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Siblings of Children with Disabilities: Examining Sibling Well-Being and Sibling Relationship Quality

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Masters of Arts in Educational Psychology

July 2007

A thesis submitted to McGill University in partial fulfilment of the requirements of the degree of a Masters of Arts in Educational Psychology (Concentration in School and Applied Child Psychology).

ABSTRACT

The effects of disability on sibling well-being and sibling relationship quality were evaluated. Particularly, two disabilities (Phelan-McDermid syndrome and attention hyperactivity disorder) with significantly different functional implications were examined. Siblings completed measures on behavioural and emotional functioning, self-concept, and sibling relationship quality. For both disability groups, no positive or negative effects on sibling well-being were found when compared to siblings of typically developing children. Sibling relationship quality was different for all three groups of siblings. When there was disability in the home, siblings reported less intimacy in their relationships. Siblings of children with Phelan-McDermid syndrome reported more mutual admiration, more power and less conflict in their relationships than siblings of typically developing children. They also reported more warmth in their relationship than siblings of children with attention deficit hyperactivity disorder. The importance of understanding how disability in the home can affect siblings is emphasized.

RÉSUMÉ

Les effets de troubles de santé sur le bien-être d'enfants de même famille et sur les relations entre frères et sœurs furent évalués. Particulièrement, deux syndromes, le syndrome de Phelan-McDermid et le Trouble du Déficit de l'Attention avec ou sans Hyperactivité (TDAH), qui ont implications pratiques significativement différentes furent examinés. Les enfants de même famille ont complété des questionnaires sur leur fonctionnement émotionnel et comportemental, leur concept de soi et la qualité de la relation avec leur frère ou leur sœur. Pour les deux groupes d'enfants avec un frère ou une sœur atteinte d'un trouble quelconque, aucun effet positif ou négatif sur le bien-être fut découvert comparativement aux enfants de familles typiques. Toutefois, la qualité des relations entre enfants de même famille était différente dans les trois groupes. Quand l'un des enfants était atteint d'un trouble, moins d'intimité était rapportée dans la relation entre frères et sœurs. Les frères et sœurs d'enfants atteints du syndrome de Phelan-McDermid ont déclaré qu'ils éprouvaient plus d'admiration, plus de pouvoir et moins de conflits entre eux que chez des enfants de familles typiques. Ils ont aussi exprimé plus de tendresse dans leur relation que dans les familles d'enfants avec un TDAH. Cet ouvrage souligne également l'importance de comprendre comment les problèmes de santé d'un enfant peuvent affecter les autres enfants de leur famille.

ACKNOWLEDGEMENTS

I would like to extend my thanks to my supervisor, Dr. Steven Shaw, for the opportunity to work with him the past two years; and my deepest appreciation for his guidance and encouragement, particularly throughout the course of working on my Masters thesis. Thank you for supporting my idea for my thesis and helping me to develop the idea. I would also like to especially thank Amira Rahman, Diana Chang, and Betty Wang for their help with data collection, as well as feedback and comments on the initial drafts of my thesis.

I am eternally grateful to my mother, Adeline Chiang, for her unconditional love and financial support throughout my studies. She has kept me motivated and focused on realizing my goals and dreams. Thank you to my fiancé, Eugene Hsu, for his love, patience, support, and understanding. Thank you to my sister and close friends for their invaluable emotional support, especially during the challenging times. Above all, I would like to thank God for the determination and strength that kept me going, and for the wisdom in completing my thesis.

Each one of you has contributed to the success of my thesis. Thank you.

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CLAIMS TO ORIGINALITY

In the current study, the influences of children with disabilities on sibling well-being and sibling relationship quality were evaluated by examining two disabilities of varied nature. Instead of commonly compared disabilities autism and Down syndrome, selection of the two disabilities was based on their significant differences in functional implication. Two reasons for the variability in sibling disability research, particularly with intellectual disabilities, were addressed in the design of the current study. First, instead of multiple sources but different types of information on sibling well-being, the focus in the current study was on siblings' perspectives to evaluate differences with previous research. Second, instead of heterogeneous causes of intellectual disabilities in the sample, a specific microdeletion syndrome was examined. This is the first study where the effects of this microdeletion syndrome on sibling well-being and sibling relationship quality are examined.

CHAPTER I

Introduction

Siblings are an important part of most children's social worlds (Furman & Buhrmester, 1982). Approximately 80 percent of children in Europe and the United States grow up with siblings (Dunn, 1983, 2004). Siblings share common background and experiences with which even the closest and most familiar of friends cannot compete. The emotional bonds between siblings tend to be second in strength only to those between parents and children (Irish, 1964). Children's interest in their siblings is revealed not only in the frequency of their interactions, but also in the reciprocal quality of the relationship. This quality is reflected in the frequency of imitation between young siblings and emotional experiences that are multifaceted (Stoneman & Brody, 1993). The warmth and affection, close familiarity, and sharing of interests between siblings, means that siblings are particularly well placed to tease, annoy, and compete with one another (Stoneman & Brody, 1993). This range of experiences within sibling relationships is a feature that distinguishes them from other childhood relationships. Siblings play central roles in children's lives and are an important source of social support for children. They have a major influence on each other's development and this varies when one of the siblings has disabilities.

Having a sibling with disabilities has both negative and positive effects on the well-being of children. Major issues that have been the focus of sibling disability research include: behaviour problems, psychological issues such as depression, anxiety, and loneliness, and socially related outcomes such as self-concept and self-efficacy or locus of control. Siblings of children with disabilities are found to be at risk for adjustment

difficulties (Lamorey, 1999; Rossiter & Sharpe, 2001). They appear to be at an increased risk for aggression, behaviour problems, anxiety, and depression, when compared to siblings of typically developing children. They are lonelier, have more problems interacting with their peers, and experience more social maladjustment in school. At the same time, siblings also benefit positively from their experiences (Hannah & Midlarsky, 1985). The relationship between a child and his or her sibling with disabilities leads to increased assertiveness, resilience, helpfulness, and less self-centeredness (Abramovitch, Stanhope, Pepler, & Corter, 1987; Crnic & Leconte, 1986; Faux, 1993; Stoneman & Brody, 1993). The family roles taken on by siblings may foster maturity and a sense of responsibility (Faux, 1985; as cited in Faux, 1993).

When one child has a disability, children describe varied sibling relationships. While having positive attitudes such as admiration of their sibling, affection, closeness, and intimacy (Kaminsky & Dewey, 2001), siblings also interpret their sibling relationship as distressing (McHale & Gamble, 1988). They identify aggression as the most common stressor in the relationship (Bagenholm & Gillberg, 1991; Ross & Cuskelly, 2006). Sibling interaction is similar when compared to typically developing sibling dyads. Children with disabilities spend similar amount of time interacting with their siblings (Abramovitch, et al., 1987) and demonstrate similar patterns of social initiations and responses (Knott, Lewis, & Williams, 1995). However, an important difference between siblings of children with disabilities and siblings of typically developing children is the time spent in caregiving-related activities (Bagenholm & Gillberg, 1991; McHale & Gamble, 1989). Siblings of children with disabilities are consistently the caregiver in the relationship, resulting in a significant pattern regarding the type of roles played by the

typically developing sibling and the child with the disability (Abramovitch, et al., 1987; Brody, Stoneman, David, & Crapps, 1991; McHale & Gamble, 1989).

Growing up with a sibling who has a disability is a chronic stressor for children. Yet, every family and every sibling in a single family is different. The effects of sibling disability on children's well-being and sibling relationships are varied. There are many different factors, from individual sibling variables to family factors, which affect sibling development. Stress on siblings is also generated directly by the child with the disability (Wolf, Noh, Fisman, & Speechley, 1989), which is often a function of the diagnosis and prognosis of the child's condition (McCubbin & Patterson, 1983). For example, siblings of children with autism have more behaviour problems and adjustment difficulties than siblings of children with Down syndrome (DS) or intellectual disabilities (IDs; Fisman, et al., 2000; Rodrigue, Geffken, & Morgan, 1993). Furthermore, the nature of the disability affects how well siblings adjust and is a major factor influencing sibling relationship quality (Fisman, Wolf, Ellison, & Freeman, 2000). Siblings of children with autism have more negative perceptions of the sibling relationship compared to siblings of children with IDs (Bagenholm & Gillberg, 1991; Kaminsky & Dewey, 2001). Overall, when comparing between disabilities, investigators have often compared between siblings of children with autism and siblings of children with DS or IDs. Differences between the sibling groups are attributed to the greater intensity of difficulty generated by children with autism than children with DS or IDs (Gray & Holden, 1992), which create challenges and cause stress for siblings. One factor of the nature of a disability that determines the intensity or type of difficulties generated by the child with the disability is its functional implications (e.g., behavioural, cognitive, motor, or multiple; Lobato, Faust,

& Spirito, 1988).

In the current study, the influences of children with disabilities on sibling well-being and sibling relationship quality were evaluated by examining two disabilities of varied nature. Well-being was defined as indicative of a person's behaviours, as well as that person's satisfaction with himself or herself, and with his or her own behaviours (Moore & Keyes, 2003). Thus, a well-adjusted child would report having high self-esteem; few behavioural difficulties; and competence in everyday activities at school, at home and with peers. Siblings' experiences with children with Phelan-McDermid syndrome (PMS; also known as deletion 22q13 syndrome), and with children with attention deficit hyperactivity disorder (ADHD), were compared to siblings' experiences with typically developing children. PMS and ADHD were selected because of the differences in their functional implications. When comparing between autism and DS or IDs, the difference between siblings' experiences is a result of the greater intensity of difficulties generated by a child with autism. The differences between growing up with a sibling who has PMS and with a sibling who has ADHD is likely not to be based on differences in the intensity, but in the type of challenges presented by the child with the disability. Particularly, children with PMS consistently require much care and nurturance from family members, while children with ADHD have severe behavioural difficulties that create significant amounts of disruption and tension in the family.

PMS is a severe developmental disability with multiple serious functional implications. Children with PMS have moderate to profound cognitive impairment and severe expressive language impairment (Manning, et al., 2004; Phelan, et al., 2001), as well as various behavioural and social difficulties (Wilson, et al., 2003). In some children,

aggressive behaviours, skill deterioration and serious health-related issues are reported. These children are extremely dependent on family for daily functioning. PMS is a rare chromosomal disorder caused by a micro-deletion at the subtelomere of the 22nd chromosome, specifically 22q13.3. With the first commercially available genetic testing of PMS described in 1998, PMS has become recognized as a relatively widespread and under-diagnosed cause of IDs (Havens, Visootsak, Phelan, & Graham, 2004).

