a child with a disability. Lastly, past research has identified both differences and similarities between mothers' and fathers' experiences of parenting children with disabilities. Given the important implication of gender differences for service delivery, the current study explored the possibility of such differences in predicting parental perceptions of family adjustment.

The following reviews theory and research related to families with children with disabilities to both provide an overview of the literature and a basis for the current study. Individual stress theory and family stress theory are reviewed. Specifically, the Double ABC-X model of family stress (McCubbin & Patterson, 1983) is described as the framework for the current research. Finally, the current study and its findings are reported and discussed. Limitations as well as suggestions for future research are considered.

LITERATURE REVIEW

Overview

Significance of the Issue

With advancing medical technology, there has been an increase in the number of multiple births, and a larger number of infants are surviving preterm births and prenatal trauma (alcohol and drug abuse), resulting in a greater likelihood of a child having long-term chronic conditions (Carpenter, 2000). Often these children are in need of home care and other professional involvement over the course of the child's life (Singer & Farkas, 1989). Hanvey (2002) profiled Canadian families with children with disabilities, providing background and describing these families' lives. There are approximately 565,000 children and youth (up to 19 years) who have disabilities (Hanvey, 2002). This includes all reported disabilities, which are a diverse group by disability type, gender, ethnicity, culture, and race. According to Statistics Canada (2001), the total number of children in Canada with disabilities from the ages of 5 to 14 totaled 154,720. Within this group, 39,120 (25%) were receiving some help with daily activities. The majority of these families (80%) have children who were considered to have severe to very severe disabilities involving increased demands associated with child care (Statistics Canada, 2001).

As discussed by Hanvey (2002), historically, many children with disabilities were not part of their family system or the larger community as they lived in institutions. A major shift in childhood disability has occurred with many children now living at home with their families. This has had considerable implications for the family system. As a result, there are numerous factors in need of assessment to determine how families

manage the stress of raising a child with a disability and how parents can be supported in caring for their children (Hanvey, 2002). Despite the diversity in disability type, research does reveal some common themes identified by these families. It has become important to understand factors in caring for a child with special needs as well as those that influence positive family outcome.

Impact of Childhood Disability

A family who has a child with a disability faces stress unlike other families. Childhood disability has a significant impact on the family unit. As quoted in Carpenter (2000), a mother describes the experience of learning of her child's diagnosis in the following:

> It's like being hit by an express train. First of all the engine hits you with the news that your baby has serious problems....Days or weeks later, the first coach hits you with the news that she has brain damage....The second coach, after weeks or months, brings her blindness or deafness, maybe both, and then the third coach: perhaps cerebral palsy, epilepsy or inability to sit or eat....The track on which the train is running is harsh in the extreme. A continuing sequence of your baby's illnesses, hospital readmissions, sleepless nights, exhausting days and questions to which there are no answers. (p. 135)

To learn of the child's diagnosis creates significant stress for parents. Stages of coping progress similar to stages of mourning or grief (i.e., denial, bargaining, anger, depression, and acceptance, Perry, 2004; Seligman, 1999; Seligman & Darling, 1989; Ziolko, 1991). Parents have reported feelings of helplessness, low self-esteem, resentment of demands, and financial strain (Ziolko, 1991). There can be significant

physical, emotional, and psychological care of the child required placing new demands on the family (Kazak, 1989; Pelchat, Lefebvre, & Perreault, 2003). Therefore, respite has been identified as a common concern for families (Hanvey, 2002). In addition, social isolation and stigmatization place considerable strain on the family and the marital dyad (Pelchat et al., 2003; Seligman, 1999; Seligman & Darling, 1989). Depending on the characteristics of the family, this can be an overwhelming experience (Seligman & Darling, 1989). However, families have been shown to be resilient in these situations. The family's strengths often emerge in this heightened time of stress.

Family strengths in childhood disability

As noted by Perry (2004) there is considerable heterogeneity in families with children with disabilities; while some families are overwhelmed with a mild disability others can manage a severe disability without difficulty. Initially, researchers assumed that the increased stress in these families was thought to invariably result in decreased family functioning (Knussen & Sloper, 1992). However, it has been demonstrated that families do not remain in a constant state of sorrow, and they, in fact, most often find ways to manage these challenges (Sanders & Morgan, 1997). Research has found that family members view their family as similar to any other family (Britner et al., 2003; Trute, 1990). They have reported that they view their child with a disability as a valuable member of the family and describe personal growth from the experience, including increased acceptance (Hanvey, 2002; King et al., 2006), greater insight, an increased sense of fulfillment (Hanvey, 2002) as well as patience, compassion, tolerance, perseverance, and unconditional love (King et al., 2006). Research has found that families identify positive impacts of the child's disability (Behr & Murphy, 1993;

Hastings, Beck, & Hill, 2005; Stainton & Besser, 1998; Scorgie & Sobsey, 2000; Scorgie, Wilgosh, & Sobsey, 2004; Scorgie, Wilgosh, Sobsey, & McDonald, 2001; Trute & Hiebert-Murphy, 2002). Scorgie et al. (2001) examined the impact of parenting a child with Down syndrome. Their research showed that parents identify a number of transformations as a result. More recently, Scorgie et al. (2004) further describe the process as transformational parenting in parents of children with disabilities. Parents have identified personal transformations (i.e., changes in self), relational transformations (i.e., changes in relationships), and perspective transformations (i.e., changes in priorities) as a result of their experiences. Scorgie et al. (2004) developed a working model for the transformation process involving image making, meaning making, and choice making. Similarly, King et al. (2006) determined that parents undergo considerable shifts in their beliefs and gain a new perspective on life. In addition to personal growth, they report that parents adjust family priorities as a result of raising a child with a disability (King et al., 2006). These findings have influenced service delivery with families with children with disabilities by providing a better understanding of how parenting is impacted by raising a child with a disability.

Providing Services to Families with Children with Disabilities

Family-Centered Practice

The goal of research with families of children with disabilities has been to guide intervention practices. As a result, a family-centered practice model is now promoted in intervention with families with children with disabilities. To begin this discussion, family systems theory will be reviewed followed by the principles of family-centered practice.

Family Systems Theory

Originally, the primary outcome measure in families with children with disabilities was the child's health. Researchers are now interested in a more holistic, systemic approach to this study (Bubolz & Whiren, 1984; Kazak, 1989; Seligman & Darling, 1989). An ecological perspective (Bubolz & Whiren, 1984) or social-ecological model (Kazak, 1987, 1989; Seligman & Darling, 1989) that examines the health of the family system has now been adopted. Family systems theory states that: (1) the family system consists of interconnected parts, (2) change in one part will influence all the others, (3) the system is contained within a state of balance, and (4) the family system will oscillate between change and stability (Kazak, 1989).

Childhood disability research now recognizes the importance of a family systems perspective in order to move beyond models that focus on individual outcomes (Britner et al., 2003; Kazak, 1989). It has been recognized that the family is the constant in the child's life, and understanding the child within the context of the family is now considered essential in service delivery (Trute & Hiebert-Murphy, 2007). Bailey, Buysse, Edmondson, & Smith (1992, 1998) discuss that any intervention which focuses on the family is considered to have a greater impact than that which only focuses on the child.

Because of family systems theory, the family has emerged as a focus for research and intervention. A family-centered practice model has been developed to guide the professional interaction with families with children with a range of health and psychosocial needs, including developmental disabilities.

Principles of Family-Centred Practice

A family-centered approach to practice in the field of childhood disability has been well-established in the literature (e.g., Dunst, Trivette, & Deal, 1994a, 1994b; Law et al., 2003; Trivette, Dunst, Deal, Hamby, & Sexton, 1994). The seven principles of family-centered practice as discussed by Markwood and Bride (2001) are described next. (1) The home is the best place to assist families. (2) Intervention should empower families and encourage them to solve their own problems. This involves increasing competence, self-reliance, and independence. The assessment of strengths and capacities is essential. (3) Intervention should be individualized intervention that is based on the social, psychological, educational, cultural, economic, and physical characteristics of each family. (4) Intervention should be based on an identification of needs in families and adjusting priorities according to changing needs. (5) The family is a system and intervention with one member impacts the entire system. (6) A collaborative relationship involving cooperation and interdependence should exist between the practitioner and family. (7) Practitioners should recognize and advocate for social justice for all groups of people and capitalize on strengths in each family's cultural heritage. These principles are considered to be the ideal model of practice. The principles of family strengths, family-based intervention and empowerment, and collaboration will be reviewed as salient to the current investigation.

Family strengths. Principle two identifies the importance of family strengths in the family-centered practice model. Research has determined that it is the family's strengths that help them to cope effectively with childhood disability (Byrne & Cunningham, 1984). The identifications of strengths is consistent with salutogenesis (i.e.,

"salus" = "health" and "genesis" = "origins", Antonovsky, 1979). Moving from the assumption of deficiency to that of resiliency, the family is now viewed as more resourceful and competent in dealing with stress (Patterson, 2002a, 2002b). Research has been increasingly interested in strengths to determine what is helpful for families of children with disabilities. Families have identified the positive transformations of their experiences which left them with a sense of strength and hope (Kausar, Jevne, & Sobsey, 2003). Therefore, family strengths have become vital to intervention with families with children with disabilities (Dunst, Trivette, & Deal, 1988; Dunst et al., 1994a, 1994b; Trivette, Dunst, & Deal, 1990; Trivette et al., 1994). The primary goal of service delivery is to build capacity in families (Dunst, 2002) and to empower the family (Dempsey & Dunst, 2002).

Individualized intervention. The primary focus of family-centered practice is the family, and therefore intervention needs to be tailored to the specific characteristics of each family. Law et al. (2003) identified the importance of the interpersonal aspects of service delivery including individualized care for parents of children with disabilities. Parents of children with disabilities are often the primary source of information to help practitioners understand the unique characteristics of the family. Although much research has been focused on mothers, there has been an increased interest in fathers' perspectives of raising a child with a developmental disability, as this has been an understudied area of research (Carpenter & Herbert, 1997; Seligman, 1999). Gray (2003) identified role differences in mothers and fathers of children with disabilities as an important consideration in coping research. Generally, research shows mothers report greater distress than do fathers due to the greater time spent with the child, increased burden of

childcare, and the emotional connection to their child (Gray, 2003). Alternatively, fathers are more impacted by work and financial concerns (Burton et al., 2008). Parents react differently to having a child with a disability, with fathers being more likely to have difficulty with strong emotions associated with the stressor (Seligman, 1999). Accordingly, each parent implements different strategies to manage the same stressful event; fathers report more problem-focused coping while mothers, more emotional-focused coping (Gray, 2003). Programs developed to assist fathers in dealing with their child's disability have been shown to be beneficial (Seligman, 1999). These gender differences are critical to understand in order to provide the most effective intervention to mothers and fathers of children with disabilities.

Family-centered practice encourages help-giving practices that promote greater personal control and empowerment for parents of children with special needs (Judge, 1997; Trivette, Dunst, Boyd, & Hamby, 1995). The more control for a parent, the greater their self-efficacy (Judge, 1997) and competency of the family (Bruder, 2000). As noted by Dempsey and Dunst (2002), the promotion of individual control through their strengths has been associated with positive outcome.

Collaborative relationships. Parent-professional partnerships have been identified as central to family intervention. Two key factors in family-centered practice have been identified as critical in providing services: relational and participatory components (Dunst, 2002). The relational component involves skills related to our clinical interaction with families (e.g., empathy, active listening, and compassion) and a positive attitude about the family and their abilities. The participatory component is related to the involvement of the family in decisions toward an individualized plan that addresses the

family's needs and priorities (Dunst, 2002). As discussed by Mitchell and Sloper (2003), these priorities differ depending on the particular needs of the family. According to Dunst (2002) both relational and participatory components are critical in the family-centered approach. Research has identified four possible models of service: (1) professionally-centered, (2) family-allied, (3) family-focused, and (4) family-centered. Professionally-centered services have been rated as poor on both relational and participatory components, family-allied and family-focused are those shown to be good to excellent on the relational component, while truly family-centered services are rated high on both relational and participatory aspects of service delivery (Dunst, 2002). In a more recent meta-analysis, Dunst, Trivette, and Hamby (2007) concluded that satisfaction with services and self-efficacy beliefs were strongly related to family-centered help-giving. These were conceptualized as more proximal and contextual to the help-giving relationship. The factors not as strongly related to help-giving were more distal to this relationship (i.e., child behaviour and functioning, personal/family well-being, and parenting behaviour). They concluded that help-giving practices have an impact by empowering families in terms of their beliefs of their ability. This research has demonstrated the importance of the strength-based approach adopted by the family-centered practice model.

Parent participation in assessment, team meetings, and decision making is essential in the identification of family goals (Bailey et al., 1992). In the parent-professional partnership, parents essentially should optimally direct services (Judge, 1997; Mitchell & Sloper, 2003; Trute & Hiebert-Murphy, 2007). This model of shared responsibility empowers families caring for children with disabilities (Judge, 1997). Trute

and Hiebert-Murphy (2007) found that working alliance was a significant predictor of consumer satisfaction. The working alliance between families and professionals is the basis for the family-professional partnership grounded in respect, non-judgemental attitudes, an empathetic understanding of the family and, importantly, the ability to communicate this understanding to the family (Trute & Hiebert-Murphy, 2007). Similarly, Bruder (2000) identifies the importance of empathy in service delivery and respectful relationships with families. Researchers have found that it is the consumer (i.e., families of children with disabilities) who is most knowledgeable about the needs of the family and the child (Bruder, 2000; Mitchell & Sloper, 2003). Families have identified the importance of feeling that services are collaborative and personalized (Scorgie et al., 2001). The provision of information and the inclusion of family planning for families of children with disabilities have been identified as important factors in family-centered care (Law et al., 2003; Stewart et al., 2006). In addition, the co-ordination of services can be an overwhelming experience for families which is an important consideration in family-based intervention (King & Meyer, 2006; Missiuna, Moll, Law, King, & King, 2006).

Summary. Research has identified the importance of the family-centered approach in intervention with families (Bailey et al., 1992; Bailey et al., 1998; Bruder, 2000; Carnine, 1997; Dunst & Trivette, 1994; Dunst et al., 1994a; Helton, 1994; Law et al., 2003, 2006; Seligman & Darling, 1989; Trivette et al., 1995; Trute & Hiebert-Murphy, 2007; Wikler, Wasow, & Hatfield, 1983). Parents' perceptions of family-centeredness have been associated with greater satisfaction with services (Bailey et al., 1992; Law et al., 2003; Trivette et al., 1994; Trute & Hiebert-Murphy, 2007). Specifically, it has been identified as a significant predictor of parent satisfaction with service delivery (Trute &

Hiebert-Murphy, 2007) and parental well-being (King, King, Rosenbaum, & Goffin, 1999). It has been suggested that practitioners receive adequate training in family-centred service delivery to ensure that families' needs are met (Bailey & Smith, 2000; Bruder, 2000; Law et al., 2003). Service providers should ensure that both relational and participatory components are adopted in service delivery to promote greater satisfaction with services (Bruder, 2000; Dunst, 2002). Intervention should embrace family-centered principles of family strengths, parent empowerment, and parent-professional partnerships (Bruder, 2000; Griffer, 1997). The uniqueness of each family is critical to these practice principles (Mitchell & Sloper, 2003; Scorgie et al., 2001; Ziolko, 1991).

Conclusion

Family systems theory and family-centered practice identify the family as a central unit of analysis. Family-centered practice has provided directions for research and intervention with families of children with disabilities. Both relational and participatory components have become important in intervention with the goal of building capacity in families. Identifying the needs of the family from parents' perspectives has become essential in service delivery. Fathers' perspectives of parenting a child with disabilities have not been sufficiently examined in past research (Carpentar & Herbert, 1997). Roles of mothers and fathers differ and therefore coping factors will likely also differ. Research that furthers our understanding of the experience of parenting a child with disabilities provides important information for practice (Gray, 2003). To continue to support a family-centered approach with families, further research is needed to understand both mothers' and fathers' perspectives in raising their child with a developmental disability.

Understanding Stress in Families – Theoretical Background

Research has examined the impact of childhood disability within the context of individual and family stress theory. The following will provide an overview of these concepts to provide background for research with families with children with disabilities.

Individual Stress Theory

Stress

The psychological and sociological concept of stress first emerged by Selye (1985, 1991) as the General Adaptation Syndrome (GAS). This conceptualization has been the earliest in the literature which is concerned with the stages in which an organism adapts to stress (Perry, 2004). Stress results when external and/or internal demands exceed the resources of an individual, social, or tissue system. Motor and cognitive changes as well as changes in affect result (Lazarus, 1966, 1993). The stress reaction consists of physiological or systemic stress which involves disturbances to the tissue systems, psychological stress which involves cognitions that determine whether or not there is a threat, and social stress which consists of disturbances to the social unit (Monat & Lazarus, 1991). Stress has been categorized into stressful life events, daily hassles, and resource imbalance (Perry, 2004).

Appraisal

Once a threat is determined, the individual engages in some form of coping. Important to the initial appraisal process are the individual's emotional state, goals and beliefs, and coping style (Lazarus, 1993). The appraisal process has cognitive, motivational, and relational components (Lazarus, 1993). The relational component considers both the person and the environment for identifying emotion. This emotional

state determines the motivational component which consists of the hierarchies of goals. Finally, the cognitive factor is knowledge of how the world works, which influences the strategies for achieving goals. Overall, appraisal is defined as the assessment of events in terms of individual well-being (Lazarus, 1993).

Lazarus (1966, 1993) describes primary appraisal as determining goal relevance, goal congruence/incongruence, and finally the type of ego-involvement. At this stage the person evaluates the potential consequences of the stressful situation which determines emotional reaction intensity (Folkman & Lazarus, 1991; Lazarus & Folkman, 1984). Three interpretations can occur; the situation can be viewed as irrelevant, benign-positive, or stressful. Stressful appraisals are those which involve harm or loss, threat, and challenge (Lazarus & Folkman, 1984). Appraisal has been conceptualized as a transaction between the person and the environment (Aldwin, 1994). The individual's response to the event is a direct result of the individual's interpretation. It is argued that it is not the stressor itself which results in a negative outcome but a combination of factors, in particular one's appraisal, which impacts adjustment (Lazarus & Folkman, 1984). Cognitive coping or positive appraisal of the stressor has been identified as one's conceptualization of an event which improves well-being (Antonovsky, 1993). Cognitive coping involves examining a situation and finding positive aspects and meanings in it (Berry & Hardman, 1998).

The next phase involves secondary appraisals where blame or credit for the harm or benefit is assigned and an assessment of one's coping potential and expectations of what will happen are considered (Lazarus, 1993). It is in the secondary appraisal phase when the individual determines a coping strategy to deal with the stressor. Essentially,

secondary appraisals mediate the individual's response to the event (Folkman & Lazarus, 1991; Lazarus & Folkman, 1984).

Positive appraisal of a stressor or cognitive coping has been identified as cognitions which promote well-being (Trute, Hiebert-Murphy, & Levine, 2007). The role of positive reappraisal has become an important intervention strategy in cognitive behavioural therapy which has been shown to improve individual affect (Folkman & Moskowitz, 2000; Lazarus, 2000). For example, Taylor (1983) developed the cognitive adaptive theory to describe how women deal with their cancer diagnosis. She identified that an appraisal component (namely, the search for meaning in adversity or finding the positive in a negative experience) was critical to outcome.

Coping

Coping is thought to be an individual's attempts to gain mastery over threats that are considered to exceed his/her resources (Monat & Lazarus, 1991). The steps involved in coping are that the individual encounters a stressful event, undergoes primary and secondary appraisals, engages in problem-focused or emotion-focused coping, undergoes a reappraisal, and is faced with a new situation that he/she appraises for the new emotional response. As outlined by Snyder and Dinoff (1999), coping is the response to reducing the physical, emotional, and psychological burden which accompanies stressful events and daily hassles. These responses include cognitive, behavioural, or emotional activities to reduce the impact of stress. These changes are consistent with the individual's appraisal of the situation. The coping strategy employed has been identified as the individual's attempt to master the stressful situation (Lazarus, 1966; Lazarus &

Folkman, 1991). As evidenced in the work of Taylor (1983), the attempt to gain mastery or control is an important factor for coping with life challenges.

Lazarus and Folkman (1984) identified two types of coping strategies in managing the demands in stressful situations. The first is problem-focused coping. It involves taking direct actions to change that within the environment which is causing goal incongruence and a negative emotional state. The second is emotion-focused coping. Strategies in this type of coping include, for example, diverting attention from the stressor, denying that anything is wrong, distancing oneself from the situation, taking medication, and joking about the distressing event (Folkman & Lazarus, 1991; Lazarus, 1993; Lazarus & Folkman, 1984; Monat & Lazarus, 1991). Research has found that, generally, men tend to use problem-focused coping while women are more likely to utilize emotion-focused coping in efforts to deal with a stressor (Gray, 2003). However, individuals do employ combinations of these two strategies in the face of stressful circumstances which impact emotional states by altering the appraisal of the stressful situation (Monat & Lazarus, 1991). The coping strategy utilized is dependent on the emotional (cognitive and motivational) factors experienced by the individual (Lazarus, 1993). Whether the outcome is within the individual's control seems to influence whether problem-focused or emotion-focused coping is employed. Problem-focused coping has been shown to be of greater benefit in situations within the individual's control (Folkman & Lazarus, 1991) while emotion-focused coping seems to be more helpful in situations not within the individual's control as it reduces the person's distress (Valentiner, Holahan, & Moos, 1994).

In their influential paper, *The Structure of Coping,* Pearlin and Schooler (1978) discuss social and psychological resources in individual coping efforts. Social resources are individuals and groups who provide support to the individual coping with stress. They consider psychological resources as the personal qualities utilized in the individual's efforts to confront threats in the environment (Pearlin & Schooler, 1978). One such psychological resource is self-esteem or "the positiveness of one's attitude toward oneself" (Pearlin & Schooler, 1978, p. 5). Theories have since been developed to explain the human need for self-esteem including, for example, the suggestion that self-esteem acts as a buffer against anxiety generally (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). Taylor's (1983) theory of cognitive adaptation identified the individual's need to enhance self-esteem after experiencing stress related to a cancer diagnosis. The role of self-esteem as a protective factor has become of increasing interest in psychological research (Bovier, Chamot, & Perneger, 2004; Brown, 1993; Dumont & Provost, 1999; Rector & Rogers, 1997; Whisman & Kwon, 1993).

Self-esteem as a protective factor. Research has demonstrated the positive impact of self-esteem on a number of outcomes including suicidal ideation (Wilburn & Smith, 2005), dysphoria (Whisman & Kwon, 1993), and overall mental health symptoms (Bovier et al., 2004). As discussed by Whisman and Kwon (2004), within Brown and Harris' (1978) model of depression, self-esteem acts to moderate the impact of stressors on the individual. Brown (1993) identifies the positive impact of self-esteem on a number of outcomes and discusses how positive self-esteem acts as a buffer to stress in adolescents. Similarly, low self-esteem has been associated with avoidant coping strategies (Chapman & Mullis, 1999). In experimental research, self-esteem has been

found to protect against self-induced arousal (Rector & Rogers, 1997) and has also been shown to moderate the physiological stress response (Creswell et al. 2005).

The relationship between self-resources (an aggregate of three self-view measures) and affirming values about the self was examined by Creswell et al. (2005). Individuals with high self-resources along with affirmed personal values experienced the least stress while those individuals with low self-resources in the value affirmation group experienced the most stress. Consistent with cognitive adaptive theory (Taylor, 1983), they found that positive self-esteem served to buffer threat (Creswell et al., 2005). Others have found that at lower levels of stress, personal resources (i.e., psychological robustness) were more important to outcome than at higher levels of stress (Guillet, Hermand, & Mullet, 2002). This suggests the possibility of an interactive relationship between stress and self-esteem. Most of the studies examining the protective role of self-esteem as a personal resource have been largely conducted with adolescents and young adults (i.e., university populations) and not in other populations.

It appears that gender differences in self-esteem are important to consider in research. For example, Byrne and Mazanov (2001) report differences in the role of self-esteem in smoking behaviour in adolescent boys and girls. For girls, stress was a larger predictor of smoking behaviour than self-esteem; for boys, self-esteem was a more significant predictor of this behaviour. Researchers have identified the need to study individual mechanisms of coping (Anderson & Elfert, 1989; Gray, 2003; Simon, 1995; Somerfield & McCrae, 2000). In particular, the differences between men and women in coping with stress has become of research interest.

Adaptation

Adaptation is the outcome of the stress and coping process (Lazarus, 1966). White (1985) describes adaptation as mastery over a stressful circumstance. This is often a compromise between triumph and surrender to environmental demands (White, 1985). In the adaptation process the individual assesses the environment, undergoes an internal mechanism to act and process the information, and lastly, acts freely on the information gathered. These components determine the response to the environmental stressors to achieve positive adaptation (White, 1985). According to Moos (1992), adaptation is impacted by the situation itself, the appraisal of the situation, and by the resources available to the individual. He argues that maladaptive coping and psychiatric difficulties under stressful circumstances may be due to interpersonal, cognitive, and skill deficits as well as an inability to self-regulate (Moos, 1992). Also, the environmental precursors of a stress response are critical, and Moos (1992) particularly views appraisal and coping as situation-specific means of managing stressful situations.

Stress-related growth, which acknowledges positive outcomes as a result of stress (Somerfield & McCrae, 2000), has become more prominent in the literature on individual stress (Folkman & Moskowitz, 2000; Lazarus, 2000; Somerfield & McCrae, 2000; Tennen & Affleck, 1999). The ability to find benefit in adversity through the positive appraisal of difficult events has become an important development in research (Tennen & Affleck, 1999). This concept of growth after adversity has also been identified by Taylor (1983) in her model of cognitive adaptation for women diagnosed with cancer.

Family stress theory has emerged as an extension of the individual model and will be discussed next.

Family Stress Theory

Family stress theory is interested in how families as a unit and individuals within that system cope with stress. Family stress is considered as an extension of the individual stress model, whereby the family members and family are faced with challenges which exceed the resources of the family, and consequently threaten the family's well-being (Hobfoll & Spielberger, 1992).

Family stress theory originated with Angell's (1936) interest in the impact of the Depression on families. Next, the impact of war on families was the focus of research by Koos (1946) and Hill (1949) who inductively conceptualized family stress from a social psychological standpoint. Koos (1946) devised a "roller-coaster" conceptualization of family stress to describe how a stressful event impacts family functioning. Koos argued that families go through a period of disorganization, recovery, and finally reorganization (Boss, 1987). Koos acknowledged that some families experienced an increase in functioning after the stressful event.

As a result of the impact of World War II on families, Hill (1949) developed a model of family stress which described how families adapted to a stressful event. Since this time, his ABC-X Model of family stress has been a strong influence in the research literature. The original components of the model include:

> A (the event) – interacting with B (the family's crisis-meeting resources) – interacting with C (the definition the family makes of the event) – produces X (the crisis). The second and third determinants – the family resources and definition of the event – lie within the family itself and must be seen in terms of the family's structures and values. The hardships of the event, which go to make up the first

determinant, lies outside the family and are an attribute of the event itself. (Hill, 1949)

This conceptualization of family stress has become central in the literature (Boss, 1980, 1987; Burr, 1982; Burr et al., 1994; Hobfoll & Spielberger, 1992; Kingsbury & Scanzoni, 1993; McCubbin et al., 1980; McCubbin & McCubbin, 1987; McCubbin & Patterson, 1982, 1983; Olson et al. 1983). Burr (1982) expanded Hill's original formulation of family stress to include regenerative power and vulnerability to stress viewed as vital to the family's ability to cope. Change experienced from stress was dependent on the stressor itself, the amount of current crisis within the family system, the family's vulnerability to stress, and how the family defines the stressor event (Burr, 1982). The family's vulnerability to stress is indirectly related to the family's regenerative power, which Burr (1982) defined as the family's ability to regroup after a stressor.