Majority of research done with PMS is focused on genetic and behavioural aspects, while little is known about its psychological and social effects on family functioning. The current study is the first where the effects of PMS on sibling well-being and sibling relationship quality are examined. However, some work has been done with IDs, which may in some ways be similar to PMS because of their shared implications on cognitive functioning. Children with IDs or PMS have moderate to profound cognitive impairment. Generally, siblings of children with IDs have equally positive sibling relationships as siblings of typically developing children (McHale, Sloan, & Simeonsson, 1986). Despite positive relationships, there is some support for negative effects of having a sibling with IDs on adjustment during childhood. Children who have siblings with IDs report higher levels of aggression (Lobato, Barbour, Hall & Miller, 1987) anxiety (Coleby, 1995; McHale & Gamble, 1989), depression (Lobato, et al., 1987; McHale & Gamble, 1989), and lower levels of general self-worth and social acceptance (McHale & Gamble, 1989). Boys with siblings who have IDs experience difficulty in school (Hannah & Midlarsky, 1999). On the other hand, there is evidence for the lack of differences in internalizing or externalizing disorders, as well as self-esteem and competence, between siblings of children with IDs and siblings of typically developing children (Carr, 1998;

Cuskelly & Gunn, 2006; Hannah & Midlarsky, 1999). Overall, findings regarding the well-being of siblings of children with IDs are mixed.

There are many possible reasons to account for the variability in findings, of which two were addressed with the design of the current study. First, the types of sources information are gathered from to determine the effects of having a sibling with IDs. Even though a multi-source approach is often used in designing sibling disability research, informants tend to be mothers and teachers (e.g., Carr, 1988). When perspectives of siblings are included, the type of data that is obtained from siblings is different from those obtained from the other informants. For example, siblings reported on levels of anxiety and depression, while mothers rated on the level of conduct problems (McHale & Gamble, 1989). Second, variability in the severity or condition of IDs sampled within and across studies. McHale and Gamble (1989), as well as Lobato and colleagues (1987), examined siblings of children with different kinds of IDs, while others were more specific in their focus. For example, Coleby (1995) focused on siblings of children with severe IDs, while Carr (1988) investigated only siblings of children with DS. In the current study, although a multi-source approach was not used, the focus was on siblings' perspectives to evaluate differences with previous research. In addition, instead of heterogeneous causes of IDs in the sample, PMS is a specific microdeletion syndrome that is one of the many causes of IDs.

While PMS has multiple serious functional implications, the functional implications of ADHD are primarily and predominantly behavioural. ADHD symptoms arise in early childhood and relatively chronic throughout the life span. In the *Diagnostic and Statistical Manual of Mental Disorders, 4th edition, Text Revision* (DSM-IV-TR), the

essential feature of ADHD is defined as "a persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequently displayed and more severe than is typically observed in individuals at a comparable level of development" (American Psychiatric Association, 2000, p.85). The core characteristics of ADHD are inattention and impulsivity or hyperactivity, which present in varying degrees of severity. They are manifested mostly in behavioural symptoms that interfere directly with achievement of developmental tasks, academic performance, and social relationships (Cantwell, 1996). ADHD is a serious and stigmatizing behavioural disorder affecting between 3% and 6% of the child and adolescent population in the United States (APA, 2000).

Due to the disruptive and unpredictable behaviours of children with ADHD, Barkley (1990) suggested that sibling relationships are likely to be tense and strained. Siblings of children with ADHD grow tired of trying to understand and live with such behaviours. This is supported by the literature, with consistent reports of negative emotions expressed by siblings (Baldwin, Brown, & Milan, 1995; Jones, Welsh, Glassmire, & Tavegia, 2006; Kendall, 1999). Children who have brothers with ADHD describe their family life as full of never-ending disruptions, as being chaotic and exhausting (Kendall, 1999). These children often feel powerless and resigned to their victimized situations. They resent their parents for minimizing the seriousness of the aggression by their brothers and perceiving the tense and strained relationship as an aspect of normal sibling rivalry. Children are jealous of the greater amount of attention their siblings with ADHD receive from their parents (Jones, et al., 2006).

Besides effects on family and sibling dynamics, there are psychological effects on siblings of children with ADHD. Retaliatory aggression is common among siblings of

children with ADHD (Kendall, 1999). Younger siblings of children with ADHD tend to mimic the disruptive behaviours they observe. When compared to siblings of typically developing children, siblings of children with ADHD report higher levels of anger (Jones, et al., 2006). On the other hand, both groups of siblings report similar levels of anxiety and depression. Yet, as a result of the cumulative negative effects of ADHD on families, siblings and parents consistently identify a need for more intervention and support related to the disruption, victimization, and exhaustion they experience (Kendall, 1999).

Overall, sibling relationship quality is likely to be significantly different between siblings of children with PMS and siblings of children with ADHD. Siblings of children with PMS may report relationship qualities that relate to their caregiving role, and siblings of children with ADHD may have negative perceptions or feelings about their sibling relationships due to the behavioural difficulties of their brother or sister with ADHD. Despite the possible differences in sibling relationship quality between the two disability groups, a higher level of aggression is a common difference between siblings of children with IDs or ADHD and siblings of typically developing children. Findings on other aspects of well-being (i.e., anxiety, depression, behaviour and school problems) of siblings of children with IDs are mixed, while those of siblings of children with ADHD are similar, when comparing with siblings of typically developing children. Thus, sibling well-being in both disability groups (i.e., PMS and ADHD) may be similar in the aggression aspect, while different in other aspects.

Children with disabilities can consistently be a stressful situation for siblings. This can be reflected in sibling adjustment outcomes or in the quality of sibling relationships. In this current study, siblings of children with PMS and siblings of children with ADHD

were examined and compared to siblings of typically developing children. The aim is twofold: (a) to evaluate the differences between two disabilities that have significant differences in their functional implications, and (b) to compare and contrast with previous research.

CHAPTER II

Review of the Literature

The Influence of Siblings during Childhood

Throughout childhood, siblings spend a significant amount of time together. By their first birthday, children spend almost as much time interacting with their siblings as with their mothers (Dunn, 1983); by middle childhood, children are still spending more time with their siblings than in any other social context (McHale & Crouter, 1996). In early childhood, siblings contribute to various psychosocial and behavioural outcomes of their fellow sibling. Throughout the lifespan, siblings are important agents of various areas of the social development of their fellow sibling including peer group affiliation, identity formation, socialization styles, and mode of emotional expression (Brody, 2004; Buhrmester & Furman, 1990). Siblings affect the development of empathy and understanding of emotion (Tucker, Updegraff, McHale, & Crouter, 1999), along with prosocial and antisocial behaviours (Bank, Patterson, & Reid, 1996). Both conflict and supportiveness in sibling interactions are related to children's psychosocial competence such as perspective-taking and consideration of other people's feelings and beliefs (Youngblade & Dunn, 1995). Siblings also serve as sources of mutual emotional and social support during difficult times. They can become closer and more supportive in the face of stress and family transitions, such as parental illness and hospitalization (Dunn, 1996).

Childhood Sibling Relationships

Sibling relationships are one of the most powerful and longest lasting of human relationships. Siblings share a unique and important relationship with one another within

the family unit (Knott, et al., 1995). They are important in providing a context for the socialization of interpersonal skills in early childhood. Some of the earliest lessons that children learn about sharing, rivalry, and compromise are learned through sibling relationships that involve cooperation, competition, and negotiation. Interaction between siblings is characterized by role asymmetries, compared to the egalitarian quality between peers. Sibling relationships are typically emotionally ambivalent, making it different than other childhood relationships. Specifically, in addition to the affection and intimacy in sibling relationships, there is a considerable amount of conflict and disagreement, even more so than in peer relationships (DeHart, 1999). Disputes between siblings are thought to be unique and particularly significant because they are more frequent and intense than in other relationships (Dunn & McGuire, 1991). In fact, it is rare that sibling relationships are characterized by high levels of warmth and support, and low levels of conflict (Brody, 1998). Individual differences in these intense positive and negative emotions toward siblings are moderately to highly stable over middle childhood and into adolescence (Dunn, 1996), despite a decrease in the frequency of interactions between siblings as they get older (Dunn, Deater-Deckard, Pickering, & Golding, 1999).

There is a wide range of individual differences in how well siblings get along. Among many different family processes, an important implication of the individual differences in sibling relationships is parent-child relationship (Brody, 1998). Sibling relationships are moderated by the quality of the relationship between parent and child (Brody, Stoneman, & Gauger, 1996), as well as that between parents (Dunn, et al., 1999). More fundamentally, stress created by conflict between parents or between parent and child can promote animosity and conflict in the sibling relationship (Brody, 1998;

Hetherington, et al., 1999). Aside from such family processes, individual characteristics like temperament and personality are also linked with sibling relationship quality (Stocker, Dunn, & Plomin, 1989). Although sibling animosity and conflict are found to be influenced by differences in sibling type (i.e., biologically related siblings and step-siblings, and unrelated step-siblings) and family type (i.e., intact families, single-parent households, and re-partnered families), sibling warmth is not (Deater-Deckard, et al., 2002). Rather, warmth in the sibling relationship may be related to individual sibling factors such as empathy and emotion understanding of each child in the sibling dyad (Dunn, 1993). Within a sibling dyad, both children can describe very different sibling relationship experiences and have different opinions on the quality of the relationship that they share (Dunn & Plomin, 1990). Although there is good sibling agreement between sibling dyads regarding the level of sibling warmth (Epkins & Dedmon, 1999), there are some aspects of the relationship that siblings tend not to agree on, particularly regarding the sources and levels of conflict (McGuire, Manke, Eftekhari, & Dunn, 2000).

Sibling relationship quality is uniquely associated with the well-being of children. Warm and loving relationships between siblings are related to low levels of conduct disorder, loneliness in children; and high self-esteem (Jenkins & Smith, 1990; Stocker, 1994). Greater sibling negativity and lower sibling positivity are associated with higher levels of externalizing and internalizing problems (Deater-Deckard, et al., 2002). In particular, more rivalry and less warmth between siblings have been linked to child depression and antisocial behaviour problems (Dunn, Slomkowski, Beardsall, & Rende, 1994). Sibling conflict and aggression are linked to child adjustment difficulties, such as aggressive behaviour (Bank, et al., 1996), academic problems and poor friendships at

school (Berndt & Bulleit, 1985). Poor relationships between siblings are associated with high levels of fear and anxiety in the younger sibling (Dunn, et al., 1994). Furthermore, the covariation between sibling conflict and child behavioural and emotional problems exists across different types of families (i.e., intact families, single-parent households, and re-partnered families; Hetherington, et al., 1999).

When a sibling has a disability, siblings' influence on development and childhood sibling relationships will be markedly affected. Family life often becomes centered on this child, altering family environment and parents' relationships with typically developing siblings, among many other family variables. In this review, the focus is to examine the effects of disability on sibling development and sibling relationship quality. Thus, empirical findings on the effects of sibling disability on the well-being of children and sibling relationship quality are summarized. In particular, both positive and negative effects on development, as well as children's descriptions of the sibling relationship and sibling interaction quality are described. Finally, a model for the impact of sibling disability during childhood is discussed, focusing on three key factors: the nature of the disability; siblings' experiences, feelings and needs; and other family factors.

Effects of Sibling Disability

The Well-Being of Children

A population at risk. There is a longstanding concern that siblings of children with disabilities may be at risk for developmental problems, especially in terms of adjustment and behavioural difficulties (Faux, 1993; McKeever, 1983; Rossiter, 2001). These children are believed to be a "population at risk" (Hannah & Midlarsky, 1985, p.510; McKeever, 1983, p.210) because their sibling interactions are impaired by having a

brother or sister with disabilities. Moreover, children may experience negative interaction with their peers due to their sibling's disability and disruptions to social activities (Lobato & Kao, 2002). Excessive caretaking responsibilities and maturity demands are placed on children with disabled siblings by their parents (Bendor, 1990). Children may be expected by parents to care, protect, and supervise their disabled sibling (Kendall, 1999). These extra responsibilities may take away from children's time outside the home with friends, which is important in facilitating the development of cognitive, social, and affective competencies. Some children may also resent the greater work burden they are required to assume and find it unreasonable and tiring (Kendall, 1999).

Children with disabilities disrupt family life; therefore, reorganization of family structure and functions are often necessitated (Howlin, 1988; Morgan, 1988). Regardless of whether the child with disabilities is the youngest in the family, he or she is the most dependent, and consistently receives the most care and attention among all the other children in the family (McKeever, 1983; Sullivan, 1979). Overall, such alterations in family and social experiences, in children's family roles, and in the family order may give rise to the anger and jealousy toward the sibling with the disability (Baldwin, et al., 1995; Jones, et al., 2006), as well as the high levels of family conflict (Nixon & Cummings, 1999).

In a review of 33 studies concerning siblings of children with chronic illnesses or disabilities, all of which included control groups for comparison, "60-70% of the controlled studies that were reviewed indicated some level of increased risk" (Lamorey, 1999, p. 82). Furthermore, in a meta-analysis of 25 studies and 79 effect sizes, a negative effect of sibling disability that could not be attributed to a publication bias or some other

artefact such as gender and age of the siblings was established (Rossiter & Sharpe, 2001). Siblings of children with disabilities perform more poorly on a variety of measures of well-being compared to siblings of typically developing children. They are also found to have more negative adjustment outcomes and behavioural problems. In the majority of research, parents or teachers complete various behavioural scales, and are more likely to perceive and report difficulties in siblings of children with disabilities compared to siblings of typically developing children. Siblings of children with disabilities appear to be at a higher risk for externalizing problems, such as aggression (Summers, White & Summers, 1994), behaviour problems (Fisman, Wolf, Ellison, & Freeman, 2000; Rodrigue, et al., 1993), and conduct disorders (Bagenholm & Gillberg, 1991; Cuskelly & Gunn, 1993).

Differences in the psychological and social well-being of siblings of children with disabilities and siblings of typically developing children are also well-established. Siblings of children with disabilities, particularly girls (McHale & Gamble, 1989), have a higher risk for emotional disorders and internalizing behaviours, including anxiety and depression (Breslau & Prabucki, 1987; Coleby, 1995; Gold, 1993; Fisman, et al., 1996; Ross & Cuskelly, 2006) and become more symptomatic (Breslau & Prabucki, 1987) relative to siblings of typically developing children. Siblings of children with various disabilities report higher levels of anger, particularly anger that is longstanding rather than a current emotional state at the time of participating in the study (Jones, et al., 2006). Using the Harter's Perceived Competence Scale, McHale and Gamble (1989) reported low self-competence in 31 school-age siblings of younger children with developmental disabilities. Siblings of children with disabilities also score lower on measures of social

acceptance and conduct (McHale & Gamble, 1989). They are less popular and have fewer friendships with other children. According to sociometric friendship reports, siblings of children with disabilities are more socially isolated than siblings of typically developing children (Andersson, 1988; Bagenholm & Gillberg, 1991; Breslau & Prabucki, 1987). They are lonely and have problems interacting with their peers. They experience social maladjustment in school (Gold, 1993). At school, siblings of children with DS have an increased frequency of peer difficulties and temper tantrums (Bagenholm & Gillberg, 1991).

Contrary evidence. Despite these extensive findings on sibling disability and its negative effects on various aspects of functioning or well-being, other investigators have found minimal evidence to support that siblings are at an increased risk of behavioural problems or adjustment difficulties (Carr, 1988; Cuskelly & Gunn, 2006; Hannah & Midlarsky, 1999). Siblings of children with autism and with DS are well-adjusted psychosocially and report low levels of loneliness (Kaminsky & Dewey, 2002). Siblings of children with autism have high self-concepts and are well-adjusted academically and behaviourally as rated by parents and teachers (Mates, 1990). The same level of self-esteem and competence are found in children who have siblings with IDs (Hannah & Midlarsky, 1999) or with developmental disabilities (Lobato, et al., 1987) and typically developing siblings. In a study consisting of two-parent families living in a large Midwestern city, differences in behavioural problems, social competence, and self-esteem were not found between siblings of children with disabilities and siblings of typically developing children (Bischoff & Tingstrom, 1991).

Opportunity for positive growth. The presence of a child with disabilities in a

family does not necessarily always have negative implications for siblings. There are positive aspects of emotional and psychological development related to such an experience, which include increased assertiveness, helpfulness, and resilience; and less self-centeredness (Abramovitch, Stanhope, Pepler, & Corter, 1987; Crnic & Leconte, 1986; Faux, 1993; Stoneman & Brody, 1993). The family roles taken on by children who have siblings with disabilities may foster maturity and a sense of responsibility (Faux, 1985; as cited in Faux, 1993). Through having extra responsibilities such as taking care of their sibling, or helping with household tasks, these children's feelings of social competence and self-esteem are enhanced (Hollidge, 2001). An older brother of a child with autism writes, "Being in a family with someone 'special' to take care of not only makes you mature faster but gives you more experience and a better understanding of how to handle people as well" (Sullivan, 1979, p. 290). Siblings of children with IDs have been found to have greater empathy and more appreciation for people with disabilities (Rossiter & Sharpe, 2001). As adults, siblings of individuals with IDs are more inclined to seek careers in the helping professions (Cleveland & Miller, 1977; Marks, Matson, & Barraza, 2005; Sullivan, 1979). The experience of disability in the family allows siblings to develop insight into the difficulties of others, and develop tolerance for people different than themselves (Crnic & Leconte, 1986).

Sibling Relationship Quality

Children's descriptions of the relationship. Even when one child has a disability, children have positive attitudes and feelings about their sibling relationship. Compared to typical sibling dyads, children report greater admiration of their sibling with the disability. They also reported greater affection, as well as less competition and quarrelling in the

relationship (Kaminsky & Dewey, 2001). Siblings of children with DS report having higher levels of closeness and intimacy in their sibling relationships than siblings of typically developing children. Although reporting intense positive attributes regarding their sibling relationships, these relationships are not without their negative emotions. Within the relationship, the most common type of stressor identified by siblings is aggression within the relationship (Bagenholm & Gillberg, 1991; Ross & Cuskelly, 2006). Siblings of children with various disabilities often interpret their sibling relationship as distressing (McHale & Gamble, 1988). They also view that they have larger and more challenging problems than their peers with typically developing siblings.

When comparing between siblings of children with IDs, siblings of children with autism, and siblings of typically developing children, there were no differences between the feelings of positivity that all three groups of siblings experienced towards their sibling relationships (McHale, et al., 1986). However, siblings of children with IDs and siblings of children with autism tend to have greater variability in their responses. These siblings describe either very positive or very negative relationships with their sibling who has a disability, while siblings of typically developing children tend to have less varied responses.

Positive descriptions of the sibling relationships are associated with well-developed coping skills, understanding of the disability, and positive responses from parents and friends. Conversely, negative feelings were related to worries about their sibling's future, feelings of rejection toward their sibling's role as a member of the family, and perception of parental favouritism. Furthermore, regardless of actual or perceived favouritism of one child over another by parents, both types of favouritism are associated

with more reports of negativity and conflict in the sibling relationship (Brody, et al., 1996).

Quality of sibling interactions. Both observational techniques and questionnaires have been used to examine sibling dyads with a child who has a disability, to understand the influence of sibling disability on the quality of sibling interactions during childhood. Overall, sibling interaction is high even though sibling dyads include children with cognitive or developmental disabilities. Compared to normally developing sibling pairs, there are similarities in the interactions between a typically developing child and his or her sibling who has a disability (Abramovitch, et al., 1987; Knott, Lewis, & Williams, 1995). Children with disabilities such as DS are found to spend similar amounts of time interacting with their siblings and engaging in similar types of interactions as typically developing sibling pairs (Abramovitch, et al., 1987). The patterns of social initiations and responses demonstrated are comparable to those observed between typical sibling dyads (Knott, et al., 1995).

Despite the overall similarities, several differences are reported. Siblings of children with disabilities are observed to be more prosocial and nurturing toward their affected sibling than siblings of typically developing children. They report that they spent more time in caregiving activities (McHale & Gamble, 1989). Particularly, girls recall spending almost twice as much time each day in caregiving activities as did boys. However, while reporting that they have to assist more often at home than siblings of typically developing children (Bagenholm & Gillberg, 1991), these siblings do not necessarily have more contact with their brothers or sisters with disabilities compared to typically developing sibling dyads (McHale & Gamble, 1989). As a result of their

caregiving role, there is a consistent and significant pattern regarding the roles that are played by the typically developing sibling and the child with the disability. Role relationships in sibling dyads when one sibling has a developmental disability are asymmetrical with the typically developing sibling assuming the dominant role of teacher and leader (Abramovitch, et al., 1987; Brody, et al., 1991; McHale & Gamble, 1989). Children with disabilities, regardless of their birth order, are more likely to show interactions with their sibling that were more typical of younger children, such as imitative behaviours.