Hill's model continued to be adapted to better reflect the nature of stress within the family. McCubbin and Patterson (1983) developed the Double ABC-X model of stress and coping in families. This model has been used widely in the study of family stress and will be discussed next.

Double ABC-X Model of Family Stress

McCubbin and Patterson's (1983) Double ABC-X Model of Family Stress (see Figure 1) has been used extensively in family stress research. The concepts during the pre-crisis or adjustment phase include stressors and hardships (A factor), resistance resources (B factor), the family's definition of the stressor (C factor), family tension, and finally, family crisis (X factor; McCubbin & Patterson, 1983). These concepts are similar

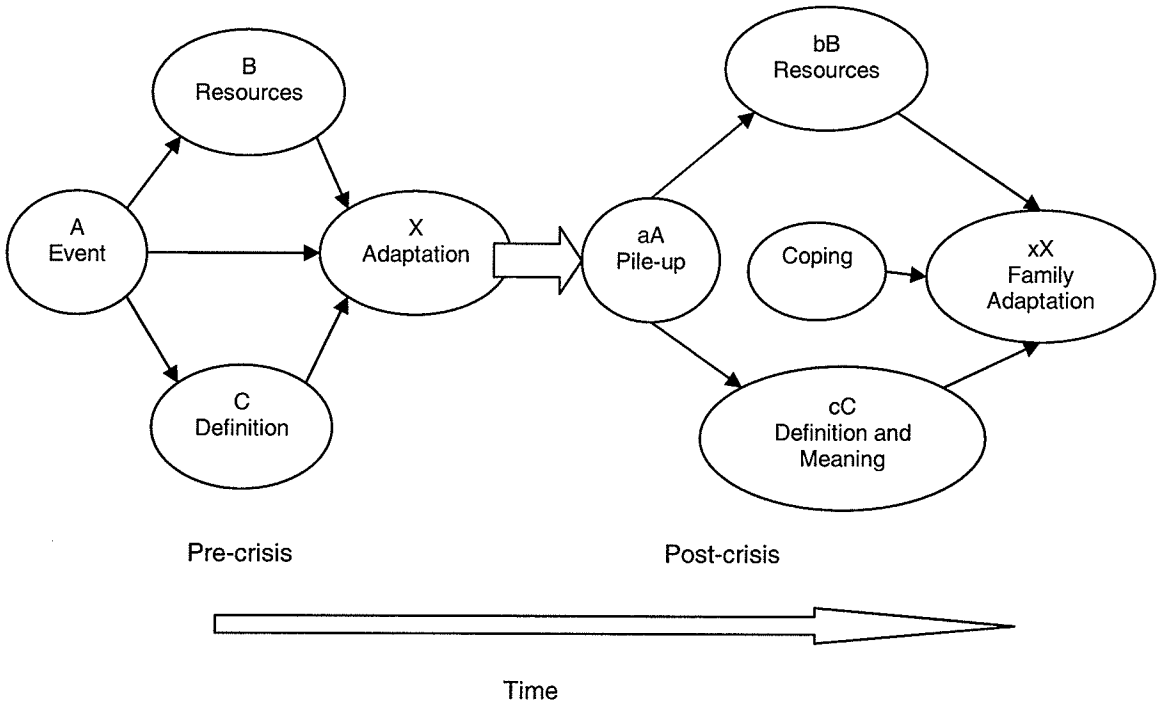


Figure 1. McCubbin & Patterson's (1983) Double ABC-X model of family stress (reproduced with permission).

to those found in Hill's (1949) original model. Using longitudinal data McCubbin and Patterson (1983) concluded that there is a second phase in stress and coping which constitutes the "double" in the model. This phase after the initial crisis is a post-crisis or adaptation phase. The components of this portion of the model are family demands or pile-up (aA factor), family adaptive resources (bB factor), family definition and meaning (cC factor), family adaptive coping (interaction of resources, perceptions, and behavior), and lastly, family adaptation balancing (xX factor; McCubbin & Patterson, 1983). These adaptation components of the model will not be described, as it is the pre-crisis phase of the model which is of interest to the current research. Therefore only the four factors stress (A factor), resources (B factor), perceptions (C factor), and outcome (X factor) will be reviewed.

Family stress and stressors (A factor). According to McCubbin et al. (1980), family stressors are those events which cause change within the family unit. Hobfoll and Spielberger (1992) define family stress as those situations which are associated with psychological or physical danger or threat. Similar to the individual stress literature, family stress is considered to be events or circumstances that place demands on the family system, exceeding the families' coping capacity. As a result, the family begins to engage in forms of coping in efforts to manage the stressful situation. Bubolz and Whiren (1984) outline the ecosystem of the family as a series of inputs and outputs, constantly requiring the family to adapt to changing circumstances. Stress causes the family to make changes in order to meet challenges.

Family resources (B factor). Families' resources have been shown to impact their coping ability by enhancing problem-solving ability. Hobfoll and Spielberger (1992)

describe resources as those qualities or strengths that assist families in attaining that which is important or valued. They are classified into two types: external and internal. External resources are those outside the family (e.g., support from neighbors, groups, social services, religious organizations). Internal resources are those within the family and can include supportiveness, openness, flexibility, cohesion, boundary clarity, order and mastery, family esteem, communication (Hobfoll & Spielberger, 1992), personal resources (financial, educational, health, and psychological), social support from family members, and coping ability (McCubbin et al., 1980). Individual personal resources of family members shown to promote positive family adaptation include a positive attitude toward self, a lack of self-denigration, and a belief in one's own mastery or having power over one's life (McCubbin et al., 1980).

Family perceptions of stressor (C factor). It has been argued that it is not the change or actual event per se that causes stress but instead it is the family response to the stressor which is important (McCubbin et al., 1980). It is the loss, threat of loss, or failure to gain which makes an event stressful (Hobfoll & Spielberger, 1992). The reaction of the family will determine whether the event itself is considered stressful. Initially, this factor was considered synonymous with coping; later models, however, place coping between perception and outcome, noting that assigning meaning is only one type of coping behavior. Stressors often challenge families' belief systems, placing greater demands on the family system (Hobfoll & Spielberger, 1992). The cognitive and emotional appraisals of the stressor are considered critical to managing stressful circumstances.

The appraisal or how one assigns meaning to a stressor has been of some debate in the theoretical literature. One limitation of the Double ABC-X conceptualization was a

failure to explain how exactly families alter meaning of a stressful situation (Burr et al., 1994; Kingsbury & Scanzoni, 1993). In response, theorists have elaborated this part of the model (Boss, 1987; Hobfoll & Spielberger, 1992; McCubbin, Thompson, Thompson, & McCubbin, 1993; Patterson, 1993). Researchers have studied more extensively how families progress though levels of appraisal toward adaptation (Burr et al., 1994; McCubbin et al., 1993; Pattterson, 1993).

Patterson (1993) identifies levels of meaning in cognitive appraisal as critical to the coping process in families. She developed The Family Adjustment and Adaptation Response (FAAR) model which emphasizes the role of meaning and cognitive factors in managing stress. There are situational and global meanings which families assign to stressors. They then move through an adjustment and adaptation phase and make first and second order changes respectively to first decrease the demands placed on them and second, to increase their capabilities for dealing with the stressor. When families experience an imbalance in their perception of demands to capabilities, they then engage in cognitive coping strategies to restore balance. These have been identified as situational meanings. Global meanings consist of the shared beliefs, meanings, and values known as family schemas. Their five dimensions include shared purpose, collectivity, frameability, relativism, and shared control.

Patterson (1993) argues that families move through levels of meaning in the following manner. The first level involves the assessment of the stressor event (i.e., situational appraisals); the second level involves the relationships within the family and how roles are defined; and the third level involves a more global appraisal involving consensus of the family's collective beliefs about the world. Maladaptation results when

consensus is not achieved. Patterson (1993) argues that the process of establishing shared meaning creates group stability and resiliency in families.

Similarly, McCubbin et al. (1993) outline family paradigms and paradigm shifts in the process of change in stressful circumstances. Like Patterson (1993), McCubbin et al. (1993) define family schema as a general set of values, beliefs, goals, expectations, and priorities common to a family system. Information is compared to these values and decisions are made based on value congruence. With incongruence, a family moves through a series of adjustments, testing new paradigms. Once a new paradigm is determined to fit, a paradigm shift occurs (McCubbin et al., 1993). Others have examined the mechanisms of cognitions within the context of the family to explain how families move through change (Bugental & Johnston, 2000).

The outcome or crisis (X factor). The X factor is the family's outcome. Initially, Hill (1949) defined it as crisis, however, later models considered crisis as only one possibility. Hill measured crisis by the amount of disruptiveness or disorganization ranging from low to high. Later stress models defined crisis as a response to stress where personal or financial resources become overwhelmed (Hobfoll & Spielberger, 1992). Originally, outcome measures used in family stress included family conflict, psychological distress of any family members, and compliance to counseling. According to McCubbin and Patterson (1983), the X factor is the product of the demands placed on the family and the family's ability to meet these demands. The Double ABC-X model considers both maladaptation and bonadaptation in the outcome variable.

Boss (1987, 2002) has reconsidered the X factor identifying four key issues in defining outcome. First, she states that crisis and stress are not interchangeable terms.

Once an individual or system no longer performs the functions required, it is then considered to be in crisis. Boss (1987, 2002) identifies a family crisis as occurring when the roles of the family are not being fulfilled, structural boundaries of the family system collapse, and when the system no longer functions. Importantly, stress in families does not always result in crisis. Second, Boss (1987, 2002) discusses crisis as a potential turning point for families. Contrary to physical stress that results in collapse, Boss (1987, 2002) argues that families can in fact become stronger in the face of adversity. Stressful events may actually lead to improved functioning or the concept of salutogenesis. Third, early models of family stress conceptualized outcome as categorical (i.e., crisis or coping). However some have described crisis as a continuous variable ranging from low at one end of the continuum to high at the other (McCubbin et al., 1980). More recently, the family's adaptation has been considered to be a continuous variable with families differing in degree (Boss, 1987). Fourth, Boss (1987) differentiates between family stress and family strain whereby stress may not exceed the family's resources. Strain results when the demands of the stress exceed the family's resources and potentially overwhelm the system (Boss, 1987).

Summary of Theoretical Literature

Individual and family stress theories have provided guidance for research questions. The main components of the individual model are stress, appraisal, coping, and adaptation to describe how individuals manage stress. Family stress theory provides a systems perspective of stress in families. McCubbin and Patterson's (1983) Double ABC-X model identifies stress, definition of the stressor, resources, and adaptation as important variables in understanding family stress. Each of these models of stress is beneficial in

research; however, conducting research from a theoretical basis has some challenges. Family stress theory argues for assessment at the level of the family; however, the variables are often measured individually (Perry, 2004). Therefore, Perry (2004) argues that stress models should be individual models. However, as identified in family systems theory and family-centered practice, change in individual members will influence the family system. Therefore, assessing individual perspectives can provide valuable information as to what contributes to positive family adaptation. Often research on stress experienced by families with disabilities has utilized individual measures to assess their impact on individual outcomes. Further research is needed to understand more fully perceptions of both individual and family functioning.

Research on Stress in Families with Children with Disabilities

Research with families with children with disabilities can be divided into two types. Some studies have examined how families of children with disabilities compare to families without children with disabilities while others have sought to identify important variables specific to families of children with disabilities.

Comparing Families With and Without Children with Disabilities

Research has compared the outcomes of parents of children with disabilities with parents of children without disabilities. Mothers of children with disabilities have been found to report higher stress than mothers of children without disabilities (Beckman, 1991; Britner et al., 2003; Cameron et al., 1991; Kazak, 1989). Similarly, studies involving fathers and mothers have found that both parents of children with disabilities reported more stress than parents of children without disabilities (Beckman, 1991; Oelofsen & Richardson, 2006). Likewise, in a study comparing parents with children

with disabilities to a standardized sample, mothers and fathers of children with disabilities reported higher stress (Cameron & Orr, 1989). In a study by Noh, Dumas, Wolf, and Fisman (1989) parents of children with conduct disorder and autism reported more stress than parents of children without developmental disabilities. Research has also found that mothers of children with disabilities report poorer mental health than mothers of children without disabilities (Nagy & Ungerer, 1990). Similarly, Nachshen and Minnes (2005) found that parents of children with disabilities reported more stress, child behaviour problems, and less well-being relative to parents of children without developmental disabilities.

However, some research has not found differences in outcomes for families with children with disabilities when compared to families of children without disabilities. In a study comparing mothers of infants with and without developmental delays, Gowen, Johnson-Martin, Goldman, and Appelbaum (1989) found no differences in depressive symptoms. Similarly, Cameron et al. (1991) reported no differences between mothers of preschoolers with and without developmental delays in scores of depression as measured by the Parenting Stress Index (PSI; Abidin, 1986). Pagels (1997) did not find differences in self-esteem between mothers of children with disabilities and mothers of children without disabilities.

Mothers of children with disabilities have reported greater satisfaction with community support compared to mothers of children without disabilities (Erikson & Upshur, 1989). Similarly, in a more recent study, parents of children with disabilities have reported more social support compared to parents of children without developmental disabilities (Nachshen & Minnes, 2005). In terms of family outcome, Britner et al. (2003)

determined that the child's diagnosis of cerebral palsy did not predict family dysfunction compared to controls.

While some variables emerge as significantly different for families of children with and without disabilities, others do not. Research seems to indicate that parents of children with disabilities experience greater stress and more challenging behaviours than parents of children without disabilities. However, there is not necessarily poorer outcome due to these stressors. It seems as though there are some variables (i.e., social support, self-esteem, and depression) which do not seem to be impacted by childhood disability. Parents of children with disabilities seem to experience higher stress than parents of children without disabilities; however, the role of other variables seems inconclusive. There is a need for more research to address complexity of the relationships between variables for positive outcome for families with children with disabilities.

Factors Related to Outcome within Families of Children with Disabilities

Research has become more concerned with a multi-factorial approach to understanding stress and coping among parents with children with disabilities that includes child, parent, and environmental factors (Hassall & Rose, 2005). The current study is interested in family outcome; however, there are few studies which have studied a system outcome. Instead, many have identified parenting stress as the outcome variable. The Parenting Stress Index (Abidin, 1995) has been used to measure this outcome variable, which can be misleading as it was not designed with parents of children with disabilities. The following will review these research findings in terms of individual outcomes and those studies which examined family outcome. To date, demographic variables, child characteristics, appraisal, and resource variables are factors that have

been identified as important in understanding stress and coping among parents with children with disabilities.

Demographic Variables

The research findings in terms of demographic variables to be reviewed are parent gender, parental age, parental education, marital status, and family income.

Parent gender. The study of gender differences in parenting children with disabilities has emerged in stress and coping research in families with children with disabilities (Gray, 2003; Pelchat et al., 2003; Sloper, Knussen, Turner, & Cunningham, 1991; Trute, 1995). Different parental roles have been identified as important considerations in these investigations (Gray, 2003; Sloper et al., 1991). Given that mothers have been found to have primary responsibilities for caregiving while fathers are more concerned with financial responsibilities (Burton et al., 2008), there are understandably different impacts of the disability on each parent. Recent research has found that among families of children with disabilities, mothers' identity related to caregiving has more deleterious health effects compared to fathers' identity related to breadwinning (Burton et al., 2008). However, fathers' coping has been found to play an important role in stabilizing the family in families of children with cystic fibrosis (McCubbin, Patterson, McCubbin, & Wilson, 1983). Carpenter and Herbert (1997) have identified the need to examine more closely fathers' perspectives in raising a child with a disability.

Research findings comparing mothers and fathers with children with disabilities are mixed. While some research has determined that mothers with children with disabilities experience greater stress than fathers with children with disabilities

(Beckman, 1991; Dyson, 1991; Nagy & Ungerer, 1990; Oelofsen & Richardson, 2006; Reddon, McDonald, & Kysela, 1992), there is one study which reports comparable levels of stress between mothers and fathers with children with disabilities (Krauss, 1993). Mothers have reported greater stress related to the child's challenging behaviours (Saloviita, Itälinna, & Leinonen, 2003; Sloper et al., 1991). Increased stress in mothers has been found to be related to unusual demands (Beckman, 1991) and duration of severe disabilities (Dyson, 1991). Research has shown that the demands placed on mothers in caring for children with disabilities are associated with deleterious health effects (Burton et al., 2008) and increased stress (Anderson & Elfert, 1989; Beckman, 1991; Bristol, Gallagher, & Schopler, 1988; Erikson & Upshur, 1989; Frey, Greenberg, & Fewell, 1989; Nagy & Ungerer, 1990; Singer & Farkas, 1989), and depression for mothers (Beckman, 1991; Gowen et al., 1989). Some research has found that mothers report more depressive symptoms than do fathers (Bristol et al., 1988; Trute, 1995). Conversely, Frey, Greenberg, and Fewell (1989) determined that caregiving contributed to positive problem solving which was associated with increased maternal well-being. In addition, mothers are impacted by fathers' perception of the importance or value of caregiving (Nagy & Ungerer, 1990) and fathers' acceptance of the child's diagnosis (Bristol & Schopler, 1984). Research has also found that mothers of children with disabilities are more likely than fathers to blame themselves for the child's disability (Anderson & Elfert, 1989).

Similarities between mothers and fathers with children with disabilities related to stress have been reported for factors related to the social acceptability of the child (Pelchat et al., 2003; Saloviita et al., 2003) and wanting their child viewed as unique but no different than other children (Pelchat et al., 2003). Similarly, for both parents, self-

esteem has been found to be a significant predictor of depressive symptoms (Trute, 1995). Trute (1995) also found that fathers reported higher depressive symptoms when the child with a disability was male; however, this was not consistent for mothers. Gray (2003) found that mothers and fathers of children with autism coped differently with the disability related to how they assigned meaning to it. In their study examining important variables to satisfaction with life, Sloper et al. (1991) found that neuroticism and the quality of the marital relationship were common predictors to outcome for mothers and fathers of children with Down's syndrome.

Krauss (1993) examined perceptions of family outcome in mothers and fathers with children with disabilities and determined that fathers viewed their families as less emotionally cohesive than did mothers. However, McCubbin, Patterson et al. (1983) found that fathers made similar coping efforts as mothers related to family cohesiveness in families raising a child with cystic fibrosis. While Trute (1990) found that both parents of children with disabilities had a range of both positive and negative perceptions of their family, there are no other studies which examine variables specific to mothers' and fathers' perceived family adjustment.

Parental age. In terms of individual outcome, Boyce, Behl, Mortenson, and Akers (1991) determined that increased maternal age was associated with less child-related and parent-related stress. Higher parental age negatively predicted family functioning for mothers of children with disabilities (Failla & Jones, 1991). Failla and Jones (1991) speculate that parental age is associated with longer time in the parent role and a greater number of children. They suggest that these factors affect mothers' ability to manage all needs in the family and therefore, their perceptions of family functioning. However, Trute

(1990) did not find significant relationships between parental age and family functioning for both mothers and fathers of children with developmental disabilities. However, a weak relationship between number of children and family functioning was reported (Trute, 1990). These differences may have to do with different sample characteristics. The older mothers had more children in the Failla and Jones (1991), where this may not have been the case in the Trute (1990) study. There may be other factors, like family size, which are significantly related to increased age which may account for differences in perceived family functioning.

Parental education. The impact of parental education has been examined in a number of outcomes with varying results. Higher parental education has been found to be related to greater parental involvement in the child's special education as well as an increase in stress (Krauss, 1993; Palfrey, Walker, Butler, & Singer, 1989). For mothers of children with disabilities, overall parental education has been found to be negatively associated with the health status of the child (Patterson & McCubbin, 1983). Other research has found that education level did not discriminate between successful and unsuccessful care providers (Sanderson & Crawley, 1982). Palfrey et al. (1989) discuss possible reasons for higher parental education associated with more stress. First, parents with higher education may be more able to identify the source of stress as the child's disability whereas parents with less education may have other significant sources of stress (i.e., unemployment, isolation). Second, parents with higher education may "intellectualize" their stress to the child's disability. Third, the discrepancy between the child's ability and parent's ability may be more distressing for more educated compared to less educated parents. It could also be that mothers with higher education at home to

care for their child have to put their careers on hold, contributing to increased distress. Conversely, Gottlieb (1998) found that for single mothers, higher education levels were associated with an increase in sense of coherence, which was related to better individual functioning. She argues that women with a higher sense of coherence view education as a means to economic freedom. The issues related to marital status and education level are noteworthy. It may be that variables important for positive outcome are different for single parents compared to two-parent families.

For family outcome, Trute (1990) found paternal education was associated with more positive family adjustment. Specifically, higher parental education was connected to dyadic cohesion which was then associated with higher family functioning. As Trute (1990) suggests, fathers with higher education may contribute to the family unit by assisting their wives in acquiring outside resources. It has been noted that the fathers' role has been more related to providing for the family (Burton et al., 2008; Gray, 2003). Perhaps fathers with more education feel more positive about the family's functioning as a result of their successful role fulfillment. Overall, the impact of parental education in relation to family functioning has received minimal attention in the research literature.

Marital status. Family composition has been studied as a demographic variable in relation to stress in families with children with disabilities. Research has compared married and single mothers (Beckman, 1983; Floyd & Gallagher, 1998; McCubbin, McCubbin et al., 1983; Singer & Farkas, 1989) with some mixed findings. Single mothers reported considerably more stress than two-parent families (Beckman, 1983; Seligman & Darling, 1989). It has been argued that two-parent families are at an advantage in managing the demands associated with raising a child with a disability

(Trute & Hauch, 1988). As reviewed by Seligman and Darling (1989), single parents often cite time demands, financial burden, and lack of support as significant causes of stress. In their study with parents of children with cystic fibrosis, McCubbin, McCubbin et al. (1983) identified the benefits of having another adult with another set of coping skills in the home. They argued that single parents are at increased risk of negative outcomes due to being alone in managing the demands of caring for their child. In another study, Bright and Hayward (1997) found that single mothers reported poorer coping strategies than their married counterparts, which were related to poorer mental health and self-esteem.

Floyd and Gallagher (1997), however, found that single mothers did not report greater stress than married mothers although they did utilize more services. Similarly, in another study, married mothers reported greater distress compared to single mothers (Singer & Farkas, 1989). Singer and Farkas (1989) speculated that the increase in distress may be more attributed to a decrease in family income. Therefore, there may be other mitigating factors which contribute to the role of marital status in outcome.

In a study of single mothers (i.e., no comparison group) of children with disabilities, Gottlieb (1998) identified sense of coherence (SOC) as an important factor for single mothers. Specifically, mothers with higher SOC experienced less depression, fewer health problems, less parenting stress and improved well-being compared to mothers with lower SOC.

Further research is needed to understand the experience of single parents raising a child with a developmental disability. From the research to date, it seems as though, compared to married parents, single parents experience an increase in some negative

outcomes (e.g., stress, coping, mental-health, and self-esteem). However, being married has also been associated with negative outcome (e.g., distress), perhaps related to other mitigating factors. These relationships are in need of further research to better understand factors important to outcome in each family type. It is noted that variables influencing single parents' perceived family functioning have not received attention in the research literature.

Family income. It has been argued that family income is an important variable which contributes to adjustment in families with children with disabilities (Knussen & Sloper, 1992). Often one parent, usually the mother, stays home to care for the child or must reduce her paid work considerably (Hanvey, 2002; Singer & Farkas, 1989). Along with additional costs of caring for a child with a disability, reduced paid employment can leave these families more financially strained than most (Hanvey, 2002). A number of studies have found a relationship between family income and various outcomes. Patterson and McCubbin (1983) determined that health status and family functioning were highly related to financial well-being. Similarly, Gottlieb (1998) determined that, for single mothers, increased income was related to an increased sense of coherence and positive adjustment. Socioeconomic or material resources have been identified as a protective factor for mothers. In particular, for mothers of children with disabilities, those who work outside the home reported more positive mental health scores compared to those at home full-time (Knussen & Sloper, 1992). Sloper et al. (1991) found that financial factors were significant predictors of both perceived satisfaction with life and level of stress for mothers and fathers of children with Down syndrome. However, Singer and Farkas (1989) reported a positive relationship between distress and social class. Also,

socioeconomic status did not predict stress in parents of children with delayed cognitive development (Cameron & Orr, 1989). In summary, while some research has identified family income as important to some individual outcomes, other research has not. Although one would expect income to improve individual functioning, as discussed in parental education, there may other variables (e.g., related to expectations) that contribute to heightened stress for higher income parents.

In terms of family outcome, McCubbin, McCubbin et al. (1983) found that higher family income was related to an increase in fathers' coping efforts in maintaining family integration, cooperation, and optimism. Trute (1990) found that family functioning was related to family income; however, this relationship did not emerge in the study by Trute and Hauch (1988). The larger sample of the Trute (1990) study may account for the differing results. Again one would expect income to be an asset for families; however, there has not been much research attention as to the impact of family income on perceived family functioning.

Child Variables

Child's gender. Research has shown that parents of boys report increased parenting stress for both parents (Frey, Fewell, & Valdasy, 1989; Frey, Greenberg, & Fewell, 1989) and that this effect is more pronounced for fathers (Frey, Greenberg, & Fewell, 1989). Compared to boys, girls have been associated with better parental adjustment, which has been especially true for mothers (Frey, Fewell, & Valdasy, 1989; Bristol & Schopler, 1984). It has been reported that fathers are more negatively impacted when the child with the disability is a boy (Seligman, 1999; Trute, 1995). It has been speculated that fathers react more negatively, as they have higher expectations for their

sons (Seligman, 1999), and that concerns for the child's future is common for fathers, which again may be heightened when the child with a disability is male (Trute, 1995). The effect of child gender is not however, unequivocal. Tak and McCubbin (2002), for example, did not find a relationship between the child's gender and levels of stress for both mothers and fathers of children with congenital heart disease.

When examining family outcome, research finds little impact of the child's gender on family adjustment (Fewell, Greenberg, & Fewell, 1989; Krauss, 1993; Trute, 1990). Thus, a child gender effect has been found for parenting stress outcome, however, for perceived family adjustment outcome, this effect has not been determined. These differences may be due to a greater impact of the child's gender on the individual (i.e., fathers' individual concern for the future of their child with a disability) than on the family system.

Child's age. The effect of the child's age on various outcomes has been examined in previous research. Some research has not found child's age to be associated with an increase in stress for either parent (Beckman, 1991; Boyce et al., 1991; Floyd & Gallagher, 1997; Tak & McCubbin, 2002). Hagborg (1989) reported that mothers of deaf children reported more stress with increased age. Yet others report that parents of younger children experience higher levels of stress (Behr & Murphy, 1993). Another study found changes in parenting stress for different age groups of the child, with the disability with children in middle childhood associated with greater stress than preschool and adolescent groups (Orr, Cameron, Dobson, & Day, 1993). Tak and McCubbin (2002) reported that the child's age was negatively related to parental coping in families with children with congenital heart disease.

Others have found higher depression scores in mothers of older children (Bristol & Schopler, 1984). Trute (1995) however, did not find a relationship between the age of the child and depression in mothers and fathers of children with disabilities. Several factors are important to consider in these research findings. For example, some disabilities are diagnosed early in a child's life while others may take years before a diagnosis is given. There are different developmental stages to which parents must adapt in order to meet the needs of their child. These transitions may be more difficult depending on the type of disability. In addition, studies may have a restricted age range (i.e., only very young children) which would impact outcome on this variable.

In terms of family outcome, Trute (1990) found a weak relationship between age of the child and the strength of family functioning in families with children with disabilities. However, this seemed to be a function of the number of children in the family. Once this variable was controlled, the relationship between the child's age and family functioning became non-significant. Similarly, Trute and Hauch (1988) did not find that the child's age was related to family functioning for mothers and fathers of children with developmental disabilities. In terms of family outcome, these two studies seem to indicate little impact of the child's age on the family system; however, it is important to note that only young children were included in these studies. However, it may be that the child's age may be more salient in terms of individual outcome (i.e., level of stress) and less important in terms of family outcome (i.e., family adjustment).

Disability type. Some research has determined that the type of disability is not important to outcome variables (Floyd & Gallagher, 1997; Knussen & Sloper, 1992; Palfrey et al., 1989). However, it has been reported that it is not the disability type per se

but behavioural problems (Cameron et al., 1991; Cameron & Orr, 1989; Floyd & Gallagher, 1997; Hastings, 2002; Knussen & Sloper, 1992; Noh et al., 1989), level of functional skills (Knussen & Sloper, 1992) and number of "handicapping" conditions (Cameron & Orr, 1989) that are associated with increased stress. Noh et al. (1989) found that parents of children with conduct disorder and autism reported increased stress compared to parents of children with Down syndrome. Mothers of children with autism consistently report excessive demands of the disability (e.g., hyperactivity, night activity, and worries about safety) that result in chronic exhaustion (Bristol & Schopler, 1984, Hanvey, 2002). The increased work results in heightened physical and emotional stress on mothers as caregivers. These studies provide some evidence that there are different outcomes associated with parenting a child with autism compared to parenting a child with Down syndrome. However, other research outcomes did not support this relationship. Trute (1995) reported that positive psychological adjustment in parents was not predicted by a diagnosis of Down syndrome. So while Down syndrome may be associated with less parenting stress, it does not appear to have an impact on parental mental health. Although research has addressed the role of disability on the individual outcome of parenting stress, research has not examined the impact of disability type on family adjustment.

Severity of disability. The degree of cognitive impairment has been linked to an increase in stress (Krauss, 1993). Researchers have determined that it was not disability severity but low communication ability of the child that predicted parental stress (Frey, Fewell, & Valdasy, 1989; Frey, Greenberg, & Fewell, 1989). In a more recent study, Skok, Harvey, and Reddihough (2006) determined that in children with cerebral palsy,

the severity of the disability had no impact on maternal well-being. Similarly, Tak and McCubbin (2002) did not find the severity of the child's illness to be related to levels of family stress in both mothers and fathers of children with congenital heart disease. However, other research has linked the severity of the disability to an increase in family stress (Bailey & Smith, 2000; McCubbin, 1988; McCubbin & Huang, 1989), increased financial difficulties, and more subjective distress for mothers (Singer & Farkas, 1989). Singer and Farkas (1989) also found that mothers whose children had more medical complications experienced a decreased sense of mastery in caregiving. This research suggests that there may be a negative impact of the severity of the disability on individual outcomes.

Studies which have examined family outcome show mixed results in terms of the impact of severity of the child's disability. The severity of the child's disability has been shown to have a negative impact on family interactions (Singer & Farkas, 1989). Other studies did not find the degree of disability related to family functioning (Trute, 1990; Trute & Hauch, 1988). Again these different outcomes (i.e., family interactions specifically versus family functioning generally) may account for differing findings. Interactions as compared to overall functioning may be impacted differently by the severity of the child's disability. In general, few studies have examined this relationship making conclusions uncertain.

Appraisal

In the general stress literature, positive reframing has been found to predict positive family outcome in the general population (Lavee, McCubbin, & Olson, 1987) and the appraisal of the controllability of a situation has been shown to be predictive of

positive outcome for families experiencing stress (Valentier et al., 1994). Positive appraisal and assigning meaning to a stressor have been shown to be effective in coping with stress (Folkman & Moskowitz, 2000) and are now considered to be central to the coping process (Boss, 1987; Burr et al., 1994; Folkman & Moskowitz, 2000; Patterson, 1993) both at the individual (Folkman & Moskowitz, 2000) as well as at the family level (Brown, 1993; McCubbin et al., 1993; Patterson, 1993, 2002a; 2002b).

According to Brown (1993), cognitive coping in families with children with disabilities is the creation of positive illusions about the disability. In addition, the belief that one can overcome obstacles is an important component in the appraisal process. To view obstacles as challenges as opposed to threats creates positive secondary appraisals and ultimately greater control over the environment (Brown, 1993). This type of cognitive coping has been associated with greater resourcefulness of the individual (Brown, 1993). This process of positive appraisal is thought to enhance problem-solving to improve secondary appraisals which in turn reduce the exposure to the stressor, all of which contribute to a more positive outcome (Knussen & Sloper, 1992). In parents of children with disabilities, positive self-appraisals of coping ability have been associated with lower levels of parental stress, increased family adjustment, and a lower level of distress for both mothers and fathers (Frey, Greenberg, & Fewell, 1989). In fact, parental beliefs were the most important factor to outcome, providing significant support for appraisal in the stress and coping model (Frey, Greenberg, & Fewell, 1989). Frey, Greenberg, and Fewell (1989) also found that a positive belief system moderated the stress of criticism for mothers of children with disabilities.

Specifically, the meaning that parents assign to their child's disability has become of increased interest in the literature. Hassall and Rose (2005) identify the central role of parental cognitions and appraisals in models of coping. Both positive and negative appraisal of the disability have become of interest as two separate variables in order to best understand parental perceptions of childhood disability (Perry, 2004; Trute & Hiebert-Murphy, 2002). For negative appraisal, Salovitta et al. (2003) determined that defining the situation as a "catastrophe" was significantly related to an increase in stress for both mothers and fathers of children with intellectual disabilities. Trute and Hiebert-Murphy (2002) found that parent perceptions of negative family impact of the disability was a significant predictor of parenting stress for both mothers and fathers of children with disabilities.

In terms of positive appraisal, Stainton and Besser (1998) reported that parents of children with disabilities identified nine themes in terms of positive impact of the disability. These included source of joy and happiness, increased sense of purpose, expanded personal and social networks and community involvement, increased spirituality, family unity, increased tolerance and understanding, personal growth and strength, and positive impacts on others and the community. Others have reported similar outcomes in terms of positive aspects of childhood disability (King et al., 2006; Scorgie & Sobsey, 2000). As a relatively new area of study, research has now identified the need to study the positive impact of childhood disability on families.

Specifically, research has become increasingly interested in how positive appraisal or perceptions of childhood disability impact outcome in families of children with disabilities. In terms of individual outcomes, positive appraisal in parents of children

with autism was associated with lower depression scores (Hasting, Kovshoff et al., 2005). Positive reframing was also a significant predictor of mothers' perception of their child's intellectual disability (Hastings, Allen, McDermott, & Still, 2002). Research has found that parents' positive appraisal predicted parenting stress (Trute & Hiebert-Murphy, 2002) and was associated with lower perceptions of stress (Knussen & Sloper, 1992). Hastings, Beck, and Hill (2005) found a gender effect with mothers being more positive in their perceptions than were fathers. These positive perceptions in mothers were then associated with lower parenting stress. It has been suggested that mothers' positive perceptions may be an effort, whether conscious or unconscious, to balance their higher parenting stress. Also, mothers spend more time with their child, thereby providing more opportunity to identify positive contributions (Hastings, Beck, & Hill, 2005).

In terms of the role of positive appraisal on family outcome, optimism has been associated with positive family adjustment (McCubbin & Huang, 1989; McCubbin, Patterson et al., 1983). Overall, the impact of positive appraisal of the child's disability on perceived family adjustment has not received attention in the research literature.

Resource Variables

As discussed by Pearlin and Schooler (1978) resources are not necessarily related to what individuals do but it is that which is available to them in their coping efforts. They consist of factors that families can access to cope more effectively with stress. Specifically, resources are classified as either internal or external. The following will review research on both internal and external resources in families with children with disabilities.

Internal Resources

Internal resources are those within the family which include both personal and family resources. For the purpose of the present investigation, research findings for coping ability and the role of self-esteem as a psychological resource are most central. To provide a more complete review of the literature, the role of family resources (i.e., family attributes, family coping, internal family supports) will also be discussed.

Coping

In terms of coping ability in families with children with disabilities, illness-focused (Timko, Stovel, & Moos, 1992) and emotion-focused (Knussen & Sloper, 1992) coping have been linked to higher depression and personal strain. Adaptive coping consisting of problem-solving, restructuring thoughts, and seeking out supports has been shown to be more effective at managing stress than palliative coping which involves emotion-focused coping like avoidance, self-blame, and wishful thinking (Bailey & Smith, 2000). Other research has found that mothers who did not blame themselves for their child's disability were rated as having more positive family adaptation than mothers who did (Bristol, 1987). For fathers, problem solving has been shown to be particularly helpful for coping outcome (Frey, Fewell, & Valdasy, 1989). It would seem that there are factors which are important to positive outcome including mechanisms of coping. The internal resources of individuals within the family have not received a lot of attention in the literature. These resources may impact one's ability to cope with stress and therefore should continue to be addressed in research to provide tangible information to inform practice with families.

Parental Self-Esteem

Self-esteem as a protective factor was identified early in the psychological literature (Pearlin & Schooler, 1978), and research has supported this conceptualization (Bovier et al., 2004; Brown, 1993; Dumont & Provost, 1999; Rector & Rogers, 1997; Whisman & Kwon, 1993). Similarly, in research with families of children with disabilities, self-esteem has been identified as an important psychological resource for both mothers and fathers of children with disabilities (Hall, 1994; Trute, 1995).

The individual resource of self-esteem has been associated with certain coping efforts. For example, coping efforts at maintaining self-esteem were related to family expressiveness for mothers of children with cystic fibrosis (McCubbin, McCubbin et al., 1983). However, this coping pattern was not consistent for fathers. Additional research has found self-esteem to be related to other outcomes. Trute (1995) found that self-esteem was a significant predictor of depression for both mothers and fathers of children with disabilities. In her study with children with autism and cerebral palsy, Hall (1994) concluded that high overall parental self-esteem was a significant predictor of improved family functioning for families with children with disabilities. Trute and Hiebert-Murphy (2002) examined self-esteem as a predictor of parenting stress in mothers and fathers of children with disabilities and found that it was not a significant predictor for either parent. Therefore, it seems as though self-esteem is related to depression for both mothers and fathers and to family functioning for mothers, but does not seem to predict parenting stress for either parent. These findings highlight potential gender differences which have been reported in the research on self-esteem in the general population (Kling, Hyde, Showers, & Buswell, 1999). As there has only been one study that specifically examined

the role of self-esteem as a predictor of family outcome, more research is needed to further our understanding in this area.

Family Resources

Family resources are those available to the family in managing stressful situations. Research into the role of family attributes and internal family supports will be reviewed.

Family attributes. Characteristics of the family associated with positive family functioning include pursuing information about the disability (McCubbin & Huang, 1989; McCubbin, McCubbin et al., 1983; Taanila, Syjala, Kokkonen, & Jarvelin, 2002), acceptance of the disability (Taanila et al., 2002), family co-operation and integration (Bristol & Schopler, 1984; McCubbin & Huang, 1989; McCubbin, McCubbin et al., 1983; McCubbin, Patterson et al., 1983; Taanila et al., 2002), emotional activities and openness (Holland, 1996; Taanila et al., 2002), family stability (Holland, 1996), and active recreational orientation (Bristol & Schopler, 1984). A positive relationship has also been found between religious beliefs and family functioning (Abbott & Meredith, 1986; Reddon, 1989) and family cohesion and family adjustment (Bristol & Schopler, 1984; Holland, 1996). Family cohesion has been associated with positive family adjustment for mothers of autistic children (Bristol, 1987) and sense of coherence for mothers of children with disabilities (Gottlieb, 1998). Families who engage in problem-solving coping are better adjusted than those who do not (Knussen & Sloper, 1992; McCubbin, Patterson et al., 1983). Similarly, problem-solving in families with children with disabilities has been linked to higher parental involvement (Bailey & Smith, 2000; Gavidia-Payne & Stoneman, 1997).

Failla and Jones (1991) reported that family hardiness was associated with higher social support, coping to maintain the family integration, and higher levels of family functioning. They defined family hardiness along three dimensions: control (feeling capable of affecting change), commitment (active involvement with the view that events have meaning), and challenge (view that events are opportunities for growth). It was determined that that the meaning assigned by families to a stressor was a critical variable in increased family hardiness (Failla & Jones, 1991). This again underscores the importance of the perception of stressors in these families.

Internal family supports. Social support has been identified as an important factor for positive family adaptation in the general population (Lavee, McCubbin, & Patterson, 1985). Similarly, internal family relationships are the most common variable predicting positive outcome in families of children with disabilities (Knussen & Sloper, 1992).

Spousal support in couples with children with disabilities has been identified as particularly important. Bristol (1987) found that mothers with children with autism and other communicative disorders with more adequate spousal support were rated as having more positive family adaptation. Research has shown that couples report increased marital difficulties in families with children with disabilities (Bristol et al., 1988), which is due in part to the stress of caring for the child with a disability (Seligman & Darling, 1989; Ziolko, 1991). However, as reviewed by Sobsey (2004), it is not clear from the research exactly how marital adjustment and childhood disability are related. Spousal support has been identified as one of the strongest predictors of positive family functioning with these families (Abbott & Meredith, 1986; Bristol et al., 1988; Reddon et al., 1992). Similarly, Trute (1990) and Trute and Hauch (1988) found that the strength of

the marital dyad was an important predictor of positive family adaptation. Expressive spousal support (i.e., "harmonic responsiveness", Bristol et al., 1988, p. 448) has been identified as the most important factor in quality of parenting (Bristol et al., 1988). In contrast, disharmony is a negative predictor of both perceived and parental adaptation (Bristol et al., 1988). Ziolko (1991) identifies factors (e.g., low self-esteem, excessive demands, and financial strain) which place considerable strain on the marital dyad

Other supports identified in the research literature as important to positive adaptation include emotional support (Gottlieb, 1998), functional support (Failla & Jones, 1991), and grandparent involvement and support (Mirfin-Veitch & Bray, 1997b; Seligman, Goodwin, Paschal, Applegate, & Lehman, 1997). In particular, grandmother support has been found to be a negative predictor of parenting stress for mothers but not fathers of children with disabilities (Trute, Worthington, & Hiebert-Murphy, 2008).

While supportive networks have been linked to positive family functioning, families with children with disabilities have also been shown to have smaller, denser networks. This has been linked to higher levels of stress in families (Kazak, 1989; Kazak & Marvin, 1984; Kazak & Wilcox, 1984) especially when relationships are enmeshed (Bristol, 1987). Criticism from the family's network has been associated with increased psychological distress for fathers of children with disabilities (Frey, Greenberg, & Fewell, 1989).

External Resources

External resources are those outside the family and can be divided into two categories. Informal supports include support from friends, neighbours, groups, and religious organizations while formal supports are those from social service organizations

and contact with professionals. As support variables are not examined in the current study, the following will briefly review research findings for these supports for families with children with disabilities.

Informal social supports

Informal social supports have been identified as important to outcome in a number of studies (Beckman, 1991; Bristol, 1987; Bristol et al., 1988; Bristol & Schopler, 1984; Dunst, Trivette, & Cross, 1986; Failla & Jones, 1991; Frey, Greenberg, & Fewell, 1989; Gottlieb, 1998; Holland, 1996; Kazak & Marvin, 1984; Kazak & Wilcox, 1984; Knussen & Sloper, 1992; McCubbin, McCubbin et al., 1983; McCubbin, Patterson et al., 1983; Mirfin-Veitch & Bray, 1997a; Raikes & Thompson, 2005; Reddon et al., 1992; Schilling, Gilchrist, & Schinke, 1984; Taanila et al., 2002; Valentiner, 1993). Mothers and fathers of children with disabilities have reported similar levels of social support (Krauss, 1993), and in a study of parents of children with congenital heart disease there was a positive relationship between perceived social support and parental coping (Tak & McCubbin, 2002). Overall, Tak and McCubbin (2002) identify informal social support as a significant predictor and family resource in managing family stress. Other researchers have found that perceived helpfulness of social support predicted stress for parents of children with disabilities (Krauss, 1993). Mothers with more supportive networks reported increased adjustment (Frey, Greenberg, & Fewell, 1989) and Bruder (2000) stated that support from the informal network has been shown to be the largest predictor of both family and child outcomes. Research has also determined it is the satisfaction with (Frey, Fewell, & Valdasy, 1989), and perceived helpfulness of (Krauss, 1993), the support which influences adjustment. Group and religious involvement has

also been found to be important in stress management for parents of children with disabilities (Sanderson & Crawley, 1982).

Formal social supports

Both network support (Failla & Jones, 1991) and the utilization of network resources (Trute & Hauch, 1988) have been identified as helpful for positive family adjustment in families with children with disabilities. However, while some research has found that formal support is linked to a reduction in stress (Bristol & Schopler, 1984) others have found formal supports to have no impact on level of stress (Beckman, 1991) or adaptation (Bristol, 1987). Other research has found an inverse relationship between parental perceptions of professionals' control over their child's development and adjustment (Bristol & Schopler, 1984).

Applying Family Stress Theory in Research with Families with Children with Disabilities

Several studies have explicitly used family stress theory to guide their study of outcomes in families with children with disabilities (Bristol, 1987; Orr, Cameron, & Day, 1991; Patterson & McCubbin, 1983; Reddon, 1989; Reddon et al., 1992). Patterson and McCubbin (1983) found a significant negative impact of pile-up stressors on the health status of the child with the disability. They determined support for the Double ABC-X model; however, their use of an individual rather than family outcome is a limitation of the study design.

In her study with mothers of children with autism and communication disorders, Bristol (1987) determined that positive adaptation was predicted by active coping patterns and adequate support. Self-blame and defining the disability as a handicap were both

predictive of poor outcome which supported the Double ABC-X model. However, limitations of the study are the exclusion of fathers' perceptions and a specific sample of children with autism and communicative disorders. In addition, family functioning was assessed by individual and marital measures without a more general family adjustment measure. The use of correlation in the analysis also limits the findings.

Reddon (1989) and Reddon et al. (1992) assessed adjustment in families with children with disabilities using the most recent model of family stress (T-Double ABC-X) (McCubbin & McCubbin, 1987) which includes coping in families over time. Reddon (1989) reported that pile-up, coping, and resources predicted family adjustment for both parents but this was especially true for mothers. Reddon et al. (1992) identified correlational relationships between the variables of stressors, resources, and coping in mothers of children with developmental disabilities. Severity of the child's disability was not related to resources, coping, or family functioning. Overall, they concluded that the relationships between the variables examined supported the T-Double ABC-X model of stress and coping in families with children with disabilities. The strength of this research is the assessment of family outcome and the inclusion of fathers' perspectives. However, the study was based on a small sample and conclusions are based on relatively simple analyses, which are relative limitations.

Orr et al. (1991) examined the ordering of variables in the Double ABC-X model for families with children with disabilities. Their results supported the ordering ACBX rather than ABC-X. They determined that the appraisal (C factor) mediated the relationship between the stressor (A factor) and resources (B factor), which then impacted outcome (X). This contradicts the original model, where both B and C were considered to

mediate the relationship between the stressor and adjustment. They conclude that the family's appraisal of the stressor is paramount in the assessment of family stress (Orr et al., 1991). A limiting factor is their use of parenting stress as the outcome measure rather than a variable to assess family outcome. In a similar study design, Nachshen and Minnes (2005) used structural equation modeling to test the relationships between the variables in the Double ABCX model of family stress in families of children with and without developmental disabilities. This study replicated the findings of Orr et al. (1991) with the ordering ACBX for families of children with disabilities. The direct relationship between the stressor and the family's resources was not significant in their study. They determined that the family's perception of the stressor and the family's resources served as mediators in the relationship between the stressor and family empowerment. The strength of these studies is the use of more sophisticated statistical methods to better detect relationships between variables.

In their study with mother and fathers of children with congenital heart disease, Tak and McCubbin (2002) were interested in the relationship between family stress, perceived social support, and parental coping. They tested the direct relationship between family stress and coping as well as possible moderating and mediating relationships between perceived social support on family stress and coping. While the direct effect was supported, neither the mediating or moderating models were found to be significant. Tak and McCubbin reported gender differences in coping outcome; mothers' coping was more related to family integration, cooperation, and optimism, whereas fathers' coping strategies were in an effort to maintain self-esteem, social support, and psychological stability. Overall this study did not provide support for the theoretical model in terms of

variables important for coping outcome. The limitation with regard to family stress theory was their use of coping rather than family functioning as outcome. In addition, the sample was restricted to families of children with congenital heart disease.

Summary and Conclusion

Research has been informative in identifying variables important for positive outcome in families with children with disabilities. In particular, studies utilizing the Double ABC-X model of family stress have provided information about stress and outcome in families with children with disabilities. The Double ABC-X model indicates interactive relationships between the variables of stress, appraisal, resources, and outcome. While the relationships between variables have been established in some studies, others do not provide support for the model. According to family stress theory and family-centered practice an important outcome is family adjustment. Therefore, research with families should be concerned with family outcomes in addition to individual outcomes. Past research has examined parenting stress as an outcome; however, further research is needed to further our understanding of family adjustment. In addition, previous studies have not clearly differentiated between specific stressors associated with raising a child with a developmental disability and parenting stress as an outcome of these challenges. Given the challenges of parenting when a child has a disability, it is especially imperative that measures that are used to assess parent or family outcome do not include assessments of the perceived challenges of parenting. Measures that include perceived child difficulties as a component of parenting stress do not provide an appropriate assessment of the stress of parents of children with disabilities. To validly

assess parenting stress as an outcome, it is important for the outcome measure not to be confounded by concurrently evaluating the stressor.

The role of meaning assigned to the stressor of having a child with a developmental disability has become an important aspect of stress research. Positive appraisal has been associated with positive outcome, whereas negative appraisal has been linked with negative outcome. The important contribution of positive perceptions of the child's disability has been identified in mothers of children with learning disabilities (Hastings, Beck, & Hill, 2005), mothers of children with autism (Hastings, Kovshoff, et al., 2005) and in both parents of children with developmental disabilities (Trute & Hiebert-Murphy, 2002). The role of the situational meaning related to positive aspects of childhood disability is in need of further study. The role of positive appraisal in families with children with disabilities has not been examined extensively as a predictor of family outcome.

The role of resources has been well-established in the research literature and has generally been associated with a number of positive outcomes. Specifically, social support has been the most established resource variable examined in family stress research in both the general population (Fondacaro & Moos, 1987; Holahan & Moos, 1985, 1986; Valentiner et al., 1994) and in families with children with disabilities (Hobfoll & Spielberger, 1992; McCubbin et al., 1980; Kazak, 1989). A less examined area of research is self-esteem as an internal resource. The role of self-esteem as a protective factor in parents with children with disabilities has not received much research attention. There have been few research studies examining self-esteem as an individual resource influencing family outcome in families with children with disabilities. Perry

(2004) has identified the importance in intervention of enhancing self-esteem in both mothers and fathers of children with disabilities. The role of self-esteem needs to be examined further in these families.

Demographic and child variables have been examined in the research literature with mixed results. The majority of studies have examined the relationship between demographic variables and parenting stress. For research with family outcome, past research has produced varying results with regard to demographic variables (i.e., parental age, parental education, family income, and marital status) and child variables (i.e., child's age, child's gender, and disability type). Further research is needed to continue to identify demographic and child variables related to positive family outcome in families of children with disabilities. For example, there has been minimal research exploring variables related to what factors are important for positive family adjustment for single parents. Similarly, the type of childhood disability has been examined in relation to individual outcome but not to functioning at the level of the family.

The role of gender in stress and coping has become of interest in both research and practice. Mothers and fathers assume different roles and responsibilities within the family and in relation to the child with the disability and therefore they may not necessarily utilize the same coping strategies (Gray, 2003; Perry, 2004). More research is needed to identify similarities and differences of mothers and fathers in raising a child with a disability. This knowledge would assist in service delivery to these families.

The Present Study

The present study sought to further our understanding of factors important in the adjustment of families with children with developmental disabilities. While research has

been conducted with children with developmental and other disabilities, the current study is limited to children with developmental disabilities. These are typically conditions which occur in childhood and are life-long. This study addressed a need in family stress research to determine relationships between variables of theoretical importance in diverse populations (Huang, 1991). The theoretical basis for the study is the precrisis phase of McCubbin and Patterson's 1983 Double ABC-X model of family stress. Three factors (A) parenting stress, (B) internal personal resources (i.e., parental self-esteem), and (C) positive appraisal of the disability were examined to determine their impact on (X) family adjustment. The variables chosen for the study are important from a clinical perspective, as they have implications for the provision of family-centered services to families raising a child with a developmental disability. Although Perry (2004) argues for an individual model in stress and adaptation in families of children with disabilities, the current study was interested in both individual and family system variables. The perceptions of mothers and fathers of children with disabilities for the variables of parenting stress, positive family impact of the disability, parental self-esteem, and family adjustment were examined to better understand the relationships between individual and relational variables in predicting perceptions of family adjustment in these families. Although family functioning is the outcome of interest, it is noted that all measures of the current study are based on parent (i.e., individual) self-report.

Variables of Interest

Parenting stress. Parenting stress was examined as the initial predictor variable in the current design to assess stress associated with raising a child with a disability. Research has been clear in delineating parenting stress as an important variable for these

families. However, research has not been clear in conceptualizing this as a stressor rather than outcome variable for families with children with disabilities. One goal of this research was to better understand how families are impacted by childhood disability. This variable has been used extensively as an outcome measure with this population; however, using family stress theory as a guide, the current study conceptualized parenting stress as the "A Factor" in the model. Therefore, this research aimed to identify possible factors which impact on the relationship between parenting stress and family adjustment.

Parental self-esteem. Social support as a resource variable has received considerable research and clinical attention with families with children with disabilities. The role of the internal personal resource of self-esteem as a buffer to stressful situations has been supported in the general research literature (e.g., Bovier et al., 2004, Creswell et al., 2005; Rector& Rogers, 1997; Whisman & Kwon, 1993; Wilburn & Smith, 2005). Similarly, there has been research which has found self-esteem to be a psychological resource in parents of children with disabilities (Hall, 1994; McCubbin, McCubbin et al., 1983; Trute, 1995) but it remains to be an understudied area. Additionally, research has identified possible gender differences in the role of self-esteem. It has been shown to be related to individual factors (i.e., depression) for mothers and fathers but not associated with increased parenting stress for either parent. Self-esteem has been shown to be more important in terms of family outcome for mothers than fathers; however, the role of self-esteem in terms of family outcome has not been examined extensively. In order to address this gap in the literature, the current study examined self-esteem as an internal resource of parents of children with disabilities. This variable was examined as the "B factor" in the family stress model.

Positive appraisal. The current research was interested in the role of positive appraisal of the disability for positive family adjustment. The examination of positive appraisal of the disability is considered important for two reasons. First, it is important from a theoretical standpoint to examine the role of the "C factor" in the family stress model which is the definition or meaning assigned to the disability in relation to family outcome. The examination of the positive aspects of childhood disability is important considering how previous research has largely focused on the negative aspects of parenting a child with a developmental disability. Second, from a practice perspective, understanding the role of positive appraisal could provide important information in terms of intervention for families. As noted by researchers, the positive aspects of raising a child with a developmental disability have not been addressed in clinical work with families of children with disabilities (Hastings & Taunt, 2002). Current research has identified the important contribution of positive perceptions in intervention for mothers of children with intellectual disabilities (Hastings, Beck, & Hill, 2005). The current study sought to determine the contribution of positive appraisal of the child's disability in relation to family adjustment.