A Model for the Impact of Sibling Disability during Childhood

There is tremendous variability in the types of stressors children experience in their lives and children's ability to cope with these stressors. There is often no simple relationship between disability and sibling well-being or the sibling relationship. Instead, the effects of sibling disability are complex. Sibling relationships are mediated by many different factors, which determine how children are affected by the presence of siblings with disabilities (Crnic & Leconte, 1986). In the following model, some salient factors are grouped into three main categories and described: the nature of the disability; siblings' experiences, feelings, and needs; and family variables.

Nature of the Disability

Diagnosis is found to consistently affect family functioning and well-being. In examining a model of coping, resources, and stress, McCubbin and Patterson (1983) found that ambiguity in the diagnosis, and therefore prognosis, of a child's condition significantly contributed to family stress. Parents report that the family life is more disrupted and stressed when they have a child with autism than a child with DS. Autism

is a severe developmental disorder that presents extreme challenge for the family unit (Gray & Holden, 1992). Children with autism frequently engage in behaviours that are potentially disruptive to family life such as aggression, hyperactivity, impulsiveness, obsessive ritualistic behaviours, self-injury, and temper tantrums (Gray & Holden, 1992). On the other hand, children with DS represent a group of individuals with IDs who have far fewer social or communication deficits than those associated with autism. The greater intensity of difficulty generated by children with autism versus children with DS, higher levels of parenting stress, and sense of lack of competence in parenting, account for the different parental experiences (Wolf, Noh, Fisman, & Speechley, 1989). These challenges and stress are likely to spill over into family environment and affect sibling well-being and the sibling relationship.

Parallel to findings on the effects of disability on family life, diagnoses similarly have different effects on siblings (Cuskelly, 1999). Siblings of children with autism have more internalizing and externalizing behaviour problems when compared to siblings of children with IDs, as rated by their mothers on the Child Behaviour Checklist (Rodrigue, et al., 1993). The internalizing dimension includes inhibited, shy-anxious personality problems, while the externalizing dimension includes aggressive, acting-out behaviours. Siblings of children with autism demonstrate more adjustment difficulties than siblings of children with DS (Fisman, et al., 2000). Over a 3-year period, teachers consistently identify higher levels of internalizing difficulties in siblings of children with autism, compared with siblings of children with DS (Fisman, et al., 2000). They are also found to be at a greater risk for internalizing behaviours compared to siblings of children with IDs and of typically developing children (Fisman, et al., 1996). Siblings of children with

autism are more negative with respect to their perceptions of the sibling relationship compared to siblings of children with IDs (Bagenholm & Gillberg, 1991; Kaminsky & Dewey, 2001).

More fundamentally, it is likely that different characteristics of a disability affect sibling well-being and the sibling relationship. Some of the ways that diagnoses of disabilities differ include the aetiology (e.g., unknown, genetic, or sociocultural), visibility (e.g., physical appearance overtly affected or physical appearance not affected), and functional implications (e.g., behavioural, cognitive, motor, or multiple) of the disability (Lobato, Faust, & Spirito, 1988). For example, more caregiving activities are described among dyads that have siblings who have disabilities with severe functional implications (McHale & Gamble, 1989). Better sibling relationships are noted among children with less serious disabilities (Stoneman, Brody, Davis, Crapps, & Malone, 1991). On the other hand, children's descriptions of living with the chronic behavioural disorder ADHD are highly negative (Kendall, 1999). In addition, IDs pose more difficulties for families and siblings than physical disabilities (Stoneman et al., 1991). Overall, more stressors present more disruption in the family, with differing effects on sibling well-being and the sibling relationship.

Siblings' Experiences, Feelings, and Needs

The focus of early studies tended to examine whether younger siblings were affected differently than older siblings because of possible variability in their experience of sibling disability. This was based on the beliefs that older siblings have lived their earlier years in a typical family environment, while younger siblings, especially those in a close age-spacing relationship, are born into families marked by the presence of a child

with disabilities. Based on these beliefs, two hypotheses have been investigated: (a) the problems of younger siblings are different from, but not necessarily more severe than those of older siblings; and (b) younger siblings are at a greater risk of maladjustment than older siblings. Although findings of such research are mixed, it seems that younger siblings have a greater overall risk of adjustment difficulties than older siblings, while having similar problems. Younger siblings, specifically those in close age-spacing relationship to the child, were found to score higher on psychological impairment than older siblings (Breslau, 1982). Younger siblings are more aggressive, irritable, withdrawn, and depressed than older siblings (Lobato, et al., 1987).

From examining within-family differences of sibling experiences, there has been a shift in the focus of research towards understanding siblings' overall feelings and needs. By doing so, researchers explain that educators and professionals who work with siblings become aware of their experiences through their feelings and needs, and are better equipped to intervene appropriately. Many children who are involved in taking care of their sibling feel they have a special role in their sibling's life and in the family (Kendall, 1999). At the same time, because of the amount of care and attention their siblings get, some children feel overlooked and ignored much of the time, and feel that they are expected to be invisible in the family – not requiring too much help or attention from their parents (Kendall, 1999). A child described this role as that of a "pedestrian – a person who just walks through the family and takes up space but is not really noticed" (Kendall, 1999, p.131). On the other hand, children may feel guilty about their need for extra attention from their parents or their feelings of rivalry toward a sibling who has special needs (Crocker, 1981).

Children with brothers who have ADHD often feel manipulated and victimized by their siblings' overt and verbally aggressive acts, and angry at the lack of appropriate parental response to their experience (Kendall, 1999). They view themselves as unworthy of attention, love, or care, which is further reinforced and experienced as parental rejection (Kendall, 1999). Children feel sad about what they cannot have because of the disability – a normal family, normal childhood, happy family outings, and an identity not associated with being the sibling of a child with disabilities (Kendall, 1999). Anger and jealousy are reported by the children (Baldwin, et al., 1995; Jones, et al., 2006) for various reasons, from confusion and tension regarding family roles (Chesler, Allswede, & Barbarin, 1992) to perceived parental partiality. Sometimes, children feel burdened or pressured by the need to excel or overachieve to make up for their siblings' deficits (Jones, et al., 2006; Seligman & Darling, 1997). Siblings of children with developmental disabilities score high in their need for achievement.

Finally, some of the issues consistently raised by siblings of children with special needs include the following (Lobato, 1990):

- Restrictions on family activities
- Stressful situations at home
- Worry about bringing friends home
- Guilt about being angry with a brother or sister with a disability
- Embarrassment about going out with their brother or sister with a disability
- Teasing or bullying about their brother or sister with a disability
- Protectiveness about a brother or sister
- Concerns about the future

Family Variables

Children often can do little to control the events that occur in their lives. Instead, they attempt to alter their reactions to such situations. Understanding the coping mechanisms used by children who have a sibling with a disability helps to explain how well they adjust and adapt to their family situation. Two kinds of coping strategies show a consistent pattern of association with adjustment and relationship measures: other-directed cognitions and self-directed cognitions (Gamble & McHale, 1989). There is a trend for siblings of children with disabilities to direct their thoughts and feelings onto other people (i.e., other-directed cognitions) more frequently to cope with stressful sibling situations. For example, these children describe situations such as thinking one's brother is a creep, wondering why a sister has to act that way, or wondering why one's parents do not do something to get the sibling to stop behaving a certain way. However, this form of coping is a less effective coping strategy for dealing with stressors associated with the sibling relationship, and is associated with poor adjustment (Gamble & McHale, 1989; Roeyers & Mycke, 1995). On the other hand, children who are able to direct their thoughts and feelings onto themselves (i.e., self-directed cognitions) report low levels of depression and anxiety (Gamble & McHale, 1989). These children exert or attempt to exert more control over their own reactions to stressors by trying to ignore the problem, calming themselves, or reflecting on one's role to think of ways to solve the problem (Gamble & McHale, 1989). For example, counting to ten and thinking about how to keep the problem from happening again, are descriptions by siblings who actively try to cope with the negative feelings that arise during stressful situations.

Although examining the coping skills of siblings may be helpful for

understanding sibling well-being, in reality, parent-related characteristics such as parenting style shape siblings' coping skills. Parents' level of acceptance of the disability and their ability to adjust and cope is important in influencing siblings' reactions to the disability. Increases in parental stress may have concomitant or residual effects on siblings in the family (Morgan, 1988). Parental burnout and depression especially in the absence of adequate resources and support, or strained marital relationships affect sibling well-being. Furthermore, siblings of children with disabilities tend to model parents who demonstrate depression, anger, and resentment. Conversely, siblings tend to be positively affected by parents who model open communication and problem-solving techniques (Siegel & Silverstein, 1994). When mothers are better adjusted, they are more aware of the attitudes and perceptions of siblings (Taylor, Fuggle, & Charman, 2001). Other parent-related factors include: the amount of information provided by parents to siblings on the nature of the illness or disability; the extent to which siblings are involved in communication and decision-making in the family; the extent to which the disability and child's needs monopolizes parental time and attention, as well as family resources; and the overall accommodations parents have made (Seligman & Darling, 1997). These factors interact to determine the nature of the family environment, particularly how much siblings feel they belong in the family, and are accepted as unique and contributing members of the family.

Parents tend to keep information from their children because they want to protect them, but this can make children feel excluded (Dodd, 2004). Siblings need to feel that they are involved in events and developments (Atkinson & Crawforth, 1995). Most siblings also worry about the future and health of their brother or sister (Pit-Ten Cate &

Loots, 2000). Regardless of the age of the child, parent communication about the disability is important for well-being. Open communication between parents and children concerning the disability and its ramifications are thought to help to decrease anxiety, and increase their understanding and cooperation. Howlin (1988) noted that the extent and openness of parental communication about the disability appeared to be a major factor in adjustment outcomes. In the case of sibling-focused interventions, increased knowledge about the disability improved the well-being of the siblings (Lobato & Kao, 2002). Moreover, direct and clear information and supportive reassurance from parents determined how well siblings adjusted to the child with disabilities (Rolland, 1994).

Conclusion

When there is disability in the family, its effects on sibling well-being and the sibling relationship are multifaceted. In the literature, there is evidence that supports effects that range from various aspects (behavioural, psychological, and/or social) of negative adjustment, typical development, and positive outcomes. There is also similar variability in terms of the effects of sibling disability on the sibling relationship. Thus, sibling disability is not consistently or necessarily associated with sibling adjustment difficulties and problems within the sibling relationship. In conclusion, many factors determine how the chronic stressor of sibling disability affects the lives of children, such as the nature of the disability; siblings' experiences, feelings and needs; and family factors, such as sibling coping skills and parent-related characteristics.