Perry (2004) outlines the confounding nature of stress and appraisal variables. She questions whether parent reports of child difficulty are part of the A factor (stressor) or the C factor (meaning). However, in the current study of stress and appraisal are based on separate measures. The Family Impact of Childhood Disability measure examines the positive and negative meaning assigned to the child's disability while the Parenting Stress Index identifies the stress associated with parenting the child. Positive and negative perceptions have been identified as an outcome measure (Perry, 2004); however, the

current research utilized this as the appraisal factor ("C Factor") within the context of family stress theory. As positive appraisal has been identified as important to outcome in other research, the current study was interested in the impact of parents' positive assessment of the child's disability on family outcome.

Family adjustment. Family adjustment has not been well studied in past research on families with children with disabilities. Instead the adjustment of individual members has tended to be the focus. Following family stress theory and family-centered practice, the current study was interested family adjustment as outcome, viewing the individual within the context of the family. The purpose was to provide information to inform practice as to what variables are important for positive family functioning.

Demographic and child variables. In addition to the key variables of parenting stress, positive appraisal, and self-esteem, the present study also explored the importance of selected demographic variables in family adjustment. A review of the literature highlights that the influence of marital status, family income, parental education, and parental age in relation to family functioning is in need of further clarification. In addition, the role of the child's age, the child's gender, and disability type was also of interest. This study considered the potential relevance of these variables in predicting family adjustment. As there is some arbitrariness regarding where in the model some variables are placed (i.e., income and education can both be viewed as either a resource variable or a demographic variable), the variables in the present study were categorized as demographic variables consistent with previous research (e.g., Tak & McCubbin, 2002; Trute, 1990; Trute & Hauch, 1988). The current research was interested in the role of demographic variables (i.e., parental age, parental education, marital status, and family

income) as well as child variables (i.e., the child's age, the child's gender, and child disability type) in relationship to family adjustment. The purpose of including these variables was to inform practice as to their possible significance in predicting family adjustment.

The Role of Gender

The current study was interested in exploring gender differences and similarities in the variables of interest among parents of children with disabilities. Consistent with the family-centered practice model, fathers' perceptions have been increasingly examined in the literature; however, this is a relatively new area of research. The current study was interested in fathers' as well as mothers' perspectives to identify gender similarities and differences in perceived family outcome. This will provide a more specific understanding to guide practice for each parent in raising a child with a developmental disability.

Relationships between Variables

The interactive relationships among variables are important to consider in family stress research (Aldwin, 1994). The family stress model theorizes an interactive effect between stress, resource, and appraisal variables. Huang (1991) recommends a more predictive approach in data analysis which is specific to prevention and management of stress in the family. These relationships have been examined in the general stress research (Lavee et al., 1987). Some studies with families with children with disabilities have provided support for the family stress model (Bristol, 1987; Patterson & McCubbin, 1983; Reddon, 1989; Reddon et al., 1992) while others have not (Nachshen & Minnes, 2005; Orr et al., 1991; Tak & McCubbin, 2002). To continue this type of investigation,

the current study used the Double ABC-X model as a framework for examining the relationship between variables important to positive family adjustment.

Holmbeck (1997) has discussed the statistical confusion between mediating and moderating relationships. Mediating relationships are those were one variable (A) is influenced through another variable (B) to then impact an outcome variable (C). Moderating relationships are those where the relationship between two variables (A and C) changes as a result of variable (B). Variable B may either strengthen or weaken this relationship at different values (Hastings, 2002; Holmbeck, 1997). The current study examined these possible relationships between parenting stress and parental self-esteem and parenting stress and positive appraisal on the outcome of family adjustment. Whisman and McClelland (2005) discuss important methodological issues to consider in these types of analyses. The presence of underpowered studies in psychological research have been identified (Maxwell, 2004) which is often due to a reduced sample size and reliability of measures (Maxwell, 2004; Whisman & McClelland, 2005). These statistical constraints have been taken into consideration in the current study. Therefore, the mediation and moderation analyses were considered exploratory in nature.

Hypotheses

The purpose of the current study was to examine the role of demographic variables (i.e., parental education, parental age, family income, and marital status), child variables (i.e., the child's age, the child's gender, and disability type), parenting stress, parental self-esteem, and positive appraisal of the disability on family functioning. Parenting stress was considered to be the stress variable in the family stress model. The

appraisal variable in the model was positive appraisal of the disability while parental self-esteem was conceptualized as an internal resource.

Main hypotheses. The model to be tested for the main hypotheses is illustrated in Figure 2). Based on the review of the research, the main hypotheses of the current study were as follows:

Hypothesis 1: After controlling for demographic and child variables that correlate with family adjustment, positive family adjustment will be predicted by lower parenting stress.

Hypothesis 2: After parenting stress and any related demographic and child variables are accounted for in the model, positive family adjustment will be predicted by higher parental self-esteem and higher positive appraisal of the disability.

This research provided an exploratory examination of possible moderating (see Figure 3) and mediating (see Figure 4) relationships between both positive appraisal and self-esteem on the relationship between parenting stress and family adjustment.

Moderation hypotheses. The hypotheses for possible moderating relationships were as follows:

Hypothesis 3: After demographic and child variables are controlled for and the direct effects of parenting stress and parental self-esteem are added to the model, parental self-esteem will moderate the relationship between parenting stress and family adjustment.

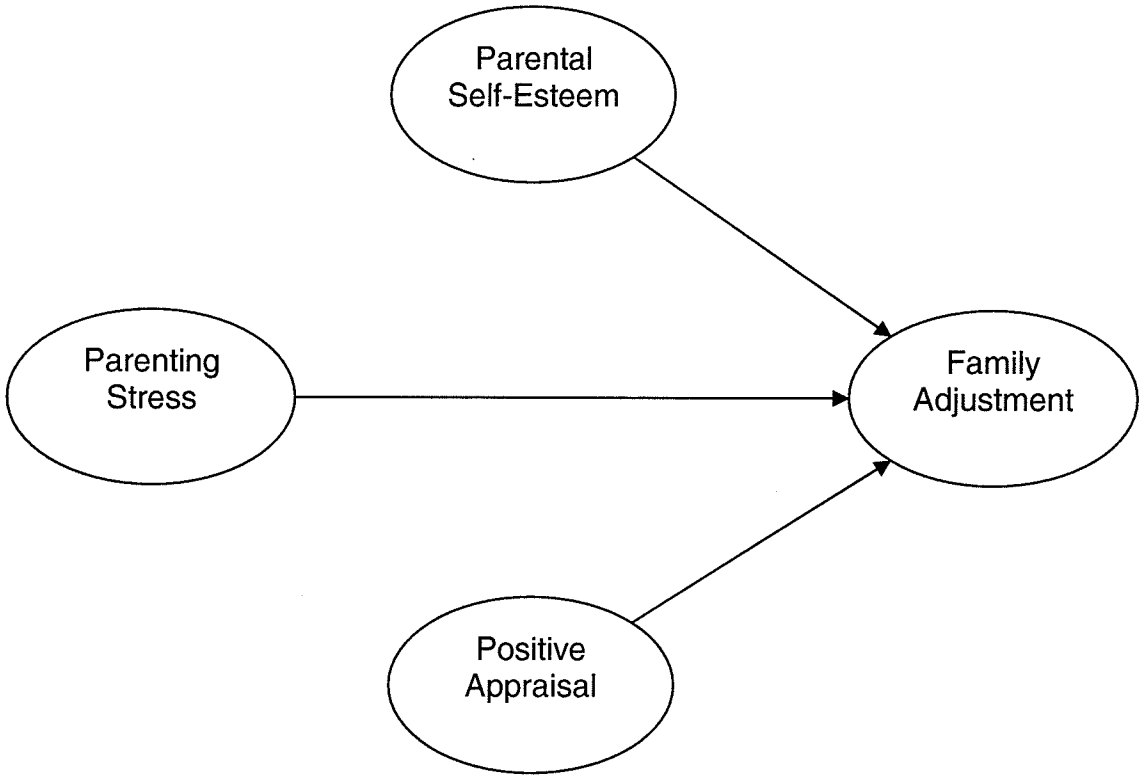


Figure 2. Main (direct) effects model.

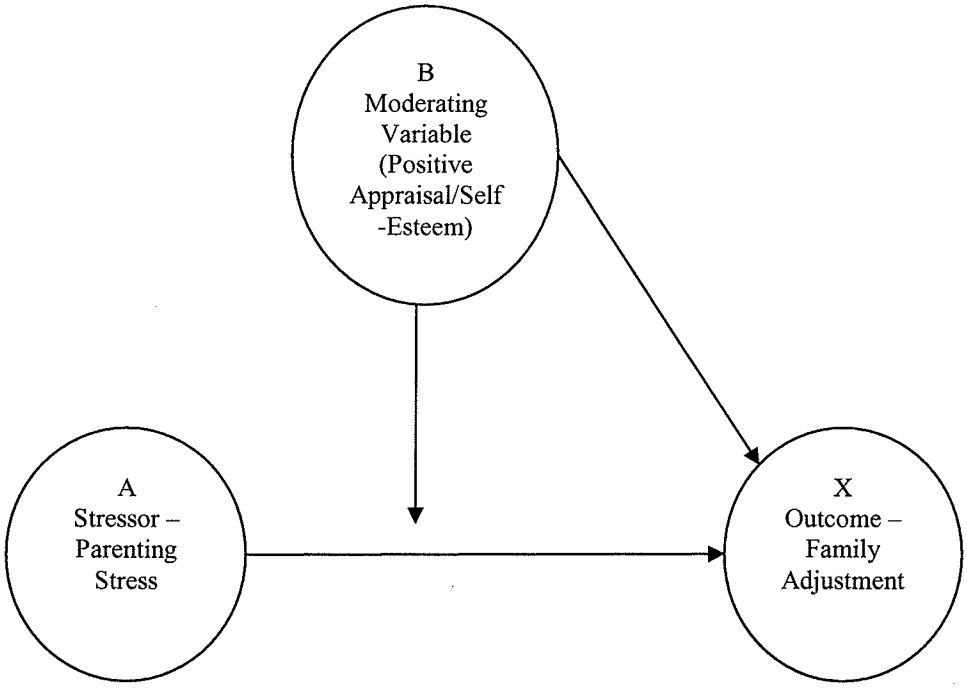


Figure 3. Moderation model.

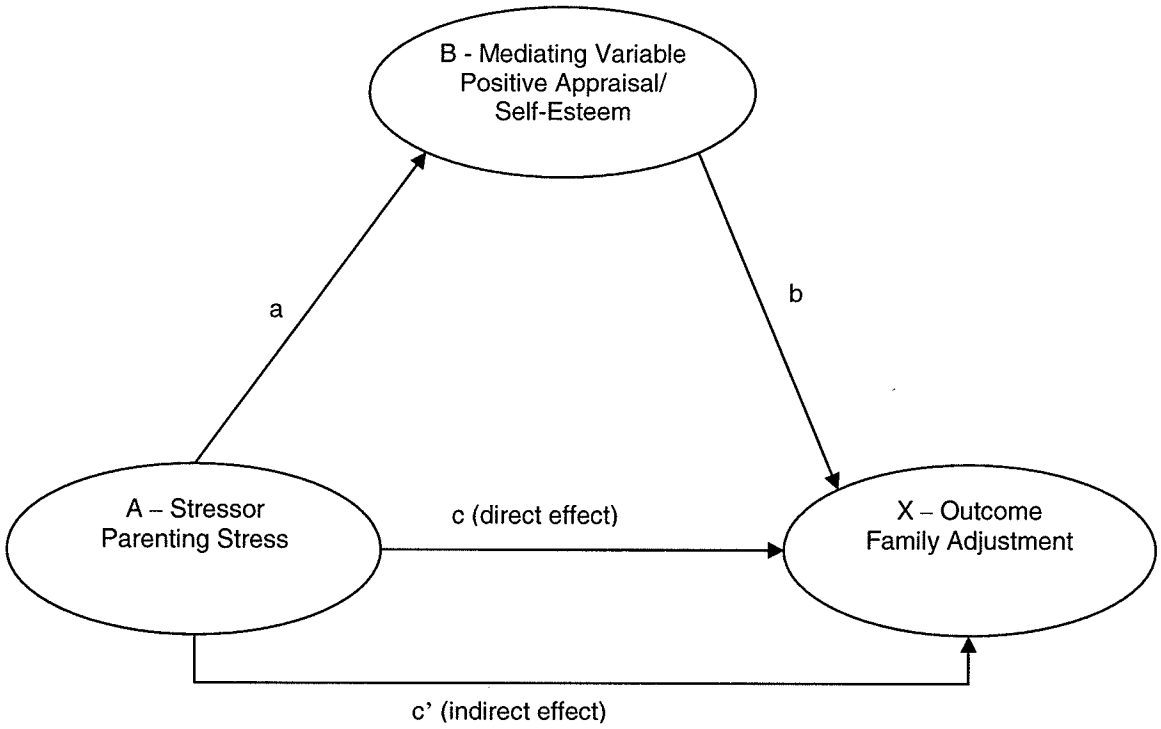


Figure 4. Mediation model.

Hypothesis 4: After demographic and child variables are controlled for and the direct effects of parenting stress and positive appraisal are added to the model, positive appraisal will moderate the relationship between parenting stress and family adjustment.

Mediation hypotheses. The hypotheses for possible mediating relationships were as follows:

Hypothesis 5: After demographic and child variables are controlled for and the direct effects of parenting stress and parental self-esteem are added to the model, parental self-esteem will mediate the relationship between parenting stress and family adjustment.

Hypothesis 6: After demographic and child variables are controlled for and the direct effects of parenting stress and positive appraisal are added to the model, positive appraisal will mediate the relationship between parenting stress and family adjustment.

Given the goal of exploring gender differences in variables important to predicting outcome, the study looked at these relationships separately for women and men.

METHOD

Participants

Data from this study was obtained from the archive of the Family Strengths in Childhood Disability Project. Families with young children (aged 0-12) with developmental delay or developmental disability were included in the research. The primary focus of this project was the examination of factors that facilitate and/or hinder the provision of family-centered services for families with children with disabilities. Measures were given to families to assess a variety of aspects of raising a child with a disability at entry to the provincially-funded support system for families with children with disabilities system and then again 12 months later. Both qualitative and quantitative measures were used. The project was designed to examine the implementation of family-centered practice with these families.

Children's Special Services, a provincial program of the Manitoba Governments' Department of Family Services and Housing, coordinates services to families with children with disabilities. Families with children with developmental disabilities are referred to receive case coordination, financial support, respite, and early intervention services. All families entering Children's Special Services between October 2000 and July 2001 in two health regions (one an urban region with a population of approximately 600,000 and one a mixed urban and rural region with a population of approximately 120,000) were eligible for the study. There were 222 families who entered the service system in the two regions during the study period. Based on specific criteria, 178 of these families were included in the larger study. To be eligible (a) the child needed to have a formal diagnosis of developmental delay or developmental disabilities; (b) the child with

the disability had to be 12 years of age or younger; (c) the file with Children's Special Services was not a transfer or re-opened case (i.e., to ensure that the family was new to the service system) and (d) the parents were able to speak and read English. The eligible pool of 178 was reduced by 27 families to 151 families. The reasons identified for this were that 4 families could not be located as their place of residence had changed, 11 families had their files transferred out of the area or had their file closed during the project, 2 families did not had an adequate understanding of English to proceed, 7 children were over the age of 12 during the course of the project, and 3 families had extenuating circumstances which impeded their participation (e.g., their child died). If eligible, mothers and fathers were invited to participate. The Time 1 (T1) sample was comprised of 111 families, representing a 74% response rate. Twenty-one single parent families and 90 two-parent families completed measures at T1. Within these families, there were 106 mothers and 70 fathers who completed measures. In addition to these requirements, to be included in the current study, participants had to have completed all the measures of interest (parenting stress, positive appraisal, self-esteem, and family adjustment). Those who had not completed all of these measures were excluded from this study. As a result, 98 mothers and 62 fathers formed the sample for the current study.

Procedure

Parents were asked by their service coordinator to give written consent to be contacted about the Family Strengths in Childhood Disability Project. If such permission was given, the family was contacted and given more information. At this point, if families chose to participate they were visited by a research assistant, provided written informed consent to participate and completed study measures. Initial data collection occurred

approximately six months after the family was referred for services (which typically occurred at the point of diagnosis). Data was collected at a second home visit 12 months later. While some family measures were re-administered, the focus of the second data collection was on the family's experience with the service delivery system.

This study was based on T1 data retrieved from the archive of the Family Strengths in Childhood Disability Project. There was no identifying information included, and variables were screened for missing data.

Materials

The materials for the study consisted of questionnaires to assess demographic variables, parenting stress, appraisal of the disability, parental self-esteem, and family adjustment.

Socio-Demographic Information

Parents completed a socio-demographic questionnaire which consisted of the assessment of marital status, employment, education level, family form, number of children, and family income (see Appendix A). An additional questionnaire to obtain specific information about the child's developmental disability was also completed by parents (see Appendix B).

Parenting Stress

The Parenting Stress Index – Short Form (PSI-SF; Abidin, 1995) was used to assess level of parental stress. This is a 36-item scale which measures the level of stress that the parent is experiencing. For the purposes of this project, the measure was completed as it related to raising the child with a disability. It is divided into three factors (consisting of 12 items each): Difficult Child Characteristics, Dysfunctional Parent-Child

Interaction and Parental Distress. Items are assessed on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The PSI has been used extensively as a measure of parenting stress for both research and clinical practice. Specifically, the PSI has been used in previous research in childhood disability as a measure of parental stress for parents of children with autism (Beckman, 1991; Noh et al., 1989), Down syndrome (Krauss, 1993; Noh et al., 1989), motor impairment (Krauss, 1993), genetic disorders and general delays (Beckman, 1991), conduct disorder (Noh et al., 1989), and developmental delays origin unknown (Beckman, 1991; Krauss, 1993). The short form total stress score has a .94 correlation with the full scale PSI (Abidin, 1995). Abidin (1995) reported a test-retest reliability of .84 (over a six-month time interval) and an alpha of .91 for the PSI-SF. This is considered to be a valid and reliable measure of parenting stress, which is comparable to the full scale PSI. The total score was used for the purposes of this study as it gives a composite measure of stress related to raising a child with a disability.

Parental Self-Esteem

The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) was used to assess internal resources of the parent. Previous research has examined self-esteem as an internal resource (Bovier et al., 2004; Irvin & Acton, 1996; Trute, 1995). The RSES consists of 10 items which are assessed on a 4-point Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree), resulting in a total score range from 10 to 40. The scoring is such that higher scores indicate lower self-esteem. There are an equal number of positive and negative items. Rosenberg (1965) reports a coefficient of reproducibility of .92 as well as a coefficient of scalability of .72 and test-retest reliability has been reported as .85. The measure has been found to have internal consistency with reported

Cronbach's alphas of .88 (Fleming & Courtney, 1984) and .89 (Irvin & Acton, 1996). Long-term self-concept stability in parents of children with developmental disabilities has also been established (Trute, 1995).

Positive Appraisal of the Disability

The positive appraisal subscale of the revised Family Implications of Childhood Disability Scale (FICD; Trute & Hiebert-Murphy, 2002; Trute et al., 2007) measured the parents' cognitive appraisal of the family impact of the disability. Trute and Hiebert-Murphy (2002) developed the measure to determine both the positive and negative impact of the disability. Their primary appraisal of impact is based on Lazarus and Folkman's (1984) definition of an event as harmful, inconsequential, or benign-positive. It is considered to be parents' attempts to restore balance after learning of their child's disability (phase one of the model). While the FICD scale assesses both the positive and negative appraisals of childhood disability, for the purpose of the current investigation, only the Positive Family Impact (PFI) component of the measure was utilized. Originally this complete measure consisted of 15 items. The original measure showed good internal consistency of .71 and .88 for the positive and negative scales respectively (Trute & Hiebert-Murphy, 2002). It was not found to be related to social desirability in mothers or fathers. Over time (7 years) the measure showed good long-term stability ($r = .62$, $p < .001$). The measure demonstrated good discriminant validity with only a weak relationship with mothers' depression and self-esteem scores (Trute & Hiebert-Murphy, 2002). In order to balance the number of positive and negative items, five additional positive appraisal items were added to the measure (Trute et al., 2007). The 10 positive items (the Positive Family Impact [PFI] subscale) were used as a measure of positive

appraisal of the disability in terms of family impact. The PFI was reported to have an alpha of .81 for mothers and .85 for fathers (Trute et al., 2007). Test-retest reliability over a two-week period was reported to be .92 for the PFI (Trute et al., 2007).

Family Adjustment

The Brief Family Assessment Measure III (Brief FAMIII; Skinner, Steinhauer, & Santa-Barbara, 1995) was used to assess family adjustment. The full scale FAM III consists of 50 items and is based on a process model of family functioning (Skinner et al., 1995). It has been widely used in both clinical settings and in basic and applied research as a measure of family processes (Skinner, Steinhauer, & Sitarenios, 2000). It consists of six factors: task accomplishment, role performance, communication, affective involvement, control, and values and norms. In a recent publication, Skinner et al. (2000) discuss the normative data, reliability, and validity (discriminant, construct, and clinical) of the measure. Normative data is based on 247 adults from two-parent homes. The mean age was 38.6 years (SD = 8.5). Forty-three percent were men and fifty-seven percent were women. Fifty-three percent had completed at least some post-secondary education (Skinner et al., 2000). Reliability was reported at .93 for the general scale (Skinner et al., 2000). It has been demonstrated to distinguish between clinical and non-clinical families (Skinner et al., 1995), and this was replicated more recently where differences were found for the general scale with clinical groups consistently scoring higher (which indicates more problems) than non-clinical groups (Skinner et al., 2000). Its construct validity was found to be high with significant correlations with other related measures (Skinner et al., 2000). Internal consistency is also high (alpha > .80, Skinner et al., 1995). Therefore, it has been well established as a good reflection of family functioning.

The Brief FAMIII is comprised of fourteen items that demonstrated the best item-total correlation on the full scale. The short form correlates strongly with the full-scale measure (*r* values range from .94 to .97). Each item is rated using a 4-point Likert Scale from strongly agree to strongly disagree. A sample item is "We feel loved in our family". As indicated, higher scores on the Brief FAMIII reflect poorer family functioning. The social desirability and the defensiveness scale are not included in the Brief FAMIII (Skinner et al., 2000).

RESULTS

Data preparation

As outlined in Tabachnick and Fidell (2001) there were a number of statistical issues around normality that were considered before running the data analyses. Data transformations were conducted to deal with the concerns that emerged. In particular, the data for each of the variables was plotted and screened for outliers that would impact the normality of the distribution. As a result of this initial screening there were outlier scores (outside 3 standard deviations of the mean) for the variables of family adjustment, positive appraisal, and self-esteem. Three family adjustment measure scores and two positive appraisal scores for mothers were identified as falling outside of the normal distribution. As recommended by Fidell and Tabachnick (2003), they were changed to within 2.5 standard deviations of the mean score. One self-esteem score for fathers was changed to within 2.5 standard deviations of the mean as well in order to approximate a normal distribution. After these transformations, the data were re-examined visually and it was determined that the kurtosis and skewness were within acceptable limits. This was then the data set which was used for subsequent analyses.

Parental age was also examined as part of the initial screening for normality. As mentioned there were 98 mothers and 62 fathers who were eligible for the current study. However, after screening the data it was decided that one mother and one father whose age was outside a Z-score of 3 were dropped from the study. This family was one where the child's grandparents were legal guardians. The rationale was to keep the sample as homogeneous as possible on this demographic variable. Therefore, the final number of participants was 97 mothers and 61 fathers. There were 58 families where both mothers

and fathers completed measures, 39 families where only mothers completed measures, and 3 families where only fathers completed measures.

Parent Characteristics

Father Characteristics

The average age for the men in this study was 37.60 years (*SD* = 6.38 years). Fifty-four fathers (88.5%) reported full-time ongoing employment, one (1.6%) reported part-time seasonal employment, two (3.3%) reported that they were disabled/unable to work, one (1.6%) indicated that he was a homemaker, and two (3.3%) identified "other" as employment. The employment for one (1.6%) father was missing. The mean education level of fathers was 14.1 years (*SD* = 2.6 years).

Mother Characteristics

The average age for the women in the sample was 33.7 years (*SD* = 6.25 years). Thirty-five mothers (36.1%) reported full-time ongoing employment, 13 (13.4%) reported part-time seasonal employment, three (3.1%) reported that they were unemployed and seeking employment, 34 (35.1%) reported that they were homemakers, two (2%) reported that they were disabled/unable to work, three (3.1%) reported that they were self-employed, two (2%) were students, and five (5.2%) identified "other" as employment. The mean education level of mothers was 13.14 years (*SD* = 1.94 years).

Child Characteristics

Sample of Fathers

There were 25 (41%) girls and 36 (59%) boys in the sample of fathers. The mean age of the children was 42.72 months (3.56 years; *SD* = 31.1 months or 2.6 years). The range in age was from five months to 12 years. Fathers indicated that the children had the

following primary diagnoses: developmental delay – not otherwise specified (n = 19, 31.1%), autism (n = 10, 16.4%), pervasive developmental disorder (PDD; n = 10, 16.4%), Down syndrome (n = 7, 11.5%), cerebral palsy (n = 6, 9.8%), developmental delay – genetic/metabolic (n = 6, 9.8%) and Asperger's syndrome (n = 3, 4.9%).

Sample of Mothers

There were 33 (34%) girls and 64 (66%) boys in the sample of mothers. As identified by Trute (1990), this approximates the gender distribution for children with disabilities in the larger community. The mean age of the children was 48.04 months (4.0 years; SD = 34.38 months or 2.87 years). The age range for the children in sample of mothers was from five months to 12 years. Mothers indicated that their children had the following primary diagnoses: developmental delay – not otherwise specified (n = 32. 33%), autism (n = 13, 13.4%), pervasive developmental disorder (pdd; n = 13, 13.4%), Asperger's syndrome (n = 11, 11.3%), cerebral palsy (n = 11, 11.3%), Down syndrome (n = 9, 9.3%), and developmental delay – genetic/metabolic (n = 8, 8.2%).

Family Characteristics

Fathers

Fifty-nine (96.7%) of the fathers were married/living as married and 1 (1.6%) was divorced. There was missing data on marital status for one (1.6%) father. The family form reported for the men in the sample included: married (n = 48, 78.7%), remarried (n = 7, 11.5%), blended family (n = 3, 4.9%), single parent (n = 1, 1.6%), and foster family (n = 1, 1.6%). The range for number of children in the family was from one to six (mean = 2.46, SD = 1.21). Fathers' reported family income can be found in Table 1.

Table 1

Family Income for the Sample of Fathers (N = 61)

Income	*n*	%
0-$10,000	1	1.6
$10,000-$14,999	2	3.3
$15,000-$19,999	1	1.6
$20,000-$24,999	3	4.9
$25,000-$29,999	3	4.9
$30,000-$34,999	10	16.4
$35,000-$39,999	5	8.2
$40,000-$44,999	4	6.6
$45,000-$49,999	4	6.6
$50,000-$59,999	10	16.4
$60,000-$74,999	5	8.2
$75,000 and over	7	11.5

Note. Family income data was missing for six fathers.