Rationale for Current Study

Children with disabilities often live with one or more brothers and sisters. Although siblings of children with disabilities are not targeted to receive specialized

services, it is important for educators and professionals to be knowledgeable of these children's unique experiences and potential risk for adjustment difficulties. Studying siblings of children with PMS and siblings of children with ADHD increases understanding of the effects of severe IDs like PMS, and psychological or behavioural disorders like ADHD on sibling well-being and sibling relationship quality. The generation of such an understanding can lead to improved intervention and therapy strategies to either enhance or reduce the short-term and long-term effects of living with a brother or sister with disabilities. Particularly, focusing on dynamic aspects of the sibling relationship (e.g., relationship qualities) is more likely to contribute to changing or improving the effects of sibling disability than research into status variables such as age and birth-order. Dynamic variables are open to change and therefore provide the foci for interventions (Cuskelly, 1999).

Objectives of Current Study

Two main research topics, sibling well-being, and sibling relationship quality, were developed to understand the effects of disability on siblings, as well as to compare between two disabilities with significantly different functional implications (i.e., PMS and ADHD). Since the effects of disability on sibling well-being and sibling relationship quality are mixed, there were no specific predictions on the types of differences that will be found between the three sibling groups (i.e., siblings of children with PMS, siblings of children with ADHD, and siblings of typically developing children). Rather, the objective of the current study was to identify areas of similarities and differences between the three sibling groups, which were determined accordingly:

1. Sibling well-being, which was examined in terms of children's behavioural

functioning and self-concept, as indicated by their scores on the Behaviour Assessment System for Children, 2nd Edition, Self-Report (BASC-II SRP) and Self-Perception Profile for Children (SPPC; Harter, 1985) respectively.

2. Sibling relationship quality, which was assessed using the Sibling Relationship Questionnaire (SRQ; Furman & Buhrmester, 1985). The SRQ evaluates sibling relationship in terms of the qualities Warmth or Closeness, Relative Status or Power, Conflict, and Rivalry, which are derived from 12 scales.

CHAPTER III

Method

Participants

Participants were 50 siblings between the ages of 8 and 13 years. The age range of the participants was limited by the measures that were used to collect the data. There were 19 siblings of children with PMS, 11 siblings of children with ADHD and 20 siblings of typically developing children. For the disability groups, the participating sibling was the sibling nearest in age to the child with the disability, and was within 6 years of that child. Socio-demographic characteristics for siblings are presented in Table 1. Highest attained maternal education level was obtained (see Table 2).

Table 1

Socio-demographic Characteristics of Siblings

	Group		
Variable	PMS	ADHD	Typically Developing
Age of Siblings, *M* (*SD*)	10.2 (1.86)	11.0 (1.75)	10.6 (1.96)
Gender, *n* (%)			
Female	5 (26.3)	11 (55.0)	4 (36.4)
Male	14 (73.7)	9 (45.0)	7 (63.6)
Position in relation to child with disability or typically developing child, *n* (%)			
Older	15 (78.9)	7 (35.0)	4 (36.4)
Younger	4 (21.1)	13 (65.0)	7 (63.6)
Age Gap, *M* (*SD*)	3.68 (1.77)	2.27 (1.19)	3.45 (2.52)

Table 2

Maternal Education Information

Sibling Group	Highest Education Attained, *n* (%)				
	Secondary	Post-Secondary	College or University	Graduate	Total
PMS	2 (10.5)	1 (5.3)	14 (73.7)	2 (10.5)	19 (100.0)
ADHD	1 (9.1)	1 (9.1)	6 (54.5)	3 (27.3)	11 (100.0)
Typical	4 (20.0)	3 (15.0)	11 (55.0)	2 (10.0)	20 (100.0)

Recruitment

Phelan-McDermid syndrome. When a child is first diagnosed with PMS, the family is given contact information for membership in the 22q13 Deletion Syndrome Support Group. Among the services provided are an electronic message board, a newsletter, and the biennial 22q13 Deletion Syndrome Support Group conference. Participating families were recruited through the electronic message board where the proposed research was described and participation welcomed, by word of mouth from parent-leaders in the Support Group, and during the Support Group conference. Participating families were from Canada, the United Kingdom, and the United States.

Attention deficit hyperactivity disorder. Participating families were recruited via emails describing the research, which were sent to various ADHD parent support groups throughout Canada. Participating families were from Alberta, Ontario, and Quebec.

Typically developing children. Participating families were recruited via advertisement describing the research, which were placed in the university, in a local

family magazine, and on online postings, welcoming participation from families throughout Montreal and other parts of Canada. Participating families were from Ontario and Quebec.

Measures

Sibling well-being and sibling relationship quality were assessed for all three groups of children. Data were collected using the following measures:

1. Behaviour Assessment System for Children, Second Edition, Self-Report (BASC-2 SRP; Reynolds & Kamphaus, 2004)
2. Self-Perception Profile for Children (SPPC; Harter, 1985)
3. Sibling Relationship Questionnaire (SRQ; Furman & Buhrmester, 1985)

Behaviour Assessment System for Children, Self-Report

The BASC-2 SRP is used to evaluate the personality and self-perceptions of children (Reynolds & Kamphaus, 2004). It is multidimensional in that it measures numerous aspects of behaviour and personality, including clinical and adaptive dimensions. It consists of statements that respondents answer in one of two ways. Some of the items (presented first on the record form) require a *True* or *False* response, while others require a rating on a four-point scale: *Never*, *Sometimes*, *Always*, or *Almost always*.

The SRP has forms at three age levels of which two were used in the current study: *child* for participants between the ages of 8 and 11, and *adolescent* for participants 12 and 13 years. These levels overlap considerably in scales, in structure, and in item content. The *child* and *adolescent* forms have identical composite scores with the following scales in common: School Problems (Attitude to School and Attitude to Teachers); Internalizing Problems (Atypicality, Locus of Control, Social Stress, Anxiety, Depression and Sense of

Inadequacy); Inattention/Hyperactivity (Attention Problems and Hyperactivity); Personal Adjustment (Relations with Parents, Interpersonal Relations, Self-Esteem, and Self-Reliance); and an overall composite score – the Emotional Symptoms Index. For each age, combined-sex group, separate-sex group, and clinical group norms are provided for obtaining normative scores for both scale and composite scores. In the current study, separate-sex group norms were used. Scores were reported as t-scores ($M = 50$ and $SD = 10$).

The BASC-2 scales and composites have high internal consistency and test-retest reliability. For separate-sex groups, the reliabilities of the composite scores range from .83 to .96 (Reynolds & Kamphaus, 2004) for all three age levels. Test-retest reliabilities for the composite scales are generally in the upper .70s to low .80s. For the individual scales, the median test-retest reliabilities are .71 and .75 at the *child* and *adolescent* levels respectively. The SRP composites were based on factor analyses (confirmatory factor analysis and principal-axis analysis) of the scale intercorrelations at the three different age levels and on prevailing behaviour and psychological theory.

For the purpose of the study, the following clinical scales were investigated: (a) Social Stress, (b) Anxiety, and (c) Depression. Particularly, the Social Stress scale measures the difficulty experienced in establishing and maintaining relationships with others. All four adaptive scales were also investigated: (a) Relations with Parents, (b) Interpersonal Relations, (c) Self-Esteem, and (d) Self-Reliance. The Self-Reliance scale measures the confidence in one's ability to make decisions, solve problems, and be dependable. The selection of these scales was based on findings of previous literature on siblings of children with disabilities.

The composite scales investigated were: (a) School Problems, (b) Internalizing Problems, and (c) Inattention-Hyperactivity. The Emotional Symptoms Index is described as a global indicator of serious emotional disturbance, with particular emphasis on internalizing problems (Reynold & Kamphaus, 2004). In the current study, this composite was not investigated as it is tends to be used for assessment and differential diagnosis. Moreover, for the purpose of the current study, investigating the Internalizing Problems composite was considered sufficient. The Personal Adjustment composite was also not investigated since all comprising scales were already investigated individually.

Self-Perception Profile for Children

The SPPC measures children's perceptions of themselves. It evaluates children's domain-specific judgements of their competence and a global perception of their self-worth (Harter, 1985). The SPPC has six domains: Scholastic Competence, Social Acceptance, Athletic Competence, Physical Appearance, Behavioural Conduct, and Global Self-Worth. Scholastic Competence reflects the child's perception of his or her competence or ability in school. Social Acceptance measures the degree to which the child is accepted by his or her peers or feels popular. Athletic Competence taps content relevant to sports and outdoor games. Physical Appearance reflects the degree to which the child is happy with the way he or she looks. Behavioural Conduct measures how much children act the way they are supposed to do, avoid getting into trouble, do the right thing, do the things they are supposed to do, and like the way they behave. Global Self-Worth taps the extent to which the child likes oneself as a person, is happy with their life, and is generally happy with the way one is. A four-point Likert scale format is used for scoring all items. A score of 1 indicates *low* perceived competence or satisfaction and a

score of 4 reflects *high* perceived competence or satisfaction. Subscale scores are derived by averaging comprising item scores. Internal consistency reliabilities for all subscales range from .71 to .86 (Harter, 1985).

Sibling Relationship Questionnaire

The SRQ provides data on the overall quality of the relationship between sibling dyads. Correlations between the scales and the Children's Social Desirability Questionnaire (Crandall, Crandall, & Katkovsky, 1965; as cited in Furman & Buhrmester, 1985) are low (r = .14). This indicates that children are likely to respond to the items based on their actual perceptions of the relationship, rather than their desire to provide socially desirable responses.

The SRQ is a 48-item self-report questionnaire that four factors were derived on the basis of primary factor loadings. The four factors are Warmth or Closeness, Relative Status or Power, Conflict and Rivalry. The Warmth or Closeness factor represents qualities such as how much siblings love, care, or admire each other. The Relative Status or Power factor represents how much siblings help, teach, and make each other do things. In other words, this factor looks at whether one sibling is playing the caretaker role, or both siblings are playmates with relatively equal status and power. The Conflict factor represents how much siblings argue, fight and compete with each other. The Rivalry factor is a parent partiality component, where the perception of favouritism by either parent is examined separately. All four factors are internally consistent and reliable (Furman & Buhrmester, 1985).

Each factor consists of different scales. The Warmth or Closeness factor consists of the scales Prosocial Behaviour, Affection, Companionship, Similarity, Intimacy

Admiration by Sibling, Admiration of Sibling. The Relative Status or Power factor consists of the scales Nurturance of Sibling, Nurturance by Sibling, Dominance of Sibling, and Dominance by Sibling. The Conflict factor consists of the scales Antagonism, Competition, and Quarrelling. The Rivalry factor consists of the scales Maternal Partiality and Paternal Partiality. The internal consistency coefficients for the all scales exceed .70 except for the Competition scale (.63) (M = .80).