Mothers

The family form reported for the sample of mothers was as follows: first married (n = 56, 57.7%), single parents (n = 19, 19.6%), remarried (n = 8, 8.2%), living as married (n = 7, 7.2%), blended family (n = 5, 5.1%), extended family (n = 1, 1%), and foster family (n = 1, 1%). Overall there were 19 (19.6%) single mothers and 78 (80.4%) mothers from two-parent homes. The range for number of children in the family was from one to six (mean = 2.40, SD = 1.20). Mothers' reported family income can be found in Table 2.

Summary Statistics for Self-Report Measures

Internal Consistencies of the Measures

Internal consistencies for all measures are reported in Table 3. The reliabilities of all measures are within acceptable levels, with Cronbach's alpha ranging from 0.74 to 0.94.

Descriptive Statistics of Self-Report Measures

Descriptive statistics (means, standard deviations, and ranges) for all self-report measures for mothers and fathers are reported in Table 4.

The Parenting Stress Index – Short Form (PSI - SF). The total score for fathers on the PSI-SF was 81.38 with a standard deviation of 19.92. Mothers' mean score was 91.4 with a standard deviation of 25.01. According to Abidin (1995) a total raw score of over 90 is an indicator that the individual is experiencing clinically significant levels of parenting stress. Therefore, on average, mothers in this sample would be considered to be experiencing clinically significant levels of parenting stress (at or above the 90th

Table 2

Family Income for the Sample of Mothers (N = 97)

Income	*n*	%
0-$10,000	4	4.1
$10,000-$14,999	10	10.3
$15,000-$19,999	1	1.0
$20,000-$24,999	8	8.2
$25,000-$29,999	6	6.2
$30,000-$34,999	14	14.4
$35,000-$39,999	5	5.2
$40,000-$44,999	6	6.2
$45,000-$49,999	4	4.1
$50,000-$59,999	13	13.4
$60,000-$74,999	6	6.2
$75,000 and over	8	8.2

Note. Family income data was missing for twelve mothers.

Table 3

Internal Consistencies of Self-Report Measures

Measure	Cronbach's alpha
Fathers ($N = 61$)	
Parenting Stress Index (PSI – SF)	0.93
Parental Self-Esteem (RSES)	0.82
Positive Appraisal (FICD-PFI)	0.85
Family Adjustment (Brief FAM III)	0.85
Mothers ($N = 97$)	
Parenting Stress Index (PSI – SF)	0.94
Parental Self-Esteem (RSES)	0.88
Positive Appraisal (FICD-PFI)	0.75
Family Adjustment (Brief FAM III)	0.90

Table 4

Summary Statistics for Self-Report Measures

Measure	Range	Mean	*SD*
	Fathers ($N = 61$)		
Parenting Stress Index – Total Score	38-126	81.4	19.9
Parental Self-Esteem	10-27	16.7	3.9
Positive Appraisal	14-40	25.6	6.1
Family Adjustment Measure – Total Score	0-19	11.5	4.8
	Mothers *(N = 97)*		
Parenting Stress Index – Total Score	41-162	91.4	25.0
Parental Self-Esteem	10-31	18.9	4.8
Positive Appraisal	15-36	27.9	4.8
Family Adjustment Measure – Total Score	0-28	11.8	6.0

percentile). Specifically, there were 46 mothers (47.4%) and 17 fathers (27.9%) who scored within this clinical range.

The Rosenberg Self-Esteem Scale (RSES). Prior to analysis, one father's self-esteem score of 30 was changed to 27, which was calculated at 2.5 standard deviations above the mean. The purpose was to approximate a normal distribution as a score of 30 fell outside of the acceptable 3 standard deviations above the mean. This was done as recommended by Fidell and Tabachnick (2003). Following this change, the range of fathers' self-esteem score was 10 to 27. The mean score for fathers on the self-esteem measure was 16.72 with a standard deviation of 3.92. This finding is similar to the self-esteem scores of fathers of children with disabilities reported by Trute (1995; mean =16.59, *SD* = 4.05).

For mothers, the mean score on self-esteem was 18.93 with a standard deviation of 4.80. The range was from 10 to 31. This mean is comparable to other studies which have utilized this measure with this population. Bright and Hayward (1997) reported a mean of 20 and standard deviation of 4.8 for mothers of children with disabilities. Trute (1995) also reported similar self-esteem scores for mothers of children with disabilities (mean = 18.37, *SD* = 4.39).

Family Implications of Childhood Disability Scale - Positive Scale (PFI). The mean score for fathers on the positive appraisal measure (PFI) was 25.62 with a standard deviation of 6.15. The range was from 14 to 40.

The mean score for mothers on positive appraisal was 27.94 with a standard deviation of 4.81. Due to outlier scores for mothers, two scores were changed. One score of 10 and one of 11 were changed to 15 (i.e., 2.5 standard deviations below the mean) in

order to create a normal distribution for the sample. As mentioned this procedure is recommended by Fiddell and Tabachnick (2003). After these transformations the scores ranged from 15 to 36.

The Brief Family Assessment Measure III – (Brief FAMIII). The mean family adjustment score for fathers was 11.83 which translates to a T-score of 48. T-scores below 50 indicate less than average family difficulties (Skinner et al., 1995). Therefore, compared to the normative sample, fathers in this sample, reported slightly less than average family difficulties

The mean score on family adjustment for mothers was 11.81 with a standard deviation of 5.98; however, this was after three FAM scores for mothers were changed to move the values into a normal distribution. Similar to above, the scores of 31, 32, and 39 were changed to 2.5 standard deviations above the mean for scores of 28 (Fiddell & Tabachnick, 2003). The mean for mothers without the transformations was 12.00. Each of these values converts to T-scores of between 47 and 48. Again, according to Skinner et al. (1995), this mean score for mothers represents a slightly lower than average reporting of family difficulties.

Mean Scores by Disability Type

In order to determine whether there were differences in disability type for the child's age and parents' mean scores on self-report measures, the type of childhood disability was divided into three categories. The first category was the Pervasive Developmental Disorder Spectrum Disorders as specified in the DSM-IV TR (APA, 2000). These developmental disabilities include autism, Asperger's syndrome, and pervasive developmental disorder, not otherwise specified (nos). The second category

was for children with Down syndrome. The third category was for children with other developmental disabilities which include developmental delay, not otherwise specified (nos), developmental delay – genetic/metabolic or abnormalities in development, and cerebral palsy. Separate one-way ANOVA's were conducted for fathers and mothers to determine if there were differences between scores for parents of each disability type.

Child's Age

Fathers. There were differences in the mean age of children in each disability category, $F(2, 58) = 4.68$, $p = .013$. Post hoc analysis showed that the mean age of children with Down syndrome was younger than children in the other two categories, (see Figure 5).

Mothers. There were mean age differences of the children depending on disability type for mothers, $F(2, 94) = 4.72$, $p = .01$. The children with Down syndrome were significantly younger than children with a PDD diagnosis; however, children with Down syndrome were similar in age with children with other developmental disabilities and children with other developmental disabilities were similar in age to those with PDD diagnosis (see Figure 5).

Self-Report Measures

Mean scores on each of the self-report measures were also compared by disability type for both mothers and fathers.

Parenting Stress

Fathers. There were significant differences for total parenting stress for fathers depending on disability type. Total stress scores were significantly different between the three groups, $F(2, 58) = 13.97$, $p = .00$. Post hoc analyses revealed that for total parenting

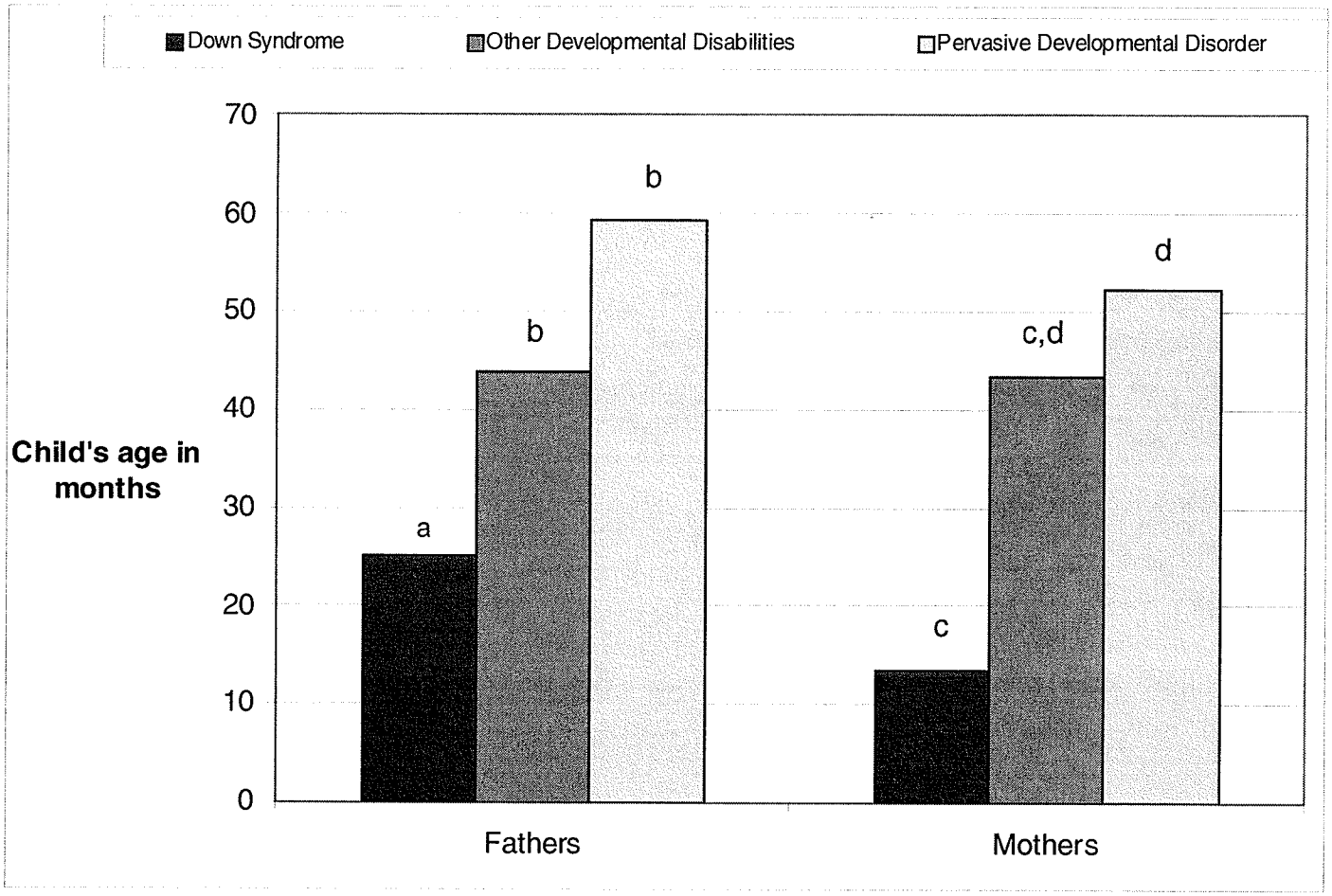


Figure 5. Mean child's age by disability type for father and mother samples. Means that do not share superscripts differ at $p < .05$ in the Tukey honestly significant difference comparison.

stress, fathers of children with Down syndrome reported significantly less parenting stress than fathers of the children in the other two groups (see Figure 6).

Mothers. There were differences between the groups for total parenting stress scores for mothers as well, $F(2, 94) = 12.98$, $p = .00$. Post hoc analyses determined that mothers of children with Down syndrome reported significantly less parenting stress than mothers in the other two groups. Mothers of children with other developmental disabilities and mothers of children with PDD Spectrum Disorders reported similar parenting stress scores (see Figure 6).

Positive appraisal

Fathers. There were no differences between the types of disabilities for fathers' scores on the positive appraisal measure, $F(2, 58) = .051$, $p = .95$.

Mothers. There were differences on positive appraisal scores for mothers, $F(2, 94) = 3.92$, $p = .023$. Post hoc analysis showed that mothers of children with Down syndrome scored significantly higher on positive appraisal compared to mothers in the other two groups who did not differ from one another (see left-most set of bars in Figure 7).

Self-esteem

Fathers. There were no differences between the three groups on parental self-esteem scores for fathers, $F(2, 58) = .84$, $p = .44$.

Mothers. Overall, there were differences in parental self-esteem scores based on disability type, $F(2, 94) = 3.66$, $p = .03$. Mothers of children with Down scored significantly higher on self-esteem compared to mothers with children with other developmental disabilities. However, there were no differences between mothers of children with Down compared to mothers with children with PDD Spectrum Disorders

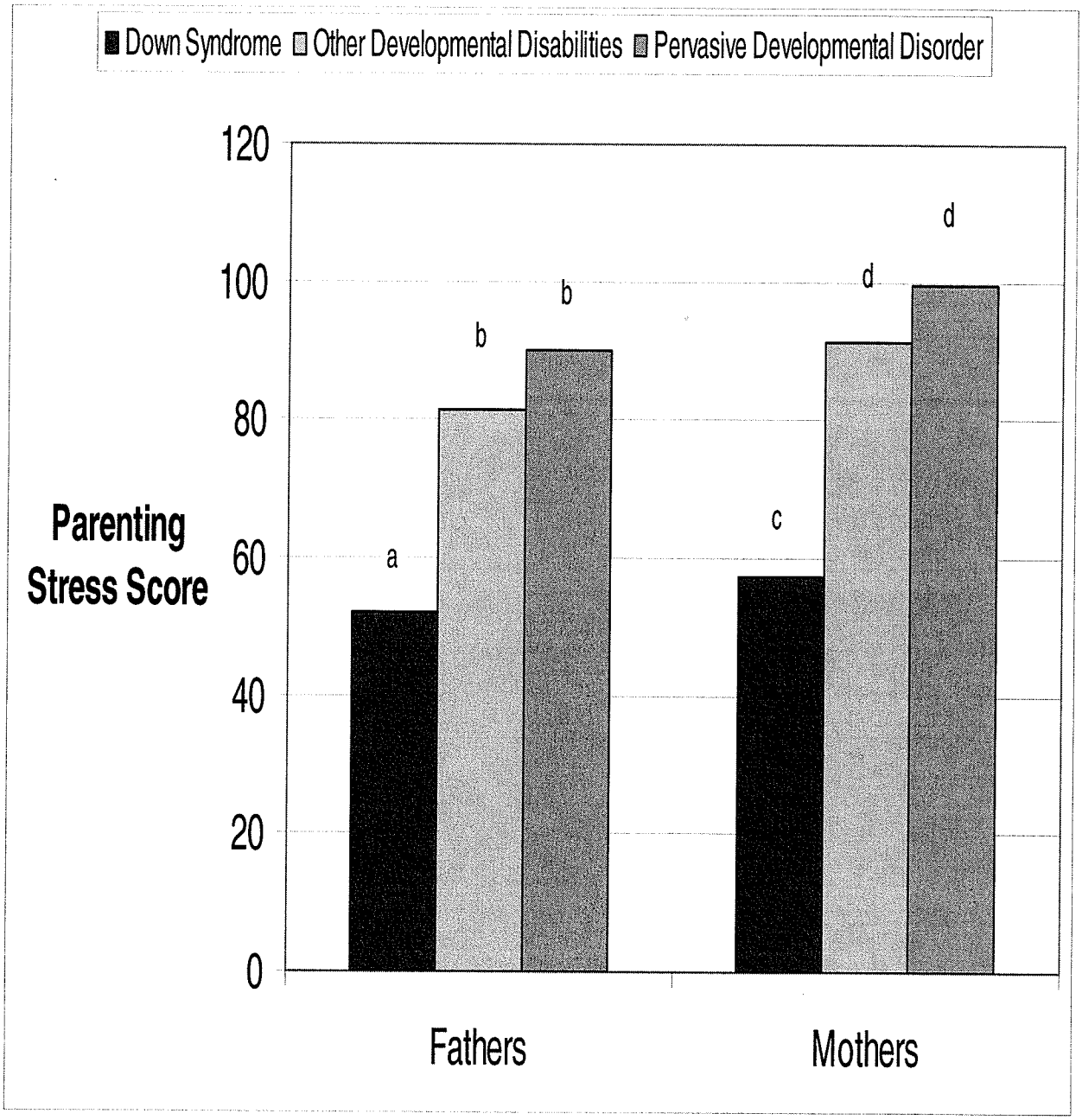


Figure.6. Total parenting stress scores by disability type for mother and father samples. Means that do not share superscripts differ at $p < .05$ in the Tukey honestly significant difference comparison.

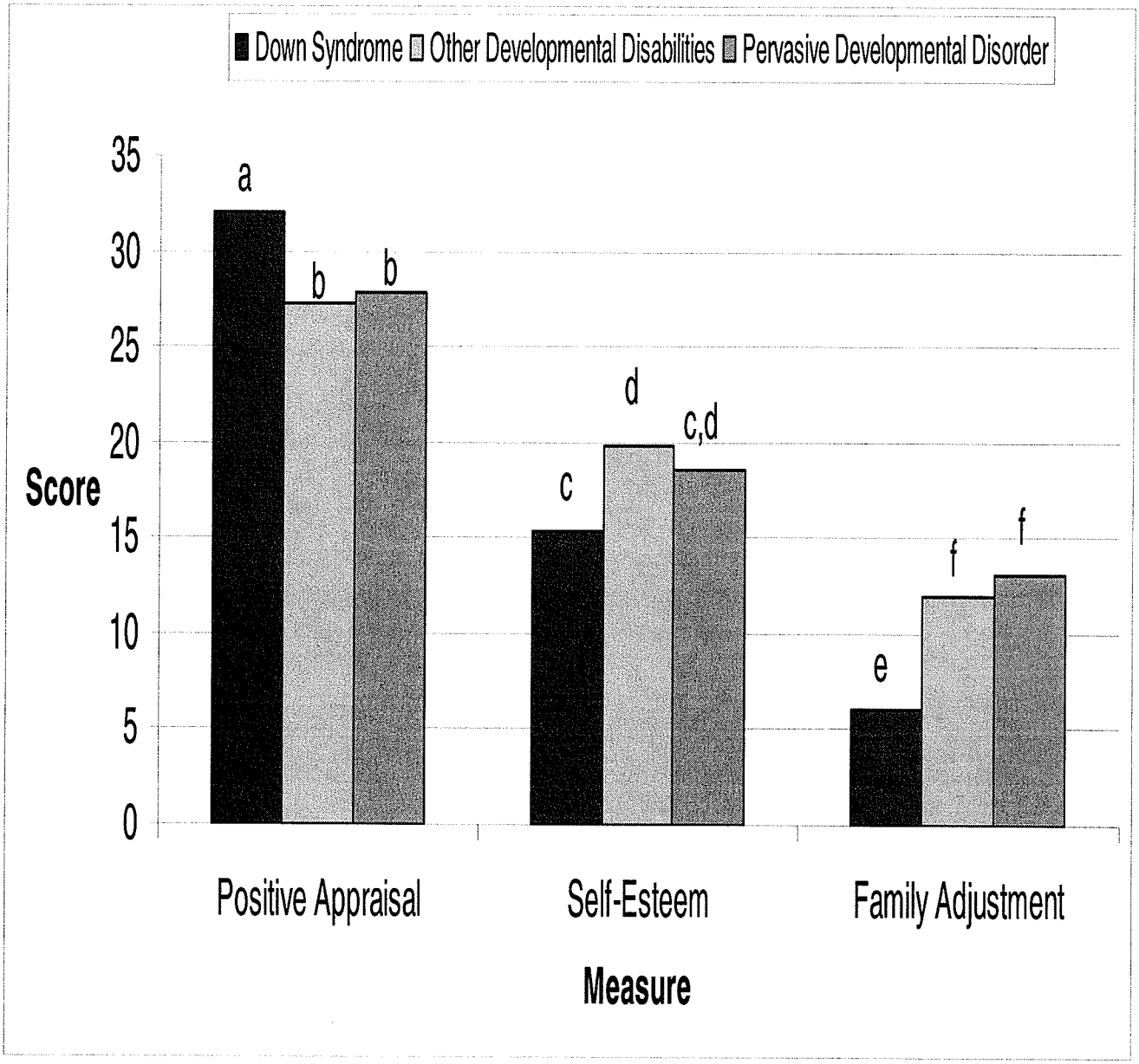


Figure 7. Mothers' mean self-report scores by disability type. Means that do not share superscripts differ at $p < .05$ in the Tukey honestly significant difference comparison.

nor were there differences between the mothers with children with PDD and mothers with other disabilities (see middle set of bars in Figure 7).

Family Adjustment

Fathers. There were no significant differences in family adjustment scores among fathers of children with different disabilities, $F(2, 58) = 2.45$, $p = .10$.

Mothers. There was a significant difference among mothers of children with different types of disabilities on family adjustment scores, $F(2, 94) = 5.51$, $p = .005$. A post hoc analysis was conducted which revealed that mothers of children with Down syndrome reported significantly fewer family difficulties than mothers in the other two groups (see right-most set of bars in Figure 7).

Comparison of Mothers and Fathers

As the mother and fathers samples are not independent, the only direct gender comparisons that could be analyzed were within families. To compare mothers and fathers from the same family, paired *t*-tests were conducted for families where both mothers and fathers completed measures (see Table 5). Family income, child's age, and number of children were not included in this analysis as these variables were identical for these mothers and fathers. Mothers ($M = 91.40$, $SD = 25.01$) reported a higher level of total parenting stress than fathers ($M = 81.38$, $SD = 19.92$) in this sample. Fathers ($M = 16.72$, $SD = 3.91$) reported higher self-esteem than mothers ($M = 18.93$, $SD = 4.80$; higher scores on the RSES indicate poorer self-esteem). Trute (1995) reported similar results for the gender analysis of self-esteem using RSES. Mothers' ($M = 27.94$, $SD = 4.81$) positive appraisal of their child's disability was higher than fathers' ($M = 25.62$, SD

Table 5

Paired t-Tests comparing Mothers and Fathers from the same Family for Self-Report Measures and Demographic Variables

Measure	*df*	*t*	*p*
Parenting Stress Index –Total Score (PSI-SF)	57	3.20	.002**
Parental Self-Esteem (RSES)	57	2.66	.010**
Positive Appraisal (FICD - PFI)	57	3.12	.003**
Family Adjustment Measure–III (Brief FAMIII)	57	-1.89	.064
Parental Age	54	-4.97	.000**
Parental Education	55	-1.11	.272

Note. Mothers scored higher on parenting stress and positive appraisal. Fathers were older and reported higher self-esteem.

*$p < 0.05$. ** $p < 0.01$.

= 6.15). There were no differences in family adjustment scores for mothers and fathers in this sample.

Correlations

Correlations between the demographic variables and dependent variable (family adjustment) were calculated for mothers and fathers. There were no significant correlations between demographic variables and family adjustment for fathers (see Table 6). There was a significant positive relationship between years of education and family adjustment for the sample of mothers (i.e., more education was associated with better family adjustment, see Table 7). In addition, significant correlations were found for single-parent status and family adjustment as well as between disability type and family adjustment for mothers. Correlations between all self-report measures as well as between the dependent measures and demographic variables are reported in Appendix C (fathers) and Appendix D (mothers).

Hierarchical Regression Analyses

Direct Relationships

Hierarchical regression was chosen for data analyses as the order the variables were entered into the analyses is based on theoretical knowledge. Based on the Double ABC-X model of family stress, the variables of parenting stress, positive appraisal, and parental self-esteem were examined for how well they predict family adjustment. The predictor variables were parenting stress, parental self-esteem, and positive appraisal. The outcome variable was family adjustment. A number of demographic and child variables have been identified in past research as important to family outcome. In this study,

Table 6

Correlations between Fathers' Perceptions of Family Adjustment and Demographic Variables

	1 (*n*)	2 (*n*)	3 (*n*)	4 (*n*)
1. Brief FAMIII	—	-.07 (58)	-.22 (58)	-.09 (61)
2. Parental education		—	.17 (56)	.03 (58)
3. Parental age			—	.36** (58)
4. # Child				—

	1	5	6	7	8
1. Brief FAMIII	—	-.03 (55)	.14 (61)	.13 (61)	-.20 (61)
5. Family income		—	-.14 (55)	.29* (55)	.05 (55)
6. Child's age			—	-.12 (61)	-.35** (61)
7. Child's gender (1=male; 2=female)				—	.03 (61)
8. Disability type					—

Note. Brief FAMIII = family adjustment; # Child = number of children in family.

*$p < 0.05$. ** $p < 0.01$.

Table 7

Correlations between Mothers' Perceptions of Family Adjustment and Demographic Variables

	1 (*n*)	2 (*n*)	3 (*n*)	4 (*n*)	5 (*n*)
1. Brief FAMIII	—	-.26** (97)	-.14 (97)	.07 (97)	-.16 (85)
2. Parental education		—	.30** (97)	-.14 (97)	.40** (85)
3. Parental age			—	.19 (97)	.32** (85)
4. # Child				—	.01 (85)
5. Family income					—

	1	6	7	8	9
1. Brief FAMIII	—	.05 (97)	.04 (97)	.27** (97)	.21* (97)
6. Child's age		—	-.12 (97)	-.32** (97)	.18 (97)
7. Child's gender (1=male; 2=female)			—	.04 (97)	-.08 (97)
8. Disability type				—	.05 (97)
9. Single parent status					—

Note. Brief FAMIII = family adjustment; # Child = number of children in family.

*$p < 0.05$. **$p < 0.01$.

correlations were examined to determine which demographic variables were related to family adjustment in this sample. The demographic variables which correlated with family adjustment were controlled by entering them in the first step of the regression. In the next step, parenting stress was entered into the model, followed by parental self-esteem and positive appraisal in the next step. Therefore, the regression analyses for main effects were conducted as follows:

Step 1: Demographics to be controlled (as necessary)

Step 2: Parenting Stress (PSI – Total Score)

Step 3: Positive Appraisal (FICD –Positive Scale)

Parental Self-Esteem (RSES)

Fathers. There were no significant correlations between demographic variables and family adjustment for fathers. Therefore, parenting stress was entered in the first step of the regression analysis followed by parental self-esteem and positive appraisal in the second step. Family adjustment was the dependent variable. The regression analysis for main effects for fathers can be found in Table 8. Parenting stress significantly predicted family adjustment explaining 28% ($R^2 = 0.28$) of the variance of paternal family adjustment, $F(1, 59) = 23.33$, $p = 0.00$. Self-esteem and positive appraisal accounted for another 8% ($R^2 = .08$) of the variance in paternal family adjustment, $F(3, 57) = 10.97$, $p = 0.00$ (Fchange $= 3.72$, $p = .03$). While this step was significant with both variables entered, neither of the variables individually reached statistical significance ($p > .05$). The total variance in paternal family adjustment for these three variables was 36%.

Mothers. Table 9 shows the main regression analysis for mothers. In entering the data for these categorical variables, dummy variables were created. Therefore, between

Table 8

Summary of Hierarchical Regression Analysis for Parenting Stress, Self-Esteem and Positive Appraisal Predicting Fathers' Family Adjustment (N = 61)

Variable	*B*	*SE B*	ß
Step 1			
Parenting Stress	.128	.026	.53**
Step 2			
Parenting Stress	.106	.029	.44**
Self-Esteem	.247	.148	.20
Positive Appraisal	-.160	.083	-.21

Note. $R^2 = .28$ for Step 1; $\Delta R^2 = .08$ and Fchange = 3.72, $p = .03$ for Step 2.

*$p < .05$. **$p < .01$.

groups comparisons in SPSS were conducted for the categorical variables to compare differences. As discussed above, for disability type, mothers of children with Down scored significantly higher on family adjustment than mothers of children in the other two categories, $F(2, 94) = 5.30$, p = .007. Married mothers had significantly higher family adjustment scores compared to single mothers, $F(1, 95) = 4.28$, $p = .04$. Therefore, education, single parent status, and Down syndrome were controlled for in the first step of the regression equation . These three variables explained 17% ($R^2 = 0.17$) of maternal family adjustment, $F(3, 93) = 6.54$ $p = 0.00$. In the next step of the regression equation, parenting stress accounted for an additional 13% ($R^2 = 0.13$) of the variance in family adjustment, $F(4, 92) = 9.83$, $p = 0.00$ (Fchange = 16.43, $p = .00$). The final step (self-esteem and positive appraisal) accounted for an additional 22% ($R^2 = .22$) of the variance of family adjustment, $F(6, 90) = 16.41$, $p = 0.00$ (Fchange = 21.02, $p = .00$). Both self-esteem and positive appraisal were statistically significant in the model ($p < .01$). The total variance in maternal family adjustment accounted for in the model was 52 %.

Moderation Analyses

Exploratory tests of moderation (parenting stress x parental self-esteem; parenting stress x positive appraisal) on family adjustment were conducted. As outlined by Whisman and McClelland (2005) there are four issues when testing moderation which can be problematic in family research. First, the required power to detect interaction effects is often problematic because of a decline in the reliability value in the interaction term (i.e., it becomes the product of the two measures) as well as the small sample sizes. Insufficient samples sizes and resulting low statistical power have been identified as

Table 9

Summary of Hierarchical Regression Analysis for Parenting Stress, Self-Esteem and Positive Appraisal Predicting Mothers' Family Adjustment (N = 97).

Variable	*B*	*SE B*	ß
Step 1			
Education	-.75	.30	-.24
Single Parent	2.38	1.45	.16
Down Syndrome	-2.73	.90	-.29**
Step 2			
Education	-.77	.28	-.25**
Single Parent	2.01	1.35	.13
Down Syndrome	-1.23	.91	-.13
Parenting Stress	.09	.02	.39**
Step 3			
Education	-.45	.24	-.15
Single Parent	2.15	1.12	.14
Down Syndrome	-1.41	.76	-.15
Parenting Stress	.04	.02	.18*
Self- Esteem	.52	.10	.42**
Positive Appraisal	-.27	.10	-.22**

Note. $R^2 = .17$ for Step 1; $\Delta R^2 = .13$ and Fchange = 16.43, $p = .00$ for Step 2; $\Delta R^2 = .223$ and Fchange = 21.02, $p = .00$ for Step 3.

*$p < .05$. **$p < .01$.

causes for the failure to detect interactions in family research (Whisman & McClelland, 2005). Second, restricted variability of the measures affects effect sizes. Therefore, the effect of reduced variance is similar to reduced reliability of the measures. Third, multicollinearity between variables is also an issue in testing for interaction effects due to creating a product between two highly correlated measures. Fourth, outliers and violation of regression analysis assumptions are compounded when conducting interaction analyses.

In the current study, there are some concerns with power in relation to a relatively small sample size. Also, the reliabilities of the measures alone are considered good; however, the reliability of the product for each interaction drops considerably. Multicollinearity is not considered problematic in the current study and lastly, outliers were transformed so are not an issue. However, it is noteworthy that power in the current study in impacted by the small sample size and the effect of reduced reliabilities in the product of the two variables. This is particularly true of the parenting stress by positive appraisal product term due to somewhat lower reliability for the positive appraisal measure. Given these limitations, these analyses were intended to be exploratory in nature.

Procedures for testing moderation effects were followed as outlined by Aiken and West (1991). First, the independent measures were centered (mean subtracted from the variable value). The purpose of centering was to reduce the impact of multicollinearity between variables. Next, an interaction term (i.e., the product of the two measures) was created from these centered values. Lastly, regression analyses were conducted with the main effects entered first followed by the interaction term. The model to be tested is

shown in Figure 3. The reporting of the moderation results is consistent with other moderation research (Rose, Holmbeck, Coakley, & Franks, 2004).

Fathers. The interaction regression analysis conducted included parenting stress and self-esteem as predictors of family adjustment. This regression analysis can be found in Table 10. In this analysis, parenting stress was entered in the first step followed by self-esteem in the second step and the interaction term in the last step of the regression. Parenting stress accounted for 28% of the variance ($R^2 = 0.28$) in family adjustment, $F(1, 59) = 23.33$, $p = .00$, while self-esteem accounted for an additional 4% ($R^2 = 0.41$) of the total variance in family adjustment, $F(2, 58) = 13.93$, $p = .00$ (Fchange = 3.53, $p = .07$). The interaction between parenting stress and self-esteem accounted for nearly 8% additional variance ($R^2 = 0.78$) in paternal ratings of family adjustment, $F(3, 57) = 12.79$, $p = .00$ (Fchange = 7.42, $p = .01$). This significant interaction was plotted using ModGraph (Jose, 2008) and can be found in Figure 8. The interpretation is that there is a "buffer" effect of self-esteem at low and medium levels of parenting stress for fathers meaning that there is a positive effect of self-esteem on family functioning at the low and medium parenting stress levels compared to the high parenting stress levels (personal communication, P. Jose, April 14, 2008). Figure 8 plots the regression lines for high, medium, and low parenting stress at high, medium, and low self-esteem. The lines diverge under conditions of low and medium stress with the highest family adjustment occurring under conditions of low stress and high self-esteem. The analysis is indicative of significant differences between the groups at low and medium but not at high levels of parenting stress. The simple slopes analysis is shown in Table 11.

Table 10

Interaction (Moderation) Regression Analysis for Parenting Stress and Self-Esteem Predicting Fathers' Family Adjustment (N = 61)

Variable	*B*	*SE B*	ß
Step 1			
Parenting Stress	.13	.03	.53**
Step 2			
Parenting Stress	.10	.03	.42**
Self-Esteem	.28	.15	.23
Step 3			
Parenting Stress	.10	.03	.40**
Self-Esteem	.30	.14	.24*
Stress x Self-Esteem	-.01	.01	-.28**

Note. $R^2 = .28$ for Step 1; $\Delta R^2 = .04$ and Fchange = 3.53, $p = .065$ for Step 2; $\Delta R^2 = .08$ and Fchange = 7.42, $p = .009$ for Step 3.

*$p < .05$. **$p < .01$.

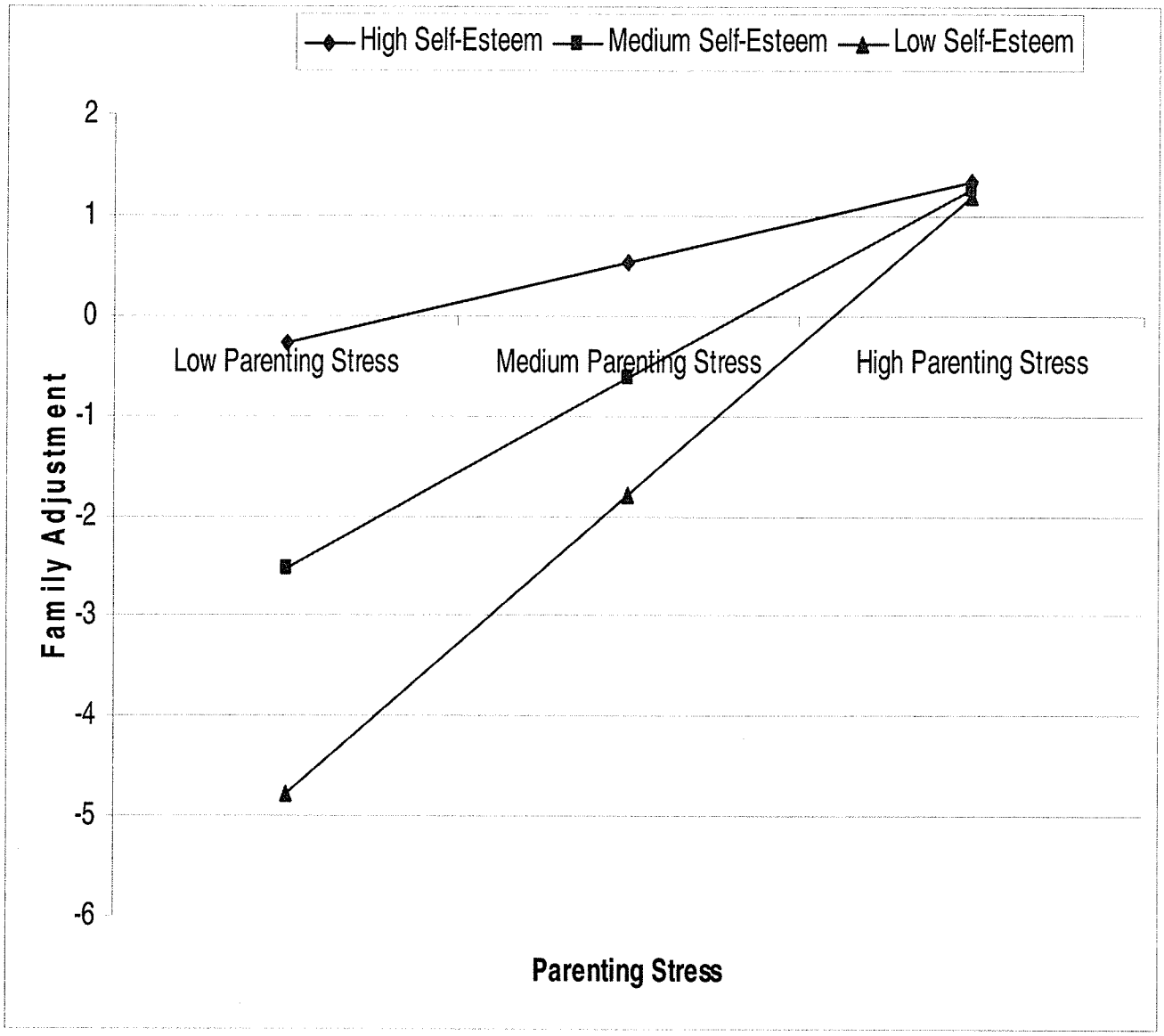


Figure 8. Moderating relationship between parenting stress and self-esteem on fathers' family adjustment ($N = 61$). Regression lines for predicting family adjustment are plotted for low, medium, and high parenting stress and low, medium, and high self-esteem

Table 11

Simple Slopes Computations for Parenting Stress and Self-Esteem Interaction for Fathers (df = 57)

	High Stress	Medium Stress	Low Stress
Simple Slope	0.040	0.095	0.150
Standard Error	0.037	0.032	0.031
t-value	1.090	3.000	4.870
p-value	0.279	0.004	0.000

The second interaction regression analysis for parenting stress and positive appraisal for fathers is shown in Table 12. In the first step parenting stress was entered, in the second step positive appraisal was entered, and in the last step the interaction term was entered. Parenting stress accounted for 28% of the variance, $F(1, 59) = 23.33$, $p = .00$. Adding positive appraisal accounted for an additional 5% ($R^2 = 0.05$) of the variance in family adjustment, $F(2, 58) = 14.61$, $p = .00$ (Fchange = 4.50, $p = .04$). However, the interaction between parenting stress and positive appraisal did not account for any additional variance in the model ($R^2 = .00$), $F(3, 57) = 9.56$, $p = .00$ (Fchange = .013, $p = .91$).

Mothers. Similarly, interaction regression analyses were conducted for mothers on the same variables. The regression for the interaction between parenting stress and self-esteem is reported in Table 13. Again, education, single parent status, and Down syndrome were controlled for in the first step of the regression equation accounting for 17% of the variance, $F(3, 93) = 6.54$, $p = .000$. Parenting stress then accounted for a further 13% of the variance, $F(4, 92) = 9.83$, $p = .00$ (Fchange = 16.43, $p = .00$), and self-esteem for 18% of additional variance in family adjustment, $F(5, 91) = 16.75$, $p = .00$ (Fchange = 31.44, $p = .00$). The interaction term contributed nothing further to the model, predicting no additional variance in family adjustment (Fchange = .00, $p = .96$).

The second maternal interaction regression equation for parenting stress and positive appraisal on family adjustment can be found in Table 14. Again, education, single parent status, and disability type accounted for 17% of the variance, $F(3, 93) = 6.54$, $p = .00$, and parenting stress accounted for an additional 13% of the variance in family adjustment, $F(4, 92) = 9.83$, $p = .00$ (Fchange = 16.43, $p = .00$). Positive appraisal

Table 12

Interaction (Moderation) Regression Analysis for Parenting Stress and Positive Appraisal Predicting Fathers' Family Adjustment (N = 61)

Variable	*B*	*SE B*	ß
Step 1			
Parenting Stress	.13	.03	.53**
Step 2			
Parenting Stress	.13	.03	.54**
Positive Appraisal	-.18	.08	-.23*
Step 3			
Parenting Stress	.13	.03	.55**
Positive Appraisal	-.18	.08	-.23*
Parenting Stress x Positive Appraisal	.00	.01	.01

Note. $R^2 = .28$ for Step 1; $\Delta R^2 = .05$ and Fchange = 4.50, $p = .04$ for Step 2; $\Delta R^2 = .00$ and Fchange = .01, $p = .91$ for Step 3.

*$p < .05$. **$p < .01$.

Table 13

Interaction (Moderation) Regression Analysis for Parenting Stress and Self-Esteem Predicting Mothers' Family Adjustment (N = 97)

	Variable	*B*	*SE B*	ß
Step 1				
	Education	-.75	.30	-.24
	Single Parent	2.38	1.45	.16
	Down Syndrome	-2.73	.90	-.29**
Step 2				
	Education	-.77	.27	-.25**
	Single Parent	2.01	1.35	.13
	Down Syndrome	-1.23	.910	-.13
	Parenting Stress	.09	.023	.39**
Step 3				
	Education	-.41	.25	-.13
	Single Parent	2.19	1.17	.15
	Down Syndrome	-1.51	.79	-.16
	Parenting Stress	.05	.02	.22
	Self-Esteem	.58	.10	.47**

Variable	*B*	*SE B*	ß
Step 4			
Education	-.41	.26	-.13
Single Parent	2.18	1.18	.15
Down Syndrome	-1.52	.84	-.16
Parenting Stress	.05	.02	.22
Self-Esteem	.58	.11	.47**
Parenting Stress x Self-Esteem	.00	.00	.00

Note. $R^2 = .17$ for Step 1; $\Delta R^2 = .13$ and *F*change = 16.43, $p = .00$ for Step 2; $\Delta R^2 = .18$ and *F*change = 31.44, $p = .00$ for Step 3; $\Delta R^2 = .00$ and *F*change = .00, $p = .96$ for Step 4. *$p < .05$. **$p < .01$.

Table 14

Interaction (Moderation) Regression Analysis for Parenting Stress and Positive Appraisal Predicting Mothers' Family Adjustment (N = 97)

	Variable	*B*	*SE B*	ß
Step 1				
	Education	-.75	.30	-.24
	Single Parent	2.38	1.45	.16
	Down Syndrome	-2.73	.90	-.29**
Step 2				
	Education	-.768	.28	-.25**
	Single Parent	2.008	1.35	.13
	Down Syndrome	-1.229	.91	-.13
	Parenting Stress	.093	.02	.39**
Step 3				
	Education	-.78	.261	-.25**
	Single Parent	1.99	1.269	.13
	Down Syndrome	-1.13	.859	-.12
	Parenting Stress	.07	.023	.31**
	Positive Appraisal	-.37	.106	-.30**

Variable	*B*	*SE B*	ß
Step 4			
Education	-.78	.26	-.25**
Single Parent	1.93	1.28	.13
Down Syndrome	-1.28	.92	-.14
Parenting Stress	.07	.02	.31**
Positive Appraisal	-.39	.11	-.31**
Parenting Stress x Positive Appraisal	-.00	.00	-.05

Note. $R^2 = .17$ for Step 1; $\Delta R^2 = .13$ and Fchange = 16.43, $p = .00$ for Step 2; $\Delta R^2 = .08$ and Fchange = 12.35, $p = .001$ for Step 3; $\Delta R^2 = .00$ and Fchange = .25, $p = .62$ for Step 4.

*$p < .05$. **$p < .01$.

contributed nearly an additional 8% of the variance in family adjustment, $F(5, 91) = 11.30$, p = .00 (Fchange = 12.35, $p = .001$). The interaction between parenting stress and positive appraisal contributed only 0.2% to the variance in family adjustment which was not a significant predictor to outcome (Fchange = 0.25, $p = .62$).

Mediation Analyses

Exploratory analyses of mediation were also conducted. The relationship between parenting stress and positive appraisal on family adjustment and the relationship between parenting stress and parental self-esteem on family adjustment were examined. One of the most common procedures for testing mediation effects was introduced by Baron and Kenny (1986). According to this method as outlined by Frazier, Tix, and Baron (2004), the first step is to test that there is a significant relation between the predictor (parenting stress) and the outcome (family adjustment, path c, see Figure 4). The second step is to show that the predictor (parenting stress) is related to the mediator (i.e., positive appraisal/parental self-esteem, path a, see Figure 4). The third step in testing for mediation is to show that the mediator (i.e., positive appraisal/self-esteem) is related to the outcome variable (family adjustment, path b, see Figure 4). The final step is to determine whether the strength of the relationship between the predictor (parenting stress) and the outcome (family adjustment) is significantly reduced when the mediator (i.e., positive appraisal/self-esteem) is included in the model (comparison of path c with path c', see Figure 4). For full mediation the relationship between parenting stress and family adjustment would not differ from zero once positive appraisal/self-esteem was added (path c'). To conclude partial mediation, the relation between parenting stress and family adjustment would be significantly smaller when positive appraisal/self-esteem was added

but greater than zero (Frazier et al., 2004). While these are the essential components of testing mediation, Preacher and Hayes (2004) have discussed limitations with this statistical procedure which have been identified by Holmbeck (2002) including the prevalence of Type I (erroneously concluding mediation is present) and Type II (not concluding mediation when it is in fact present) errors. As Preacher and Hayes (2004) discuss, low power may result in non-significant coefficients and therefore, criteria as outlined above not being met. Therefore, they developed a SPSS/SAS macro which tests directly for indirect effects utilizing the bootstrapping method. This is a nonparametric sampling procedure which uses repeated resampling from the data set in order to estimate the indirect effect from each resampled set. This is recommended for small data sets as it does not assume a normal distribution as with other tests of mediation (Preacher & Hayes, 2004). This method measures whether the total effect of the independent variable on the outcome variable is significantly reduced with the introduction of the mediator into the model. For fathers, the simple macro for SPSS from Preacher and Hayes (2004) was utilized. For mothers, in order to control for the demographic variables education, single parent status, and disability type, the mediation analyses were conducted utilizing a macro for multiple mediators which allows for covariates in the model (Preacher & Hayes, 2008). The results are presented consistent with Preacher and Hayes (2004, 2008). Accordingly, it is sufficient to either report Z-score significance or the point estimate confidence intervals in determining significant mediation results (personal communication, K. Preacher, April 10, 2008).

The first mediation regression analysis conducted for the sample of mothers and fathers was that of self-esteem between the relationship between parenting stress and

family adjustment. The second was the impact of positive appraisal on the relationship between parenting stress and family adjustment.

Fathers. A test of mediation on the effect of self-esteem on the relationship between parenting stress and family adjustment was non-significant for fathers, $Z = 1.68$, $p = 0.09$. The results of the mediation analysis are reported in Table 15.

As the relationship between parenting stress and positive appraisal was not significant for fathers, the assumptions of the Baron and Kenny (1986) procedure were not met. According to this method, one would not test for mediation. However, according to Preacher and Hayes (2004) utilizing the bootstrapping method does not require this as an assumption. Utilizing this method, the mediation analysis for impact of positive appraisal on the relationship between parenting stress and family adjustment was not significant for fathers, $Z = 0.29$, $p = 0.77$ and is reported in Table 16.

Mothers. The mediation analysis for mothers testing for the impact of self-esteem on the relationship between parenting stress and family adjustment was significant. This analysis is reported in Table 17 and is considered partial mediation as the relationship between parenting stress and family adjustment was still significantly different from zero after self-esteem was added to the model. The point estimate for this analysis was .039 with a 95% confidence interval of .013 to .078. As the confidence interval does not contain zero, this is consistent with partial mediation (personal communication, K. Preacher, April 10, 2008; Frazier et al., 2004). The model is presented in Figure 9.

The second mediation for the impact of positive appraisal on the relationship between parenting stress and family adjustment was significant utilizing the

Table 15

Mediation Analysis (Bootstrapping) of Parenting Stress and Self-Esteem Predicting Fathers' Family Adjustment (N = 61)

Path	*B*	*SE B*	*t*	*p*
b (YX) (path c)	.13	.026	4.83	.00
b(MX) (path a)	.09	.023	4.20	.00
b (YM·X) (path b)	.28	.15	1.88	.07
b (YX·M) (path c')	.10	.03	3.43	.00

Note. Number of bootstrap resamples = 10,000.

Table 16

Mediation Analysis (Bootstrapping) of Parenting Stress and Positive Appraisal Predicting Fathers' Family Adjustment (N = 61)

Path	*B*	*SE B*	*t*	*p*
b (YX) (path c)	.13	.03	4.83	.00
b(MX) (path a)	.01	.04	.33	.75
b (YM·X) (path b)	-.18	.08	-2.12	.04
b (YX·M) (path c')	.13	.03	5.06	.00

Note. Number of bootstrap resamples = 10,000.

Table 17

Mediation Analysis (Bootstrapping) of Parenting Stress and Self-Esteem Predicting Mothers' Family Adjustment with Parent Education, Single Parent Status, and Disability Type as Covariates (N = 97)

Path	*B*	*SE B*	*t*	*p*
b (YX) (path c)	.09	.02	4.11	.00
b(MX) (path a)	.07	.02	3.41	.00
b (YM·X) (path b)	.56	.10	5.57	.00
b (YX·M) (path c')	.05	.02	2.59	.01

Note. Number of bootstrap resamples = 10,000.

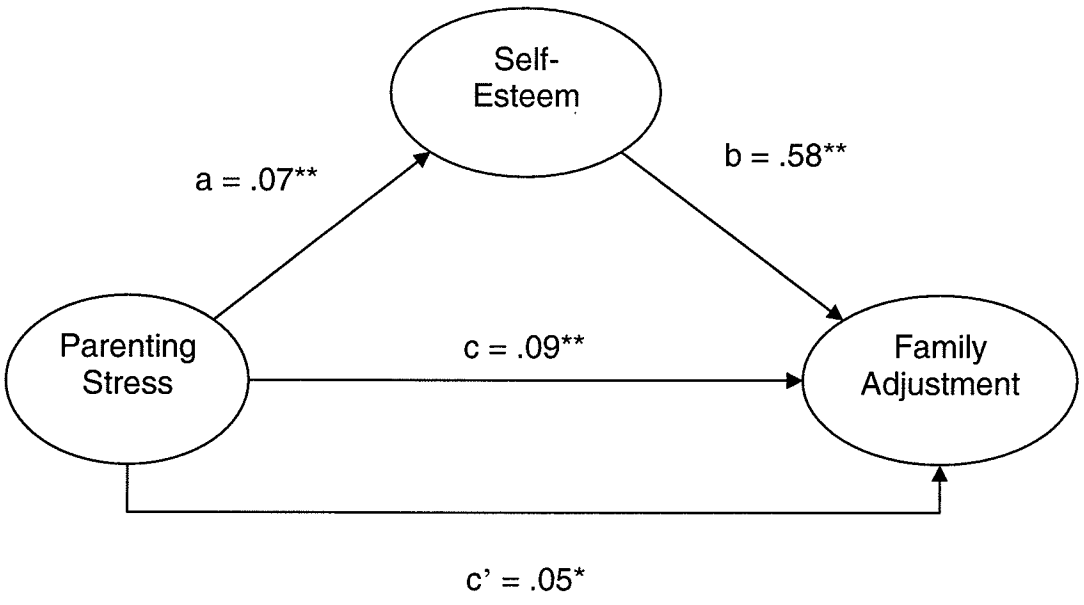


Figure 9. Mediation model results for parenting stress, parental self-esteem, and family adjustment for mothers with parental education, single parent status, and disability type entered as covariates. Direct effect and indirect effects are shown (unstandardized coefficients). *$p < .05$. **$p < .01$.

bootstrapping method. These results are reported in Table 18. The model is one of partial mediation as the relationship between parenting stress and family adjustment was still significantly different from zero with the introduction of positive appraisal. The point estimate for this analysis was .018 with a 95% confidence interval of .003 to .044. As this does not contain zero, it indicates partial mediation (personal communication, K. Preacher, April 10, 2008; Frazier et al., 2004). This model is shown in Figure 10.

A final regression analyses was conducted in order to determine if both positive appraisal and self-esteem would be significant mediators of parenting stress and family adjustment in the same model. The results are reported in Table 19. In this model, the point estimate for the total indirect effect was .048 with a 95% confidence interval of .018 and .090. A closer examination reveals that both self-esteem and positive appraisal are significant mediators with 95% confidence intervals of .011 to .0702 and .002 and .34 respectively. Again, these are indicative of partial mediation as the confidence intervals do not contain zero (personal communication, K. Preacher, April 10, 2008; Frazier et al., 2004). This model with both self-esteem and positive appraisal as mediators is shown in Figure 11.

Table 18

Mediation Analysis (Bootstrapping) of Parenting Stress and Positive Appraisal Predicting Mothers' Family Adjustment with Parent Education, Single Parent Status, and Disability Type as Covariates (N = 97)

Path	*B*	*SE B*	*t*	*p*
b (YX) (path c)	.09	.03	4.11	.00
b(MX) (path a)	-.05	.02	-2.25	.03
b (YM·X) (path b)	-.37	.11	-3.51	.00
b (YX·M) (path c')	.08	.02	3.44	.00

Note. Number of bootstrap resamples = 10,000.

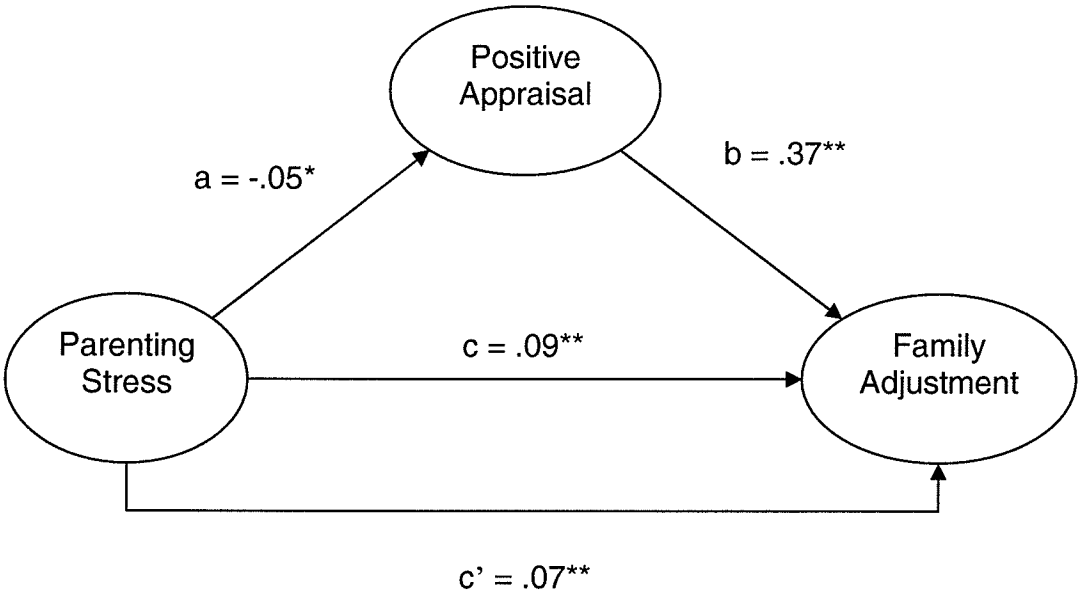


Figure 10. Mediation model results for parenting stress, positive appraisal, and family adjustment for mothers with parental education, single parent status, and disability type as covariates. Direct and indirect effects are shown (unstandardized coefficients). *$p <$ .05. **$p <$ .01.