A five-point Likert scale format is used for scoring all items, where 1 is *hardly at all*, 2 is *not too much*, 3 is *somewhat*, 4 is *very much*, and 5 is *extremely much*. Exceptions of this scoring format are questions that ask about parent partiality. In these questions, scores of 1 and 2 represented different degrees of partiality towards the sibling, namely *almost always* and *often* respectively. Scores of 4 and 5 (i.e., *often* and *almost always* respectively) represented similar degrees of partiality towards the participant. A score of 3 represent the *absence* of partiality. Scale scores are derived by averaging the items.

The Warmth or Closeness, Conflict, and Rivalry factor scores are derived by averaging relevant scale scores. These factor scores retain the five-point Likert scale format. The Relative Status or Power factor score is derived by obtaining the difference between the sum of the Nurturance of and Dominance of Sibling scale score, and sum of the Nurturance by and Dominance by Sibling scale score. A positive scale score indicates that the participant reports having more power than his or her target sibling, while a negative scale score indicates that the participant reports having less power than his or her target sibling. The value of the factor scale score indicates the degree of power that the participant reports having or not having.

Procedure

Study packets were mailed to participating families, who mailed the packets back on completion. Study packets included: parent and child consent forms (Appendix A or B), a parent questionnaire (Appendix A or B), and the three measures. An additional instruction sheet (Appendix C) was attached to the SPPC to teach participants how to properly complete the measure. Siblings completed all three measures.

Data Analyses

Descriptive statistics (i.e., mean and standard deviation) were computed across all measures. Within each sibling group, significant effects for the independent variables age, birth order (i.e., older or younger), and gender were tested separately with one-way analyses of variance (ANOVAs) or independent t-tests for each dependent variable investigated. One-sample t-tests were performed on the SRP scales and composites scores to determine if the scores of each of the three groups of siblings differed significantly from the standardized norm ($M = 50$). One-sample t-tests were also performed on the SRQ Rivalry factor, as well as the Maternal and Paternal Partiality scales, for all three sibling groups. This was done to determine if partiality towards the participant or sibling was significant. In other words, do the scores of the SRQ Rivalry factor, as well as the Maternal and Paternal Partiality scales, differ significantly from the score of 3 (i.e., *absence* of rivalry or partiality)?

One-way ANOVAs were used to test for significant differences between the three sibling groups, with different relevant scores on each measure as independent variables: (a) selected SRP composite scores and subtest scores; (b) SPPC subscale scores; and (c) SRQ factor scores and scale scores. Independent t-tests were performed to explore

significant ANOVA results.

For significant t-test results, effect sizes were calculated using the formula defined for Cohen's *d* (1988). Specifically, *d* is the difference between the means of the two comparison groups, divided by the pooled standard deviation, which is derived as the root mean square of the standard deviations of the two groups (Cohen, 1988, p.44). Cohen (1988) defined effect sizes as *small*, $d = .2$; *medium*, $d = .5$; and *large*, $d = .8$.

CHAPTER IV

Results

Effects for Age, Birth Order, and Gender

For majority of the dependent variables investigated, there were no significant effects for age, birth order, and gender within each sibling group. One exception was the SRQ Power factor. For both siblings of children with ADHD, and siblings of typically developing children, there was a significant effect for birth order (*p*s < .05). Older siblings report more power in their relationship than younger siblings. This was further qualified by a significant birth order effect for SRQ Power factor scales: (a) Nurturance of Sibling, (b) Dominance of Sibling, and (c) Dominance by Sibling, in siblings of typically developing children (*p*s < .05). It should be noted that birth order effects may not have been found in siblings of children with PMS because there were only 4 younger siblings in this group.

Behaviour Assessment System for Children, Self-Report

Selected Clinical and Adaptive Scales

Social Stress, Anxiety, and Depression scales. Mean Social Stress and Anxiety scores of siblings in all three groups were comparable to the standardized norm ($M = 50$, see Table 3). Mean Depression scores of siblings of children with PMS, $t(18) = -2.13$, $p < .05$, $d = .421$, and siblings of typically developing children, $t(19) = -4.93$, $p < .001$, $d = .696$, were significantly lower than the standardized norm, but scores of siblings of children with ADHD were comparable (see Table 3).

Comparison of all three sibling groups revealed that there were no significant group effects for all three clinical scales: (a) Social Stress, (b) Anxiety, and (c)

Depression, $Fs(2,47) = .065, .119$, and $.510$, respectively, $ps > .6$ (see Table 4). Overall, siblings of children with PMS and siblings of children with ADHD did not report more social stress, anxiety, and depression, compared to siblings of typically developing children. Moreover, reports of social stress, anxiety, and depression, were similar between siblings of children with PMS and siblings of children with ADHD.

Adaptive scales. Mean Relations with Parents scores of siblings of children with PMS, $t(18) = 2.54$, $p = .02$, $d = .415$, were significantly higher than the standardized norm ($M = 50$), but scores of siblings of children with ADHD and siblings of typically developing children were comparable (see Table 3). Mean Interpersonal Relations scores of siblings of children with PMS, $t(18) = 2.43$, $p < .03$, $d = .483$, and siblings of typically developing children, $t(19) = 2.81$, $p < .02$, $d = .477$, were significantly higher than the standardized norm, but scores of siblings of children with ADHD were comparable (see Table 3). Mean Self-Esteem scores of siblings of typically developing children, $t(19) = 2.14$, $p < .05$, $d = .414$, were significantly higher than the standardized norm, but scores of siblings of children with PMS and siblings of children with ADHD were comparable (see Table 3). Mean Self-Reliance scores of siblings in all three groups were comparable to the standardized norm (see Table 3).

Comparison of all three groups of siblings revealed that there were no significant group effects for all four adaptive scales: (a) Relations with Parents, (b) Interpersonal Relations, (c) Self-Esteem, and (D) Self-Reliance, $Fs(2,47) = .576, .609, .798$, and $.837$, respectively, $ps > .4$ (see Table 4). Overall, siblings of children with PMS and siblings of children with ADHD were as well-adjusted as siblings of typically developing children. Siblings of children with PMS and siblings of children with ADHD were also similarly

well-adjusted.

Selected Composites

In all three sibling groups, mean scores on all three composites (i.e., School Problems, Internalizing Problems, and Inattention-Hyperactivity) were comparable to the standardized norm ($M = 50$, see Table 3). Comparison of all three groups of siblings revealed that there were no significant group effects for all three composites: (a) School Problems, (b) Internalizing Problems, and (c) Inattention-Hyperactivity, Fs(2,47) = .230, .200, and .306, respectively, ps > .7 (see Table 4). Overall, the school-related problems, internalizing problems, and inattention-hyperactivity problems reported by siblings of children with PMS and siblings of children with ADHD were comparable to siblings of typically developing children. Siblings of children with PMS and siblings of children with ADHD were also comparable in their reports of school-related problems, internalizing problems, and inattention-hyperactivity problems.

Table 3

Group Means as Compared to the Standardized Norm (M = 50)

	Group		
Scales or Composites	PMS	ADHD	Typically Developing
Social Stress	Comparable	Comparable	Comparable
Anxiety	Comparable	Comparable	Comparable
Depression	Low	Comparable	Low
Relations with Parents	High	Comparable	Comparable
Interpersonal Relations	High	Comparable	High

Self-Esteem	Comparable	Comparable	High
Self-Reliance	Comparable	Comparable	Comparable
School Problems	Comparable	Comparable	Comparable
Internalizing Problems	Comparable	Comparable	Comparable
Inattention-Hyperactivity	Comparable	Comparable	Comparable

Table 4

Group Means and Standard Deviations for Scale and Composite Scores

	Group, *M* (*SD*)		
Scales or Composites	PMS	ADHD	Typically Developing
Social Stress	47.5 (11.1)	46.5 (10.9)	46.4 (7.71)
Anxiety	48.2 (10.2)	49.2 (7.56)	49.8 (11.5)
Depression	46.1 (8.09)	47.8 (14.2)	44.5 (4.99)
Relations with Parents	53.4 (5.86)	51.7 (8.34)	50.3 (11.6)
Interpersonal Relations	54.3 (7.66)	51.3 (9.48)	54.0 (6.37)
Self-Esteem	51.3 (10.0)	48.9 (14.3)	53.7 (7.72)
Self-Reliance	52.4 (8.23)	48.3 (7.39)	50.7 (8.96)
School Problems	47.8 (9.67)	50.6 (8.85)	48.8 (12.0)
Internalizing Problems	46.1 (9.78)	48.1 (12.7)	47.8 (8.80)
Inattention-Hyperactivity	49.2 (8.28)	47.1 (10.9)	49.6 (10.1)

Self-Perception Profile for Children

Using one-way ANOVAs, no significant group effects were found for all SPPC subscales: (a) Scholastic Competence, (b) Social Acceptance, and (c) Athletic Competence, (d) Physical Appearance, (e) Behavioural Conduct, and (f) Global Self-Worth, $Fs(2,47) = 1.79, .500, 2.72, 1.07, 1.06$, and $.496$, respectively, $ps > .05$ (see Table 5). The overall perceptions of various aspects of competence in siblings of children with PMS and siblings of children with ADHD were equivalent to siblings of typically developing children. In addition, overall perceptions of competence in siblings of children with PMS and siblings of children with ADHD were equivalent.

Table 5

Group Means and Standard Deviations for Subscale Scores

	Group, *M* (*SD*)		
Subscales	PMS	ADHD	Typically Developing
Scholastic Competence	3.25 (.744)	2.65 (.957)	2.99 (.868)
Social Acceptance	3.00 (.729)	3.24 (.555)	3.07 (.584)
Athletic Competence	3.13 (.638)	3.19 (.621)	2.63 (.940)
Physical Appearance	3.34 (.703)	2.98 (.701)	3.06 (.792)
Behavioural Conduct	2.92 (.550)	2.70 (.706)	3.03 (.596)
Global Self-Worth	3.44 (.507)	3.23 (.736)	3.28 (.687)

Sibling Relationship Questionnaire

SRQ Factors

There were significant group effects for the Warmth or Closeness factor, Relative Status or Power factor, and Conflict factor, *F*s(2,47) = 4.64, 14.3, and 20.7, respectively, *p*s < .02, but not the Rivalry factor (see Table 6). Rivalry reports of siblings of children with PMS, of siblings of children with ADHD, and of siblings of typically developing children were equivalent. However, mean Rivalry factor scores of siblings of children with ADHD and siblings of typically developing children were comparable to a score of 3, while scores of siblings of children with PMS were significantly lower, $t(18) = -2.176$, $p < .05$, $d = .502$.