Table 19

Mediation Analysis (Bootstrapping) of Positive Appraisal and Self-Esteem as Mediators between Parenting Stress and Family Adjustment for Mothers with Parent Education, Single Parent Status, and Disability Type as Covariates (N = 97)

Path	*B*	*SE B*	*t*	*p*
b (YX) (path c)	.09	.02	4.11	.00
b(M_1X) (path a_1)	-.05	.02	-2.25	.03
b(M_2X) (path a_2)	.07	.02	3.41	.00
b ($YM_1 \cdot X$) (path b_1)	-.27	.10	-2.85	.01
b ($YM_2 \cdot X$) (path b_2)	.52	.10	5.09	.00
b ($YX \cdot M_{1,2}$) (path c')	.05	.02	2.21	.03

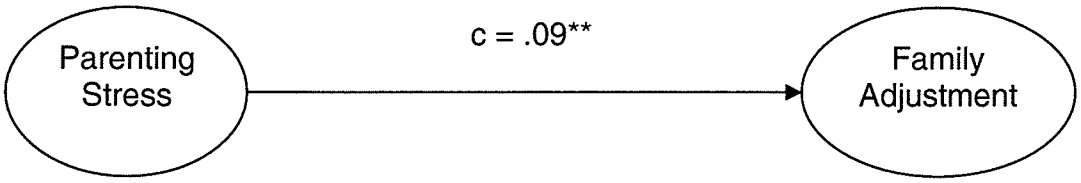
Note. Number of bootstrap resamples = 10,000.

M_1 = positive appraisal as mediator

M_2 = self-esteem as mediator

M_{12}= positive appraisal and self-esteem as mediator

A.



B.

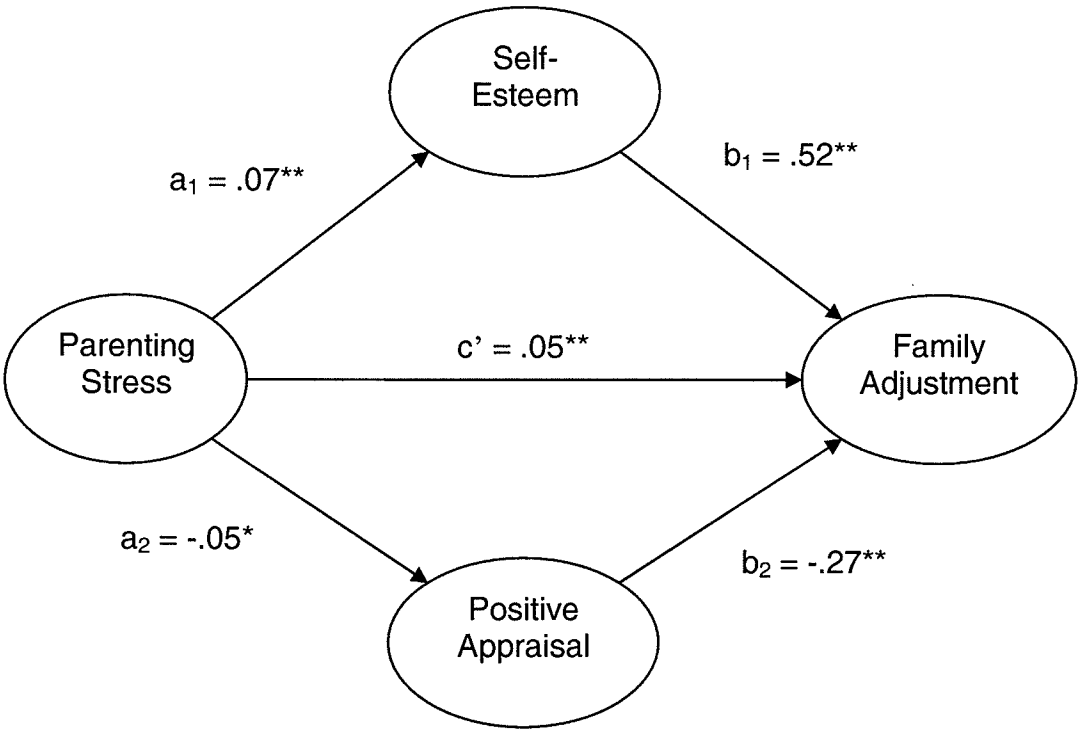


Figure 11. Mediation model results for parenting stress, positive appraisal, parental self-esteem, and family adjustment for mothers with parental education, single parent status, and disability type as covariates. A. The direct effect (parenting stress predicting family adjustment). B. The indirect effect (with self-esteem and positive appraisal as mediators). Unstandardized coefficients shown. *$p < .05$. **$p < .01$.

DISCUSSION

The current study examined the role of parenting stress, positive appraisal, and parental self-esteem on perceived family functioning for mothers and fathers of children with developmental disabilities. Utilizing the Double ABC-X model of family stress as a theoretical guide, the main hypotheses predicting a significant relationship between parenting stress and family adjustment were supported for both mothers and fathers. However, there were gender differences in the factors influencing this relationship. For mothers, once parenting stress was controlled, the variables of self-esteem and positive appraisal together significantly predicted family adjustment. In the exploratory analysis, self-esteem and positive appraisal were found to mediate the relationship between parenting stress and family adjustment for mothers. The moderation analyses were not significant for mothers in this study. For fathers, the role of self-esteem and positive appraisal as predictors of family adjustment were somewhat mixed. The model to test for direct effects was significant; however, neither self-esteem nor positive appraisal reached individual significance. For the exploratory analyses, self-esteem was found to moderate the relationship between parenting stress and family functioning while positive appraisal did not emerge as a significant moderator of this relationship. However, in the moderation analysis, positive appraisal did reach significance as an individual predictor of family adjustment. Therefore, the role of positive appraisal for fathers is inconclusive due to these mixed findings.

The results of the current study are relevant to our understanding of parenting stress and family adjustment in families of children with disabilities. The gender differences in parenting stress and family adjustment among parents are an important

contribution of the current research. In addition, these findings have theoretical and practice implications which are discussed. The limitations of the current study are identified and directions for future research are suggested.

Parenting Stress

The current study contributes to the body of research which identifies a relationship between parenting stress and family adjustment in parents of children with developmental disabilities. Parenting stress was a significant predictor of family functioning for both mothers and fathers in this study. As parenting stress has often been conceptualized in past research as an outcome variable, the current study aimed to further our understanding of parenting stress as a predictor of family outcome. Previous research has also found a relationship between parenting stress and family outcome (Bristol, 1987; Krauss, 1993). Bristol (1987) found that the "pile-up" of family stressors was a significant predictor of negative family outcome for mothers of children with autism and other communicative disorders. Krauss (1993) found that family functioning predicted parenting stress for both mother and fathers with children with disabilities. Others have not found parenting stress to predict family adjustment in mothers of children with developmental disabilities (Dyson, 1991; Reddon, 1989). Reddon's (1989) study contained a relatively small sample, and Dyson (1991) examined mothers with children with mental retardation, physical/sensory handicaps, and speech and learning disorders which may account for the differing results. The current findings support the idea that parenting stress in parents of children with a wide range of developmental disabilities is a significant predictor of their overall perception of family adjustment.

Overall, mothers reported significantly more parenting stress than fathers which is consistent with previous research involving parents of children with developmental disabilities (Beckman, 1991; Nagy & Ungerer, 1990; Oelofsen & Richardson, 2006; Reddon et al., 1992). Considerably more mothers (47.4%) than fathers (27.9%) were experiencing parenting stress within the clinical range according to the PSI normative sample. According to Innocenti, Huh, and Boyce (1992) this may not accurately reflect parenting stress for parents of children with disabilities. Their study was conducted to determine more appropriate norms for parents with children with disabilities as they do report higher parenting stress than parents from the general population. Nonetheless, for the current study, there was a gender difference for parents in this study which may be related to their roles in terms of needs and perceptions of stress in coping with the demands associated with raising a child with a disability (Bailey & Smith, 2000; Gray, 2003; Pelchat et al, 2003; Perry, 2004; Trute, 1995). Past research has attributed increased parenting stress among mothers to caregiving demands and more contact with the child. This may be consistent with the current findings, as 35% of mothers were home full-time with their child(ren). The stress associated with this caregiving role has been shown to impact maternal health outcome (Burton et al., 2008) making these findings particularly important to clinical practice. As outlined in the family-centered practice model, it is important to consider needs of individual members to promote the health of the entire system. Despite the observed differences between parents, parenting stress was a significant factor for both parents in terms of perceived family functioning. This finding suggests that providing assistance to reduce parenting stress (i.e., respite, stress management, parent support) may have a positive impact on the family.

The current study also examined the relationship between demographic and child variables and parenting stress. The child's disability type was related to parenting stress for both mothers and fathers. There were differences in mean parenting stress scores for mothers and fathers of children with Down syndrome who reported significantly less parenting stress than parents of children with pervasive developmental disorder (PDD) diagnoses and parents of children with other disabilities (i.e., cerebral palsy, developmental delay [nos], and developmental delay [genetic/metabolic]). For mothers, the mean score for both of these groups was above the clinical level and for fathers, the mean score for the PDD group was within the clinical range. This is consistent with Noh et al. (1989) who found significant levels of stress in parents of children with autism, while parents of children with Down syndrome experienced similar stress levels to that of parents of children without disabilities. However, Krauss (1993) found similar levels of stress between disability type groups (i.e., Down syndrome, motor impairment, and other developmental delay). These differences may be attributed to the inclusion in the current study of children diagnosed with PDD. Parenting a child with PDD has been associated with considerably more stress compared to other disabilities (Bristol, 1987; Bristol & Schopler, 1984; Noh et al., 1989). Also, in the current study parents of children with cerebral palsy, developmental delay (nos), and developmental delay (genetic/metabolic) reported similar parenting stress to parents of children with a PDD diagnosis. This finding implies that practitioners need to pay attention to signs of parenting stress in families with children diagnosed with these types of disabilities. Parents within these families may have an increased need for supports aimed at reducing their parenting stress.

The results also indicated that parenting a child with Down syndrome compared to children with other disabilities is associated with less parenting stress. It would be interesting to explore this further by examining specific factors (including individual, child, family, social network, and service delivery) that may explain these differences. It could be a result of the early and clear diagnosis, subsequent early intervention, positive community supports, and less challenging behaviours.

For both mothers and fathers, there was a positive relationship between the child's age and levels of parenting stress, with parents of older children reporting more parenting stress than parents of younger children. There was also a relationship between the child's age and disability type. Children with Down syndrome are diagnosed earlier and therefore, were younger than the other two groups in this study. Parents of children with Down syndrome reported less parenting stress than parents in the other two groups which likely contributes to this relationship. In previous research, Hagborg (1989) found a similar relationship for mothers of deaf school-age children. However, others have not found the age of the child to impact the level of stress (Beckman, 1991; Cameron & Orr, 1989; Floyd & Gallagher, 1997; Tak & McCubbin, 2002). For Beckman's (1991) study the children were all under three years of age and Floyd and Gallagher (1997) studied stress in parents of school-age children. The sample in the Tak and McCubbin (2002) was parents of very young children (mean age = 1.2 years) with chronic illness or congenital heart disease. The restricted age range of these studies may have limited the ability to determine an effect for age. The mean age of children of the current study was four years of age which may account for some of the differences. In addition, the presence of older children in the current study may be indicative of a longer time to obtain a diagnosis, as

children were just entering the provincial service system. Therefore, heightened parenting stress for parents of older children may be related to this uncertainty.

Furthermore, the current study examined a wide range of disability types which may have different outcomes associated with age. For fathers, children with PDD and other developmental disabilities were older than the children with Down syndrome. For mothers, children with PDD were older than children with Down syndrome. Children with other disabilities were similar in age to children with Down and children with other developmental disabilities. Typically, children with Down syndrome are diagnosed early in life which is consistent with the mean age of these children in the current study. As noted, parenting a child with PDD or other developmental disabilities was reported as more stressful than parenting a child with Down syndrome. Therefore, the positive relationship between parenting stress and the child's age may be a function of disability type rather than the child's age per se.

There was an inverse relationship between self-esteem and parenting stress for both mothers and fathers. That is, high self-esteem was associated with lower levels of parenting stress. Other research has determined that individuals with high self-resources report the least stress (Creswell et al., 2005), and individuals with high self-esteem report less stress than individuals scoring low on self-esteem (Rector & Rogers, 1997). High self-esteem has been linked to more effective coping strategies in adolescents which reduce stress levels (Chapman & Mullis, 1999). Similar findings have been reported in research with families of children with disabilities. For example, Frey, Fewell, and Valdasy (1989) determined that problem-solving ability creates opportunity for positive feedback which results in increased competence or mastery. Extending this idea, in

addition to not effectively managing the current stressor the presence of subsequent stressors may result in a cumulative effect or "pile-up" of stressors as suggested in the second phase of the Double ABC-X model of family stress (McCubbin & Patterson, 1983). Individuals with high self-esteem may utilize strategies which deal directly with the stressor (e.g., problem-focused coping) and may not experience this "pile-up" and therefore experience greater coping efficacy (Bright & Hayward, 1997; Frey, Fewell, & Valdasy, 1989; Frey, Greenberg, & Fewell, 1989). Conversely, individuals with low self-esteem may not deal effectively with stress and have been shown to be avoidant in coping with stress (Chapman & Mullis, 1999). These mechanisms may be related to the inverse relationship found between self-esteem and parenting stress in the current study. For example, there was a positive relationship between self-esteem and positive appraisal for mothers, which may lend some support to a positive feedback loop. In the current study, high self-esteem was related to more positive appraisal of the child's disability. These possible relationships are speculation as these are correlational findings. However, they do demonstrate possible relationships between these variables for mothers in this sample.

In summary, the findings of the current study, in terms of parenting stress, have important practice implications. First, there were a considerable number of mothers and fathers experiencing clinically significant levels of parenting stress. Given the negative impact of parenting stress on parental well being (Burton et al., 2008), intervention needs to address this stress. In addition, the current findings suggest that mothers are more likely to report parenting stress than fathers; while not ignoring fathers, practitioners need to be particularly sensitive to the existence of parenting stress among mothers. Second, both parents of children with PDD, cerebral palsy, developmental delay (nos), and

developmental delay (genetic/metabolic) reported significantly more parenting stress than parents of children with Down syndrome. Also, parents of older children appeared to be at greater risk for stress associated with parenting the child. These findings suggest specific groups of parents that are at risk for heightened parenting stress which may be helpful information for practitioners. Third, the negative relationship between parenting stress and self-esteem has important implications for practice. The role of self-esteem could be assessed, as it may influence parenting stress for parents of children with disabilities. Furthermore, interventions that aim to enhance self-esteem may have a positive influence on parenting stress.

Family Adjustment

A key contribution of the current investigation was the examination of family functioning. Despite increased levels of parenting stress, mothers and fathers in the current study reported perceived family adjustment within the expected range of a normative sample. Other research has found the same pattern of results (Dyson, 1991; Reddon, 1989; Trute, 1990; Trute & Hauch, 1988). Trute (1990) reported that mothers and fathers assessed their family adjustment as in the same range as families in the community. These findings further identify the resiliency of families of children with disabilities and are consistent with the stress-related growth research (Lazarus, 2000; Folkman & Moskowitz, 2000; Patterson, 2002a, 2002b; Somerfield & McCrae, 2000; Tennen & Affleck, 1999). It would seem that despite increased parenting stress, the families in this study were, on average, functioning well. This finding emphasizes the importance of not assuming that families experiencing high parenting stress will necessarily be functioning poorly. Practitioners should be encouraged to assess, identify,

and promote elements of positive adaptation in families despite the increased stress of childhood disability. This focus on families' strengths is consistent with the family-centered model of care. Communicating this resiliency to families may provide positive feedback about their coping ability.

Demographic and child variables. This study examined the role of demographic and child variables in relation to family adjustment in mothers and fathers of children with disabilities. For fathers, demographic variables were not related to the outcome of family functioning. While Trute (1990) found that father's education promoted family adjustment, this was not identified as a significant factor in family functioning in the current study. The two studies may differ in terms of the childhood disability types examined. Other research has determined that fathers were more negatively impacted if the disabled child were male (Trute, 1995; Gray, 2003). The current study determined that the child's gender was not related to family outcome for fathers; however, there may be reduced power in the current study (i.e., sample size) to detect this relationship. Nonetheless, it is possible that the expectations for male children may be more important for individual functioning but not related to perceived family outcome. It may be useful for future research to examine outcome in a way that acknowledges that family and individual outcomes are not necessarily the same.

For mothers, level of parental education, single parent status, and disability type were all significantly related to family adjustment. Married mothers with higher education perceived their families as functioning more positively than single parents with lower education. In addition, mothers of children with Down syndrome reported higher family adjustment than mothers of children with PDD or other developmental delays.

The finding that higher parental education was related to positive family functioning is similar to that of Gottlieb (1998) who determined that education was an important factor for facilitating a sense of coherence for mothers with children with disabilities. Mothers with higher education are often provided with more opportunities, which, in turn, may have a positive impact on their perceptions. These mothers may be more likely to work outside the home, and this has been associated with more positive mental health (Knussen & Sloper, 1992). While Palfrey et al. (1989) found that education in mothers was associated with more stress; the current study found that higher education was associated with more positive perceived family adjustment for mothers. The positive experiences associated with higher level of education may also be related to positive perceptions of the family for mothers. However, there may be different mechanisms affecting how parental education impacts individual (i.e., stress) compared to family (i.e., adjustment) outcome.

Although considerable research has examined the impact of marital status on parenting stress (Beckman, 1991; Floyd & Gallagher, 1997), there have been few studies that examine the impact of marital status on family outcome. Trute (1990) found that marital cohesion predicted positive family adjustment, and Trute and Hauch (1988) determined that two-parent families experienced more positive adaptation. Similarly, there was a significant relationship between single-parent status and family functioning for mothers in the current study, with mothers from two-parent families reporting more positive family adaptation compared to single parent mothers. This may be due to having more support and resources within the family. As outlined by Trute and Hauch (1988), two-parent families have a greater ability to manage the demands of caring for a child

with a disability, which would invariably impact the family's functioning. Although the current study supports the idea that mothers from two-parent families experience more positive family adjustment than single mothers, this result must be viewed with caution. The measure of family functioning used in this study (i.e., Brief FAM-III) was developed and normed on two-parent families and may not be an appropriate measure of functioning in single-parent families. This tool may not be sensitive enough to determine strengths within single-parent families.

Disability type was also found to be related to family outcome for mothers. Mothers of children with Down syndrome reported more positive family adjustment than mothers of children with PDD or other developmental disabilities. Noh et al. (1989) reported that mothers of children with Down syndrome experienced less stress compared to mothers of children with autism and conduct disorder. These authors note that while parents of children with Down syndrome are impacted by level of acceptance with regard to intelligence and appearance, they view their children as happier and a greater source of positive reinforcement than parents in the other two groups (Noh et al., 1989). These factors may also be related to more positive family adjustment in the current study. It also may be due to perceptions of increased capabilities of people with Down syndrome within the larger community. From these findings, it appears that there are important differences between parenting a child with Down syndrome and parenting a child with PDD or other developmental disabilities. These differences may impact mothers' perceptions of their family. For parents of children of PDD, challenging behaviours have been identified as a significant source of stress (Noh et al., 1989). These behaviours may also play a role in perceived family adjustment. There may be similar demands on

mothers of children with cerebral palsy and other developmental delays which factor into perceived family functioning.

These demographic and child variables associated with perceived family functioning may be important variables to "flag" when assessing the needs of mothers with children with disabilities. As noted by Floyd and Gallagher (1987), single mothers are in more need of resources and have been shown to engage in poor coping strategies (Bright & Hayward, 1997). The current study identified this group as having significantly less positive perceptions of family adjustment. Despite the caution in interpreting the result (noted above), assessing and responding to the unique needs of single-parent families is important to practice. Also, parents of children diagnosed with PDD are consistently reporting more stress and, in the current study, less positive family adjustment. It is important to recognize the unique challenges faced by these families. Also of note, level of parental education seemed to be related to perceptions of family adjustment in this study. Low maternal education may be a potential risk factor in terms of family adjustment. More research is needed to more clearly establish the role of maternal education in relation to family adjustment in these families.

There was no relationship found between the child's gender and family adjustment for mothers or fathers. This is consistent with previous research (Cameron & Orr, 1989; Frey, Greenberg, & Fewell, 1989; Krauss, 1993; Trute, 1990). However, research has shown a trend toward fathers having more difficulties when the child with a disability is a son, including higher depression (Trute, 1995) and parenting stress (Frey, Greenberg, & Fewell, 1989). It has been suggested that in traditional roles, fathers are typically more concerned with the child's future and opportunities (Floyd & Gallagher,

1997; Seligman & Darling, 1989; Trute, 1995) and have greater difficulty adjusting expectations for male children (Frey, Greenberg, & Fewell, 1989) which may have greater impact on individual functioning. However, results from the current study along with previous research (Cameron & Orr, 1989; Frey, Greenberg, & Fewell, 1989; Krauss, 1993; Trute, 1990) seem to indicate that the child's gender does not impact perceived family adjustment in mothers or fathers with children with disabilities. It may be that fathers in the current study were more involved with their children than fathers who did not participate and compared to fathers in other studies. In addition, on average, the fathers in the current study were also not experiencing high parenting stress, which may explain these results.

Similar to Trute and Hauch (1988), family income was not related to family functioning in the current study for mothers or fathers. This contradicts the findings of Patterson and McCubbin (1983) and Gottlieb (1998), who found positive adjustment to be related to higher levels of income. As discussed by Raikes and Thompson (2005), there may be other variables (i.e., self-efficacy) that moderate the impact of lower levels of income. In addition, family income may not be as important to outcome in Canadian studies because of more government-supported programs. Therefore, Canadian studies may show differences in terms of the role of family income due to this difference in funding.

There was also no relationship between parental age and family functioning in the current study for mothers or fathers. Failla and Jones (1991) report that increased parental age predicted poorer family functioning for mothers of children with disabilities. In their study, older mothers had more children, which may have contributed to this outcome.

They speculate that having more children in addition to a child with a disability reduces the ability to meet all needs in the family. The outcome measures to assess family functioning differed in these two designs. In addition, children in the Failla and Jones' (1991) study had either a cognitive and/or physical impairment of the child. In addition, the insignificant results of the current study may be attributed to the restricted age range (5 months to twelve years) as many parents included in the current study were only those of young children.

Parental self-esteem. Similar to Hall's (1994) study of mothers of children with autism and cerebral palsy, the current study found that mothers' self-esteem predicted perceived family adjustment. The self-esteem of mothers also mediated the relationship between parenting stress and family adjustment, which is consistent with other research (Irvin & Acton, 1996). Irvin and Acton (1996) determined that caregiver well-being was mediated by both internal (self worth) and external (social support) resources in caregivers of adults with cognitive difficulties. Similarly, the current study determined that for mothers caring for children with developmental disabilities, the role of the internal resource of self-esteem seemed to lessen the impact of parenting stress on family well-being. Similarly, self-ratings of coping efficiency have been shown to be positively related to family adjustment in mothers of children with disabilities (Frey, Greenberg, & Fewell, 1989). It seems that a positive sense of self and one's ability has a positive impact on the perceptions of family functioning. Similarly, for mothers, self-esteem emerged as an important factor to consider in the relationship between parenting stress and family well-being in the current study. This finding suggests that intervention which promotes a positive sense of self in mothers of children with disabilities may have a positive impact

at the family level. Teaching positive self-talk and identifying personal strengths could be utilized as ways to enhance mothers' self-perceptions. This is consistent with the emphasis within the family-centered practice model on building capacity in families (Dunst, 2002).

For fathers, self-esteem along with positive appraisal did predict family adjustment directly; however, each variable did not reach individual significance. Self-esteem moderated the relationship between parenting stress and perceived family functioning. Positive self-esteem buffered the impact of parenting stress on family functioning at low and moderate but not high levels of parenting stress. That is, there was a protective component of parental self-esteem at low and moderate levels of parenting stress. This effect was not sustained when parenting stress reached high levels. This is consistent with the findings of Guillet et al. (2002) who determined the importance of personal resources (i.e., psychological robustness) at low levels of situation strain; however, this effect was not present at high levels of strain for both male and female students. They conclude that if the situation strain becomes high, personal resources become irrelevant. In another study examining the relationship between stress and self-esteem, Creswell et al. (2005) also report a buffering effect of self-esteem on the relationships between value affirmations and the stress response. Overall, fathers with higher self-esteem in this study may have felt more confident in their abilities to deal with stress in a way that did not impact negatively on their families. However, once parenting stress was heightened, self-esteem did not provide a buffer to the impact of parenting stress on their perceived family functioning.

From a practice perspective, this finding suggests that it is important to assess not only levels of parenting stress, but also self-esteem in fathers, as this is an important variable for family outcome. Enhancing self-esteem has been identified as an important intervention strategy for parents of children with disabilities (Perry, 2004). However, according to the current study, this may be more or less effective for fathers depending on the level of parenting stress. It may be beneficial to provide intervention at enhancing self-esteem for fathers with low and moderate stress levels; however, according to the present results, enhancing fathers' self-esteem at time of high stress may not impact their perceptions of the family's functioning. Instead, lowering parenting stress directly (i.e., respite, parent support) may be a more appropriate intervention strategy.

Positive appraisal. Positive appraisal emerged as an important variable for mothers as it both predicted family adjustment and mediated the relationship between parenting stress and family adjustment. This is consistent with Frey, Greenberg, and Fewell (1989) who determined that parental beliefs were the largest predictor of outcome at all levels (parenting stress, family adjustment, and parental distress) supporting the role of cognitive appraisal as an important coping strategy.

In terms of gender, mothers were more positive in their appraisal of the disability than were fathers in this study. This finding is consistent with previous research by Hastings, Beck, and Hill (2005) who also reported that mothers were significantly more positive about their child with an intellectual disability than were fathers. They speculate that mothers spend more time with their child and have more opportunity to observe positive attributes, or it may be related to justifying their time and effort in the caregiving role. It is also possible that it may be an effort to balance out their higher parenting stress

(Hastings, Beck, & Hill, 2005). In the current study each of these may be possible explanations. In the current study a large number (35%) of mothers were home with their child(ren), which would also result in greater contact with their child with a disability. Consistent with this conceptualization, mothers did report significantly higher parenting stress compared to fathers. In addition, research has shown that fathers are more concerned with their child's future (Floyd & Gallagher, 1997; Seligman & Darling, 1989; Trute, 1995) and have difficulty lowering expectations (Frey, Greenberg, & Fewell, 1989). This may also contribute to a less positive outlook of the child's disability. In addition, it is important to note that the current study examined variables as families entered the service system (i.e., typically at the time of diagnosis). It could be that fathers require more time to accept the reality of their child's disability. This may impact their ability to identify positive aspects of the experience.

In addition to the direct impact of positive appraisal on family functioning, mothers' positive reframing of their child's disability seemed to be a coping strategy for managing the stress associated with parenting a child with a disability. This in turn, impacted the relationship between their parenting stress and perceived family adjustment. The results for positive appraisal for fathers did not support this relationship. As discussed, this is consistent with previous research on positive perceptions of mothers of children with disabilities (Hastings, Beck, and Hill, 2005; Hastings et al., 2002). Other research (Behr & Murphy, 1993) found only moderate support for positive perceptions (including finding positive meaning of the disability) as predictors for family outcome with mothers and fathers of children with disabilities. This moderate finding may be due to the inclusion of both genders in their analyses. As demonstrated in this research, there

may be gender differences in the role of positive perceptions in raising a child with a developmental disability.

In the current research, assigning positive meaning to the disability was important to perceived family adaptation for mothers. Accordingly, assessing mothers' positive appraisal of their child's disability may be beneficial. The measure utilized in this study (PFI subscale of FICD) can provide important clinical information about this construct. The extent to which mothers frame the disability in a positive manner seemed to have a favourable impact on perceived family adjustment. Parenting stress was impacted by positive appraisal, which then resulted in more positive perceived family adjustment for mothers. Similar to recommendations from other research (Hastings, Beck, & Hill, 2005; Hastings, Kovshoff et al., 2005; Hastings et al., 2002), this study supports interventions to identify the positive aspects of a child's disability. Acknowledging the positive areas of growth associated with the child's disability may impact perceived family functioning for mothers. As indicated by Hastings, Beck, and Hill (2005), in the assessment of positive contributions, parents reported that they had not been asked about the positive aspects of raising a child with a disability and had not fully recognized the unique contribution their child had made to their family. The use of the FICD – PFI to assess positive aspects of raising a child with disabilities would provide opportunities for such realizations for parents.

These results support the practice importance of parenting stress, parental self-esteem, and positive appraisal in positive family adjustment. Considering individual members as the parts of the whole system is an important component in providing services. From the family systems and family-centered practice perspectives, maintaining

the family as the outcome of interest is beneficial as it provides a broad perspective in terms of overall functioning. It is recognized that the current study only utilized a self-report measure of family functioning. However, as outlined by Carpentar (2000), we need to understand the needs of the family, and it is the perception of parents that provides important information to inform our clinical practice. In line with parent-professional partnerships, understanding the perspective of parents caring for young children with developmental disabilities is an important consideration for both research and practice.

Theoretical implications. By examining mothers and fathers separately, the current research addressed assumptions of common mechanisms of coping in stress theory. Gender differences have been identified as an important area of study in research with parents of children with disabilities (Gray, 2003). As researchers have noted, role differences impact how each gender copes with stress (Gray, 2003; Perry, 2004; Trute, 1995). The current findings support the idea that mothers and fathers assume different roles and utilize different coping strategies (Gray, 2003; Hastings, Kovshoff et al., 2005). In particular, this study provides information about fathers of children with developmental disabilities, and addresses this gap in providing services to these families (Carpentar & Herbert, 1997).

Parenting stress was a consistent factor for both mothers and fathers in terms of impact on family functioning. For fathers, a positive sense of self seemed to be associated with a more positive family outcome in the current study. This result is consistent with previous research showing that fathers were generally more concerned with providing for the family, while mothers were focused on caring for their family (Burton et al., 2008; Frey, Greenberg, & Fewell, 1989; Frey, Fewell, & Valdasy, 1989; Gray, 2003). For

fathers, there was a moderating relationship between parenting stress and self-esteem on perceived family adjustment in that self-esteem provided a buffer until parenting stress levels were in the high range. For mothers, there seems to be a mediating relationship between these variables. Once the effect of self-esteem was accounted for, the relationship between parenting stress and family functioning lessened. This is consistent with both individual and family stress theory, which indicates that positive reframing is an important factor in determining adjustment to stress (Folkman & Moskowitz, 2000). There was also a mediating relationship between parenting stress and positive appraisal for mothers. Folkman and Moskowitz (2000) discuss how positive appraisals contribute to positive affect. In finding positive meaning of their child's disability, the impact of parenting stress seemed to be reduced. These mothers experienced more positive perceived family functioning as a result of this coping effort. This fits with authors who have identified the importance of meaning-making in the resiliency process (Patterson, 2002b) and in coping with adversity (Tennen & Affleck, 1999).

Conversely, for fathers, positive appraisal did predict perceived family adjustment as an individual variable but together with self-esteem, the direct relationship was not significant. Self-esteem did not directly predict perceived family adjustment; however, it did emerge as a significant moderator variable for managing parenting stress. These results add some knowledge about the theoretical models of family stress and coping in terms of important factors for each gender. The mechanisms of the variables of interest seemed to differ for mothers and fathers in the current study.

As perceived family outcome was of interest, the current research framework was family stress theory. Specifically, variables were selected consistent with the Double

ABC-X model of family stress (McCubbin & Patterson, 1983) and was based on a systems model of stress and coping. Perry (2004) identified the importance of untangling family and individual components to stress and coping in families of children with disabilities. She argued that family stress theory does not completely capture how these families manage stress. Subsequently, she developed an individual model arguing that research typically uses individual measures (Perry, 2004). In a similar way, the current study illustrates that it is important to recognize the factors which impact perceptions of family functioning. The findings contribute to an understanding of stress and coping that identifies individual factors which impact perceptions of family adjustment. The importance of the individual perceptions of parenting stress, parental self-esteem, and positive impact of the disability on the perceptions of family adjustment was supported for mothers in the current study. For both mothers and fathers, self-esteem seemed to impact the relationship between parenting stress and family adjustment. For mothers, positive appraisal was a significant factor in this relationship. Taylor (1983) identified similar factors (e.g., search for meaning and need to enhance self-esteem) in her individual coping model for women diagnosed with cancer. Similarly, the current study provides support for the importance of individual factors in predicting perceived family functioning. This conceptualization can be applied to theoretical models of stress and coping with families of children with disabilities. Our understanding of the family is often dependent on individual perceptions. In order to develop models which describe how families cope with stress, it is important to identify individual members' perceptions of individual and family functioning. The current study identified individual factors related to perceptions of family functioning. Theoretical approaches need to be more

inclusive and recognize these individual factors in coping with stress which are important to perceptions of the family system.

Summary

The current research supports the need for practitioners to identify both the parenting stress associated with raising a child with a disability as well as areas of strength or growth to obtain a balanced assessment of parenting a child with a developmental disability. The parents in the current study reported higher than average parenting stress levels. As part of providing individualized care to these families, these needs are important to assess and provide assistance in terms of respite, connection to resources in the community, and stress management strategies. However, the families in the current study were also reported to be functioning within the expected range. This provides important information about the capacity of families with children with disabilities. Family strengths are important to identify in practice.

Our understanding of factors toward positive family adjustment for parents is critical to a positive parent-professional partnership. For mothers, disability type, single parent status, and parental education were all related to family functioning. Also, mothers more than fathers, identified the unique positive contribution of having a child with a developmental disability and this seemed to influence perceived family functioning. Parental self-esteem emerged as an important factor for both mothers and fathers in terms of family outcome. For mothers, it mediated the relationship between parenting stress and family adjustment, and for fathers this was a moderating relationship. In terms of individualized care, the current research supports assessing and providing assistance to enhance self-esteem as a personal internal resource.

An important contribution of the current study was the inclusion of fathers. Like mothers, they reported considerable parenting stress, which was related to their perceptions of family adjustment. Their self-esteem provided a buffer for the relationship between parenting stress and perceived family functioning, except when stress reaches high levels. Fathers' needs and concerns in raising a child with a developmental disability are important to the family-centered practice model. Encouraging their involvement in aspects of the child's care and development may impact mothers' levels of stress. This may also provide more opportunity for fathers to identify positive aspects of raising a child with a developmental disability.

The current study has possible theoretical implications which support an approach which identifies how individual factors impact perceptions of the family. By examining both perceptions of individual and family functioning, we more comprehensively unravel the mechanisms of stress and adjustment in families of children with disabilities.

Limitations of Current Study

The current data were correlational and concurrent. Therefore one cannot infer causality; even though tests of mediation imply a causal relationship. As discussed by Jose (2008) researchers do conduct tests of mediation on concurrent datasets; however, it is important to recognize the limitations in interpreting the results. Therefore, causality or temporal ordering of variables within a theoretical model is not implied from these analyses. As well, due to power constraints, these analyses were undertaken with caution. While there was enough power to detect a moderating effect between parenting stress and self-esteem due to high reliabilities of these measures for fathers, the other analyses likely lacked sufficient power for testing these relationships. Whisman and McClelland (2005)

discuss the need for adequate power in family research testing for interaction effects. Others have discussed issues with power in psychological research as well (McClelland & Judd, 1993; Maxwell, 2004). Therefore, the reduced power in this study may have impacted the detection of moderation. However, it has been useful to examine even in an exploratory way, the similarities and differences between mothers and fathers in the relationships between the variables deemed important for families in managing stress associated with parenting a child with a developmental disability.

The purpose of the current study was to examine variables of interest among parents of children with developmental disabilities. Therefore, the findings cannot be generalized to other groups. However, the strength of the current study is that it examined a fairly heterogeneous group in terms of the child's age, gender, and disability type. Also this research investigated the specifics of appraisal of childhood disability and therefore cannot be generalized to other stressors. While this provides information about stress and coping for this group, one cannot make generalized statements about all families with children with disabilities. Of note, families were eliminated if there was not complete data for all measures of interest. Consequently, it is not known whether these families differed from families included in the study. In addition, the participants in this study were primarily of European descent. As one of the screening criteria was an ability to read and speak English, there were families from other cultures who were not included. Therefore, the findings of this study cannot be generalized to other cultural groups due to possible differences in the variables examined.

This study identified three specific variables to determine their importance in predicting family outcome. It is recognized that there are a number of other factors which

were not included in this investigation which impact family functioning. For example, the specific ways in which fathers and mothers cope (i.e., other specific coping strategies utilized related to emotion-focussed versus problem-focussed) was not studied. As Chapman and Mullis (1999) determined, self-esteem was related to type of coping implemented in adolescent girls and boys. Boys used more avoidant coping while girls more social and spiritual supportive coping. Higher self-esteem was associated with more efforts to directly solve the problem while lower self-esteem was related to avoidance. There may be similar mechanisms operating among parents of children with disabilities. Self-esteem may be related to the ways in which parents cope with their child's disability which was not part of the current investigation.

As well, Hastings et al. (2002) determined that predictors of positive perceptions in mothers were difficulty of care, informal social supports, and coping strategies. The important coping strategies identified were positive reframing and acquiring social support. While the current study examined the role of positive appraisal of the stressor of having a child with a disability (i.e., which is similar to the concept of positive reframing), it did not account for numerous other factors (i.e., including degree of care or social support variables). The impact of other life events and other sources of stress present for families were not included in the current design and should be noted as a limitation (Perry, 2004). Given the interactive and complex relationship between the variables of stress, internal resources, and appraisal in determining family outcome, it would be beneficial to examine a wider range of variables. Nonetheless, it is hoped that this study provides further information about the role of parental self-esteem and positive

appraisal in relation to parenting stress and family adjustment for parents of children with disabilities.

The reliabilities of the measures in the study were considered high. With the exception of positive appraisal for mothers, all values were above 0.82. While the measures have demonstrated reliability and validity there are always limitations due to the fact that no measure is 100% reliable. In addition, power of the exploratory analyses was impacted by reliabilities of the measures. The Family Impact of Childhood Disability Scale (FICD; Trute & Hiebert-Murphy, 2002) is a relatively new measure and its use has been limited. However, this study provided further support for its use in assessing the appraisal of the child's disability in families with children with a wide range of developmental disabilities. Also, the Brief FAM-III (Skinner et al., 1995) was developed with two-parent families. Therefore findings related to single parents in terms of their perceived family adjustment are considered inconclusive. There are also limitations of this study as this study was a secondary analysis of a large project. The study was designed after the data had been collected, which presents methodological issues around selection of measures, determination of sample size required for certain analyses, and power of the statistical design. However, the study was conducted within these constraints and it is believed that it addressed important factors for families raising a child with a developmental disability.

In addition, the Parenting Stress Index (PSI) was used to assess parenting stress in parenting a child with developmental disabilities. The PSI may not be an accurate reflection of parenting in this population as it was normed on parents of children without developmental disabilities. As a result, many items on the measure are biased against

parents of children with disabilities. This is particularly true of the child-stress portion of the measure. Therefore, consistently, parents of children with disabilities score higher on the PSI and are considered in the "clinical" range in terms of parenting stress. So it appears as though parents of children with disabilities are more stressed compared to the general population. However, parents of children with disabilities learn to cope with the stress and therefore, the placement of parents' stress within this range may not be accurate reflection the stress experienced by this group. In response to this criticism, Innocenti et al. (1992) conducted a study with mothers of children with disabilities in order to develop norms which are more appropriate for this population. In other words, scoring was compared to other parents of children with disabilities rather than to the general population. In particular, Innocenti et al. (1992) determined that mothers of children with disabilities scored higher on the child-stress but not the parent stress domain. Therefore, due to these confounds, the PSI is limited in assessing parenting stress in parents of children with developmental disabilities.

In addition, by using the PSI as a predictor rather than an outcome is noteworthy. Most research has utilized the PSI as an outcome variable. The current study conceptualized parenting stress as the 'stressor' variable. This conceptualization and use of the PSI in this context may be misleading in terms of what it is assessing. The PSI is believed to assess possible parent-child dysfunctional patterns. However, the current study was more interested in the stress associated with raising a child with a developmental disability. By nature of the measurement's design, the PSI may not have adequately assessed this particular construct. There are two constructs within the PSI which are child-stress (particular stress related to caring for the child) and parent-stress

(which examines concerns related to relationships). The PSI may not have adequately measured the particular stressors associated with raising a child with a developmental disability given that the measure appears to include both aspects of the stressors associated with parenting and the outcome of dealing with these challenges on the parent.

The purpose of the current investigation was to obtain each parent's perspective in order to assess similarities and differences in all variables of interest. Perry (2004) argues that measures in family stress research are invariably individual measures. She states that while the family stress model asserts family outcome, the measures utilized are often individual (Perry, 2004). While this does pose a methodological challenge, it is the how family members perceive their family's functioning that is critical to intervention. In addition, from a clinical perspective it is important to obtain these different perspectives of family outcome (Skinner et al., 1995). Similarly, all measures were self-report and there was no other collateral information gathered. Therefore, the information provided is that which is perceived by the parents in the study which may or may not reflect more objective accounts of parenting stress and functioning levels. In addition, it is noted that the Brief FAMIII (Skinner et al., 1995) does not include social desirability or defensiveness scales to assess the minimizing of difficulties. Notwithstanding the limitations, utilizing parents' perceptions of family functioning is consistent with previous research (e.g., Frey, Greenberg, & Fewell, 1989) and provides useful perspectives on the family's functioning. As discussed by Frey, Greenberg, and Fewell (1989), self-report parent outcome (both parenting stress and family adjustment) has been identified as important in predicting subsequent child development. Likewise, family-centered practice advocates for an understanding of each family member's perspective.

Whether or not this is an accurate or "true" reflection of reality is noteworthy; however, clinically, the perception of the individual is just as important as the reality itself. It would seem that the parents of young children with disabilities are the best sources of this information.

Directions for Future Research

One of the most noted areas in need of future research in the area of stress and coping among families with children with disabilities is the gender differences related to roles and functioning within the family. The gender differences noted in the relationship between the variables of parenting stress, positive appraisal, and parental self-esteem could be examined further. In particular, from the current findings, the role of positive appraisal for fathers is in need of further investigation. It has been identified that we have not adequately included fathers in both research and clinical practice (Carpentar & Herbert, 1997). As noted by many authors (Bailey & Smith, 2000; Gray, 2003; Perry, 2004; Trute, 1995), the differences between mothers and fathers are important to determine the best ways to assist these families. Continuing to include fathers is important for future research. In addition, as noted by Noh et al. (1989), further research is needed in measurement to adequately assess gender differences in perceptions of stress. As these authors identify, these differences perhaps could be included in the norming of stress measures. Similarly, possible gender differences in measurement of the other measures utilized (i.e., positive appraisal and self-esteem) could be examined in future research. Future investigations should consider the family as the outcome of interest consistent with the family-centered practice model.

Family stress theory was the framework for this study examining three variables in relation to family functioning. The relationships between the variables of stress, appraisal, resources, coping, and adjustment are complex, and this research only identified three possible contributions to the relationship between parenting stress and family adjustment. The variables of the current study could be examined in other samples of families of children with disabilities to determine whether these findings are replicable. In addition, there are numerous variables which could be included in research to fully explore the complexities of the theory. As discussed, identifying individual factors important for perceived family outcome could be explored further to develop a more comprehensive theoretical understanding of stress and coping in these families. As part of these investigations, other sources of stress (i.e., other life events) should be included in assessing family stress rather than the stress of the childhood disability in isolation (Perry, 2004). The current study was interested in the specific stress of childhood disability at the time of entry to services; however, it is recognized that family members are impacted by other sources of stress as well. These additional stressors impact coping behaviours due to the notion of "pile-up" which was not examined in the current investigation. A more complex analysis involving a wider range of variables (both individual and family) including stress variables, resource variables (internal and external), and appraisal variables (both positive and negative appraisal) and their impact on family functioning (i.e., an aggregate measure) would be beneficial.

The role of child disability type important for family outcome could be investigated further in future research. In particular, research in specific disability types, especially with regard to the impact of a PDD diagnosis on both parenting stress and

family adjustment could be examined further. Research could also pay attention to the specific behavioural issues of these children and how these impact parenting stress and family outcome. These families seem to be one of the most affected groups in terms of the impact of the disability. Therefore, further research as to specific aspects in which we could better meet their needs would be beneficial. Also research should continue to explore the variables which contribute to positive outcome for parents of children with Down syndrome as well as other disabilities. Research into specific disability types contributes to a better understanding of parenting each disability type. Importantly, the use of family outcome would provide important information from a family-centered practice perspective. In terms of demographic variables, marital status and parental education were identified as important to family outcome for mothers in this study. Therefore, these variables could be included in future research to determine more conclusively their relationship with perceived family adjustment. In general, future research could also examine more extensively factors important for positive family outcome for single parents raising a child with a disability. Future research could also assess the role of culture in the stress and coping model for parents raising a child with a developmental disability, as this would provide more specific information as to best serve individuals from different cultural backgrounds. For example, Neely-Barnes and Marcentko (2004) determined that the meaning of the disability differed between White and Hispanic families. Research could continue to explore meaning in terms of culture with families of children with disabilities.

Measurement considerations should be taken into account in future investigations. In examining the role of single parent status on outcome, the use of measures normed on

single-parents should be utilized. Secondly, an important aspect of the current research was to place parenting stress as a predictor to outcome, rather than as an outcome variable. To measure parenting stress, norms for parents of children with disabilities should be used as a comparison rather than those for the general population as suggested by Innocenti et al. (1992). Furthermore, the development of a more appropriate measure of parenting stress in parents of children with developmental disabilities would be appropriate. As noted, the PSI includes stressors and outcome in its assessment of parents. There is a need to differentiate the impact of parenting on the parent and the specific situation or child factors related to parenting stress. To develop a measure of parenting stress which identifies the specific stress associated with raising a child with a developmental disability would provide conceptual clarity around this issue.

The results from the moderation and mediation analyses are inconclusive due to constraints in the study design. In order to make more definite statements about these relationships, research could further explore these relationships. While family stress theory indicates directional relationships, there may be bi-directional relationships between the variables of interest. For example, research could examine the presence of recursive relationships which would require a larger sample. Studies which utilize path analyses would be preferable as these provide information of directional relationships in the model. This type of research would include longitudinal data in order to determine the impact of variables over time. As determined by Frey, Fewell, and Valdasy (1989) who found a long term positive impact of one parent's positive perception on the other parent, this type of research could further identify important variables for positive outcome beyond the time of initial diagnosis. This would provide important information for

providing services to families of children with developmental disabilities in terms of stages of coping with childhood disability.

CONCLUSION

The current research aimed to inform practice with families of children with disabilities. Consistent with the family-centered practice model and family stress theory, perceived family adjustment was conceptualized as the outcome of interest. While parenting stress was elevated for these parents, their perceived family functioning was within the average range. Due to the increased levels of parenting stress, practice needs to continue to assess and assist with the demands of caring for a child with a disability. It would seem that disability type was a significant factor in parenting stress levels for both parents. Results showed that parents of children with a PDD diagnosis and those with cerebral palsy and other developmental delays (i.e., not otherwise specified and genetic/metabolic) experienced greater stress compared to parents of children with Down syndrome. Parents with children in these two groups are in need of assistance to manage the significant demands of these childhood disabilities. The current research also demonstrated family strengths, as these parents reported functioning within the average range. This resiliency could also be emphasized in service delivery.

Gender differences were found for variables of interest in predicting family adjustment. For mothers, disability type, single parent status, and parental education were significant predictors of perceived family outcome. Therefore, in assessing parenting stress and perceived family adjustment, practice should pay attention to these variables. For mothers, parenting stress, parental self-esteem, and positive appraisal of the disability all directly predicted family adjustment. In exploratory analyses, both self-esteem and positive appraisal mediated the relationship between parenting stress and family functioning for mothers. For fathers, direct relationships were not significant when self-

esteem and positive appraisal were entered together. However, positive appraisal did reach significance when entered individually in the moderation analysis. Further research to investigate the role of positive appraisal on family adjustment for fathers would be beneficial. Parental self-esteem was found to moderate the relationship between parenting stress and family adjustment for fathers. Although at high levels of stress, the positive impact of self-esteem was no longer present.

The practice implications of the findings are related to the assessment of these variables in parents of children with disabilities. The importance of identifying parental needs in these families is critical to the empowerment of parents emphasized in the family-centered practice model. Both positive appraisal of the disability and parental self-esteem are variables which could be identified in intervention to build capacity in parents. By identifying positive aspects of the disability with mothers and enhancing self-esteem in both parents, positive family functioning may result. The research suggests that theoretical models that conceptualize the ways that stress impacts the family system and its individual parts are useful in guiding research aimed at furthering our understanding of adjustment in these families.

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Appendix A

Parent and Family Well-Being Assessment

PARENT AND FAMILY WELL-BEING ASSESSMENT

Children's Special Services
Province of Manitoba

FORM COMPLETED BY:

MOTHER ___
FATHER ___
MOTHER AND FATHER ___

DATE: _____ _____ _____
DATE MONTH YEAR

MSSP NUMBER: _____
WORKER: _____
REGION: _____

Children's Special Services Socio-Demographical Information

MSSP Number: _____

Adult Female

Current Marital Status:

Never married	1
Married	2
Separated	3
Divoced	4
Widowed	5
Living together with partner	6

Employment:

Full, time, ongoing	1
Part time, seasonal	2
Unemployed, seeking work	3
Homemaker	4
Disabled - cannot work	5
Retired	7
Other: _____	8

Adult Male

Current Marital Status:

Never married	1
Married	2
Separated	3
Divoced	4
Widowed	5
Living together with partner	6

Employment:

Full, time, ongoing	1
Part time, seasonal	2
Unemployed, seeking work	3
Homemaker	4
Disabled - cannot work	5
Retired	7
Other: _____	8

Adult Female

Education:

Highest grade completed : _____
Post-secondary; # of years _____
University 1
Technical/vocational 2

Age: _____

Adult Male

Education:

Highest grade completed: _____
Post-secondary; # of years _____
University 1
Technical/vocational 2

Age: _____

Family Information

Family Form:

Single Parent	1
Remarried	2
First married	3
Extended family	4
Foster family	5
Living as married	6
Blended family	7
Other: _____	8

Children:

Name	Sex M	Sex F	Age	Lives at home Yes	Lives at home No
_____	1	2	____	1	2
_____	1	2	____	1	2
_____	1	2	____	1	2
_____	1	2	____	1	2
_____	1	2	____	1	2
_____	1	2	____	1	2

Income:

(Optional)	under $10,000	1
	$10,000 - $14,999	2
	$15,000 - $19,999	3
	$20,000 - $24,999	4
	$25,000 - $29,999	5
	$30,000 - $34,999	6
	$35,000 - $39,999	7
	$40,000 - $44,999	8
	$45,000 - $49,999	9
	$50,000 - $59,999	10
	$60,000 - $74,999	11
	$75,000 and over	12

Appendix B

Information on Children in Family with a Disability Questionnaire

Information on Children in Family with a Disability

Child's Name: _____ Gender: _____

Date of Birth: _____

What disability best describes your child?

_____ Developmental Delay

_____ Cerebral Palsy

_____ Emotional Disturbance

_____ Autism

_____ Asperger's Syndrome

_____ Physical Disability

_____ Unknown

_____ Other (Please Specify)

_____ Epilepsy

_____ Hearing Loss

_____ Vision Loss

_____ Cognitive Impairment

_____ Pervasive Developmental Delay

_____ Down Syndrome

_____ No Confirmation of Diagnosis

_____

In your view:

To what extent will this child's disability affect his/her cognitive development?

Not at all Mildly Moderately Severely Unknown

To what extent will this child's disability affect his/her physical development?

Not at all Mildly Moderately Severely Unknown

To what extent will ongoing specialized medical attention be required?

No need Some need Moderate Need Severe Need Unknown

How much assistance will your child require over the years to perform everyday activities like eating, bathing and toileting?

Very Little Moderate Amount Frequent Assistance Constant Unknown

Appendix C

Correlations between self-report measures (Table C1) and family adjustment and demographic variables (Table C2) for fathers ($N = 61$).

Table C1

	1	2	3	4
1. Family adjustment	—	.43**	.53**	-.20
2. Self-esteem		—	.48**	-.09
3. Parenting stress			—	.04
4. Positive appraisal				—

*$p < 0.05$. ** $p < 0.01$.

Table C2

	PSI Total (*n*)	SE (*n*)	PFI (*n*)
Child's gender (1=male; 2=female)	.22 (*61*)	.10 (*61*)	.09 (*61*)
Child's age (months)	.39** (*61*)	.24 (*61*)	-.17 (*61*)
Family income	.08 (*55*)	-.16 (*55*)	-.04 (*55*)
Parental education	.07 (*58*)	-.14 (*58*)	.06 (*58*)

* $p < 0.05$. **$p < 0.01$.

Appendix D

Correlations between self-report measures (Table D1) and family adjustment and demographic variables (Table D2) for mothers ($N = 97$).

Table D1

	1	2	3	4
1. Family adjustment	—	.59**	.44**	-.40**
2. Self-esteem		—	.33**	-.26*
3. Parenting stress			—	-.26**
4. Positive appraisal				—

*$p < 0.05$. **$p < 0.01$.

Table D2

	PSI Total (*n*)	SE (*n*)	PFI (*n*)
Child's gender (1=male; 2=female)	.00 (*97*)	.20* (97)	.11 (*97*)
Child age (months)	.23* (*97*)	.01 (*97*)	-.04 (*97*)
Family income	.09 (*85*)	-.12 (*85*)	.01 (*85*)
Parental education	.02 (*97*)	-.24* (*97*)	-.02 (*97*)
Single parent status	.05 (*97*)	.05 (*97*)	-.01 (*97*)

*$p < 0.05$. **$p < 0.01$.