Comparison between siblings of children with PMS and siblings of typically developing children revealed that siblings of children with PMS reported more relative status or power and less conflict in their siblings relationships, *t*s(29) = 5.70, and -5.96, respectively, *p*s <.001, *d*s = 1.96 and 1.92, respectively (see Table 6). There were no group differences between siblings of children with ADHD and siblings of typically developing for all three factors (i.e., Warmth or Closeness, Relative Status or Power, and Conflict). Comparison between siblings of children with PMS and siblings of children with ADHD revealed that siblings of children with PMS reported more warmth or closeness, more relative status or power, and less conflict in their relationship, *t*s(28) = 3.18, 3.72, and -5.23, *p*s < .004, *d*s = 1.09, 1.27, and 1.91 (see Table 6).

SRQ Scales

Warmth or Closeness factor scales. There were significant group effects for the following scales: (a) Prosocial, (b) Affection, (c) Intimacy, (d) Admiration of Sibling, and

(e) Admiration by Sibling, *F*s(2,47) = 5.62, 8.92, 7.85, 8,49, and 5.95, respectively, *p*s < .01. There were no significant group effects for the remaining scales: (a) Companionship, and (b) Similarity. Compared to siblings of typically developing children, siblings of children with PMS scored higher on the Prosocial, Affection, Admiration of Sibling, and Admiration by Sibling scales, *t*s(37) = 2.16, 3.46, 3.10, and 2.86, respectively, *p*s < .05, *d*s = .687, 1.12, .733, and .911, respectively; but lower on the Intimacy scale, *t*(37) = -3.51, *p* = .001, *d* = 1.14 (see Table 6). Comparison between siblings of children with ADHD and siblings of typically developing children revealed that siblings of children with ADHD reported less intimacy in their relationships, *t*(37) = -2.56, *p* < .05 *d* = 1.03 (see Table 6). Compared to siblings of children with ADHD, siblings of children with PMS scored higher on the Prosocial, Affection, Admiration of Sibling and Admiration by Sibling scales, *t*s(28) = 3.24, 4,10, 3.99, and 3.11, *p*s < .005, *d*s = 1.16, 1.38, 1.39, and 1.14; but reported similar intimacy levels in their relationships, *p* > .6 (see Table 6).

Relative Status or Power factor scales. There were significant group effects for the following scales: (a) Nurturance of Siblings, (b) Nurturance by Siblings, and (c) Dominance by Siblings, *F*s(2,47) = 6.27, 10.2, and 9.74, respectively, *p*s < .005, but not for Dominance of Siblings (see Table 6). Participants in the *PMS* group reported more nurturance of their sibling with PMS, *t*(37) = 3.15, *p* < .01, *d* = 1.01;and less nurturance and dominance by their sibling with PMS, *t*s(37) = -5.28 and -5.07, respectively, *p*s < .001, *d*s = 1.70 and 1.63, respectively; than their counterparts in the *typically developing* group (see Table 6). There were no group differences between siblings of children with ADHD and siblings of typically developing for all three scales examined

(i.e., Nurturance of Sibling, Nurturance by Sibling, and Dominance by Sibling). Between the two disability groups, siblings of children with PMS reported more nurturance of their sibling with a disability than siblings of children with ADHD, $t(28) = 2.81$, $p < .01$, $d = 1.06$ (see Table 6).

Conflict factor scales. There were significant group effects for all Conflict factor scales: (a) Antagonism, (b) Competition, and (c) Quarrelling, $Fs(2,47) = 11.6, 11.6, 22.4$, respectively, $ps < .001$ (see Table 6). Siblings of children with PMS reported less antagonism, competition, and quarrelling in their relationships than siblings of typically developing children, $ts(37) = -4.34, -4.35$, and -6.55, respectively, $ps < .001$, $ds = 1.39$, 1.40, and 2.10, respectively; and siblings of children with ADHD, $ts(28) = -4.12, -4.10$, and -4.84, respectively, $ps < .001$, $ds = 1.50$, 1.47, and 1.77, respectively (see Table 6). There were no group differences between siblings of children with ADHD and siblings of typically developing for all three scales (i.e., Antagonism, Competition, and Quarrelling).

Rivalry factor scales. Comparison of all three groups of siblings revealed that there were no significant group effects for both Maternal and Paternal Partiality scales.

Mean Maternal and Paternal Partiality scores of both *ADHD* and *typically developing* groups were comparable to a score of 3 (i.e., absence of partiality), but not the *PMS* group. Specifically, the mean Maternal Partiality score of siblings of children with PMS was significantly lower than 3, $t(18) = -2.11$, $p < .05$, $d = .487$, while the mean Paternal Partiality score was comparable to 3. For both *ADHD* and *typically developing* groups, siblings reported an absence of partiality by either parent. In contrast, participants in the *PMS* group reported maternal partiality towards their sibling with PMS, and an absence of paternal partiality.

Table 6

Group Means and Standard Deviations for Factor and Scale Scores

	Group, *M* (*SD*)		
Factors and Scales[a]	PMS[b]	ADHD[b]	Typically Developing
Warmth or Closeness**	3.51 (.356)	2.86 (.775)	3.30 (.605)
Prosocial Behaviour**	3.40 (.540)*	2.61 (.814)	3.00 (.621)
Affection***	4.74 (.466)**	3.45 (1.23)	3.97 (.858)
Companionship	3.63 (.608)	3.33 (1.09)	3.62 (.907)
Similarity	2.89 (.556)	2.97 (.737)	3.13 (.712)
Intimacy	1.61 (.714)**	1.73 (.680)*	2.67 (1.10)
Admiration of Sibling***	4.26 (.634)**	2.97 (1.15)	3.50 (.875)
Admiration by Sibling**	4.05 (.855)**	2.94 (1.09)	3.22 (.963)
Relative Status or Power*	2.51 (1.24)***	-.122 (2.64)	-.949 (2.35)
Nurturance of Sibling**	3.51 (.952)**	2.48 (.982)	2.57 (.912)
Nurturance by Sibling	1.56 (.619)***	2.33 (1.33)	2.93 (.959)
Dominance of Sibling	2.26 (.672)	2.27 (1.06)	2.57 (.702)
Dominance by Sibling	1.82 (.732)***	2.55 (1.29)	3.15 (.888)
Conflict***	1.71 (.604)***	3.05 (.785)	2.96 (.694)
Antagonism***	1.88 (.771)***	2.97 (1.03)	3.07 (.928)
Competition***	1.54 (.696)***	2.58 (1.00)	2.60 (.814)
Quarrelling***	1.72 (.678)***	2.83 (.858)	3.20 (.729)
Rivalry	2.78 (.438)	3.03 (.348)	2.93 (.447)

Maternal Partiality	2.77 (.472)	2.85 (.751)	2.82 (.721)
Paternal Partiality	2.79 (.580)	3.21 (.688)	3.05 (.423)

[a]Attached asterisks indicate the significance of the differences between siblings of children with PMS and siblings of children with ADHD.

[b]Attached asterisks indicate the significance of the differences between siblings of either disability group (i.e., PMS or ADHD) and siblings of typically developing children.

$*p < .05$. $**p < .01$. $***p < .001$

CHAPTER V

Discussion

In the current study, siblings' experiences with children with PMS, and with children with ADHD, were compared to siblings' experiences with typically developing children. The objectives were to understand the effects of disability on sibling well-being and sibling relationship quality, as well as to compare between two disabilities with significantly different functional implications (i.e., PMS and ADHD). Furthermore, unlike former studies where the effects of sibling disability were investigated with parent and teacher reports, siblings' self-reports and perceptions were the focus in the current study.

Siblings of children with PMS and siblings of children with ADHD did not report more problems than siblings of typically developing children. Reports of siblings of children with PMS and siblings of children with ADHD were also similar with one another. Group differences in problems were determined by the Social Stress, Anxiety, and Depression scales measured on the BASC-2 SRP, as well as the School Problems, Internalizing Problems, and Inattention-Hyperactivity composites. Comparability between all three sibling groups is in line with findings such as similar parent or teacher perceptions of externalizing and internalizing behaviours between siblings of children with DS and siblings of typically developing children (Carr, 1988; Cuskelly & Gunn, 2006; Hannah & Midlarsky, 1999), while contradicting existing evidence such as increased anxiety and depression in siblings of children with disabilities (Breslau & Prabucki, 1987; Coleby, 1995; Fisman, et al., 1996; Gold, 1993; McHale & Gamble, 1989; Ross & Cuskelly, 2006).

Measuring sibling perceived adjustment and perceived well-being using the BASC-2 SRP allows for a wide selection of both adaptive and maladaptive behaviours to be assessed with one single questionnaire. Moreover, the different areas of behaviour that were assessed are quite compatible with the scales of the Child Behaviour Checklist (CBCL; Achenbach, 1991), which is one of the most widely used questionnaires in sibling disability research. However, one aspect of behaviour not assessed with the BASC2-SRP, but is assessed with the parent or teacher versions of the CBCL (Achenbach, 1991) or BASC-2 (Reynold & Kamphaus, 2004), is aggression. Given previous findings that increased aggression in siblings of children with IDs or ADHD compared to siblings of typically developing children, it can be expected that if aggression was assessed, there may have been differences between the three sibling groups of this study.

In addition, siblings of children with PMS or siblings of children with ADHD did not report higher self-esteem or self-reliance, or more competence in various aspects, compared to siblings of typically developing children. On the BASC-2 SRP, siblings of children with PMS and siblings of children with ADHD reported comparable levels of self-esteem and self-reliance, with siblings of typically developing children. On the SPPC, their self-perceptions in areas such as scholastic competence, social acceptance, athletic competence, physical appearance, and behavioural conduct were comparable to siblings of typically developing children. This is contrary to previous findings on the positive effects of sibling disability on children's social competence and self-esteem (Hollidge, 2001). Overall, in the current study, sibling well-being was comparable between all three groups.

Use of both the BASC-2 SRP and SPPC to examine the self-concepts of children

allowed for an overlap of a clinical and research tool respectively. However, the BASC-2 SRP, unlike the Piers-Harris Children's Self-Concept Scale, Second Edition (Piers-Harris 2; Piers, Harris, & Herzberg, 2002), is not a clinical tool focused on measuring self-concept. The Piers-Harris 2 measures six domains in addition to overall self-concept. The six domain scales are: Behavioural Adjustment; Intellectual and School Status; Physical Appearance and Attributes; Freedom from Anxiety; Popularity; and Happiness and Satisfaction. These six scales have some overlap with the SPPC, while contributing some unique measures of self-concept. Although in research the Piers-Harris 2 is not as popular a self-concept measure as the SPPC, its use in the current study can have potentially unique contributions towards determining the effects of disability on sibling well-being. For example, Happiness and Satisfaction, which measures a child's feelings of happiness and satisfaction with life, may be lower in siblings of children with ADHD compared to the other 2 sibling groups, due to the never-ending disruptions of living with a brother or sister with ADHD (Kendall, 1999).

Although there was an absence of significant differences in sibling well-being between the groups, siblings of children with PMS reported lower levels of depression than children their age do, which was determined by comparison with the standardized norm ($M = 50$). Siblings of children with PMS also reported better relations with parents and interpersonal relations than children their age do. Given the multiple serious functional implications of PMS, this is unexpected. Moreover, there is evidence that links 22q13 deletion with autism (Durand, et al., 2006; Goizet, et al., 2000). Autism is a disability associated with greater internalizing difficulties in siblings when compared to siblings of children with other disabilities and siblings of typically developing children

(Fisman, et al., 1996; Fisman, et al, 2000; Rodrigue, et al., 1993).

Evidently, functional implication of the disability is only one factor that influences sibling well-being (Crnic & Leconte, 1986). In the current study, families of children with PMS, who participated in the study, were involved in a parent support group. Many of them were recruited during the biennial 22q13 Deletion Syndrome Support Group conference. Involvement in a support group is another factor that affects overall sibling adjustment (Van Riper, 2000). Thus, clearer identification of variables that affect sibling adjustment amidst disability in the home, and further understanding of family support and stress models are needed to clarify differences between disabilities.

Despite overall similarities in sibling well-being, sibling relationship quality was significantly different between siblings of children with PMS, siblings of children with ADHD, and siblings of typically developing children. When there was disability in the home, siblings reported less intimacy in their relationships. They were less likely to tell each other everything, as well as share secrets and private feelings (Furman & Buhrmester, 1985). Less intimacy in their relationships is expected since children with PMS have severe expressive language impairment, and since sibling relationships with children who have ADHD are likely to be tense and strained (Barkley, 1990). Although there was lack of intimacy in their relationships, siblings of children with PMS reported that they have warm and close sibling relationships. Furthermore, their ratings of warmth or closeness on the SRQ were significantly higher than siblings of children with ADHD. The difference in warmth or closeness identified between the two disability groups in the study supports previous negative reports by siblings of children with ADHD (Baldwin, et al., 1995; Jones, et al., 2006; Kendall, 1999), and re-emphasizes the presence of

differences between the effects disabilities can have on siblings.

Compared to siblings of typically developing children, siblings of children with PMS reported several differences in the quality of their sibling relationships. Siblings of children with PMS reported doing nice things for each other and sharing with each other more often (Furman & Buhrmester, 1985). The love, care and affection they reported to have for each other were more than siblings of typically developing children. Mutual admiration, which involves respecting, looking up to, and thinking highly of one another (Furman & Buhrmester, 1985), was also higher between siblings of children with PMS. There was more nurturance of their sibling with PMS, and less nurturance and dominance by their sibling with PMS. These qualities in the sibling relationship are expected because children with PMS are highly dependent on family for daily functioning. Finally, there was significantly less conflict, from antagonism, competition, and quarrelling, in their relationships. Overall, siblings of children with PMS reported high levels of warmth and low levels of conflict in their sibling relationships. High warmth and low conflict are also reported by siblings of children with DS (Kaminsky & Dewey, 2001), but are rare in typical sibling relationships (Brody, 1998). Therefore, disability in the family can change the unique quality of sibling relationships.

On the other hand, sibling relationship quality reported by siblings of children with ADHD and siblings of typically developing children were almost comparable. The lack of differences between the two groups is unexpected since siblings of children with ADHD report being victims of aggression and violence (Kendall, 1999). Moreover, as a result, siblings of children with ADHD tend to become resigned to their situations and learn to avoid and accommodate to their brother or sister with ADHD. Siblings of

children with ADHD describe caretaking responsibilities that can include giving medication, providing supervision, helping with homework, and resolving conflicts (Kendall, 1999). Such qualities of sibling relationships with children who have ADHD were not reflected in the current study.

Finally, siblings of children with ADHD and siblings of typically developing children did not report rivalry or parental partiality (i.e., maternal and paternal) in their sibling relationships. However, siblings of children with PMS reported rivalry and maternal partiality towards their brother or sister with PMS, but not paternal partiality. It is expected that mothers in families with children with disabilities will give more attention to their child with disabilities compared to other typically developing children (Howlin, 1988). Hence, it is surprising that siblings of children with ADHD did not have similar reports as siblings of children with PMS. Despite the differences between the groups when comparing with a score that represents the absence of partiality (i.e., a score of 3), rivalry or parental partiality reports of all three groups of siblings were comparable. The lack of differences in rivalry or parental partiality when compared to siblings of typically developing children are also found with siblings of children with autism and siblings of children with DS (Kaminsky, 2001). This contradicts anecdotal reports that state that siblings of children with IDs tend to resent the attention and time that the child with disabilities requires from parents (Howlin, 1988).

Given the attention demands of raising a child with PMS or with ADHD, it is unlikely that reports of parental partiality are comparable with the comparison group (i.e., siblings of typically developing children). Instead, one possible reason is that while being aware of the differential treatment, siblings understand the need for such distinction. Thus,

it is the siblings' understanding that may be reflected in their parental partiality reports. In fact, differential treatment compromises sibling relationships when children interpret their parents' different behaviour as an indication that their parents are less concerned about them or that they are less worthy of love (Kowal & Kramer, 1997). Children are less likely to draw such conclusions when their parents are attentive, responsive, and nurturing (Kowal & Kramer, 1997). Moreover, sensitive parenting often requires that children in the same family be treated differently. Children of different ages and different needs require developmentally appropriate parenting, and children with different personalities and behavioural styles require parental responses suited to each child's inclinations (Brody, 1998).

Implications for Practice in School Psychology

When there is a child with disabilities in the family, there is a need for increased social and mental health services for all members over the course of the disorder. A vital component of effective family-based interventions is to assess how individual family members are affected. The focus of research in this area is often on parents or caregivers, while the impact on siblings tends to be overlooked (Vadasy, Fewell, Meyer, & Schell, 1984). However, during clinical intervention, special attention should be directed towards the needs of other children in the family (Lobato & Kao, 2005). Siblings' needs may be as great as, or greater than those of parents, because of their identification with their brother or sister who has disabilities (Featherstone, 1980). Furthermore, it is important to bear in mind that as children, siblings have limited life experiences to assist them in understanding the multifaceted impact of having a disability.

For families of children with disabilities, the level of stress experienced is

determined by a variety of factors. Some stressors include variability in the difficulty in raising the child with disabilities, different amount of resources available to the family, and individual differences in terms of parenting stress. These stressors interact to produce a characteristic family stress profile, which affects the development and well-being of siblings (Van Riper, 2000). It is important for researchers to look at siblings between different disability groups, instead of making assumptions and stereotyping their unique experiences. Unlike previous findings on negative adjustment in siblings of children with disabilities, the siblings in the current study were as well-adjusted as the siblings of typically developing children. Thus, listening to and becoming sensitive to siblings' difficulties and experiences is important (Dodd, 2004). There may be instances when professionals need to evaluate the mental health of siblings, to recognize any possible conditions that are likely to be present. Clinicians, who work with families that have children with disabilities, need to be aware of the difficulties faced by siblings, regardless of the fact that they may not be targeted to receive specialized services. Furthermore, being aware of the adjustment or behavioural difficulties of siblings is important towards increasing overall family functioning and can help promote positive sibling coping skills.

Disability in the home has different effects on sibling relationship quality, changing it drastically or slightly as illustrated in the current study. Since sibling relationships are affected when there is disability in the home, understanding how the sibling relationship is changed is an essential aspect of family healthcare. Particularly, evaluating how the sibling relationship differs from sibling relationships shared between typically developing sibling dyads, may help point towards the types of support children need while growing up with a brother or sister who has a disability. For example, siblings

in both disability groups reported lower levels of intimacy compared to siblings of typically developing children. Alternatively, siblings of children with 22q13 describe more prosocial and affectionate behaviours in their relationships than siblings of typically developing children. Determining how siblings of children with disabilities feel about and how well they understand such differences in relationship qualities can direct the work of clinicians. Overall, with an understanding of the effects of disability on sibling development, professionals are able to engage the family in a more empathic and informed manner.

Limitations of Study

Firstly, the sample size of siblings of children with ADHD was small compared to the sample size of the other two groups. This could account for the lack of differences in sibling well-being and sibling relationship quality with siblings of typically developing children, as well as the absence of rivalry or parental partiality. Second, both families of children with PMS and of children with ADHD were recruited from parent support groups. Such a subset of families could account for siblings who were as well-adjusted as the comparison group. Finally, while focusing on siblings' perspectives was intentional in the current study, the lack of information from parents or teachers could account for the differences with findings from previous literature in terms of sibling well-being.

Directions for Future Research

The focus of future research should be on replicating the current study with other disabilities that vary significantly in functional implications. This will increase the understanding of how the nature of a disability affects sibling well-being and sibling relationship quality. Also, extension of the current study, by including information from

other sources will be helpful in terms of clarifying and strengthening findings on the effects of sibling disability. Specifically, parent and teacher information on similar measures of well-being will shed more light on current findings in relation to previous ones.

Clearer identification of variables that affect sibling adjustment amidst disability in the home, and further understanding of family support and stress models are needed. For example, instead of looking between disabilities and comparing with typical families, investigators should look within families that have children with a specific disability. This will lead to identification of other variables that affect sibling development, as well as construction of linear models that can explain the effects of disability on siblings. Finally, the effects of sibling disability should not be constrained to well-being and sibling relationship quality. Other aspects of development, such as parent-child relationship quality, can be explored.

Conclusion

The findings from the current study add to the understanding of the effects of sibling disability in three main ways. First, the presence of differences between disabilities is highlighted by the differences found between siblings of children with PMS and siblings of children with ADHD. Also, differences between siblings of children with PMS and siblings of children with autism from previous findings, emphasize that severity or functional implications of the disability is only one factor influencing how siblings adjust to disability in the home. Second, sibling relationship quality is changed when one child in the dyad has a disability. It is too soon to judge whether such changes, particularly those reported by siblings of children of PMS, are good or bad. Perhaps,

sibling relationship quality just becomes different. Finally, unlike anecdotal reports of parental partiality towards the child with disabilities, no differences between the three groups were found in the current study. It makes sense to account for the absence of parental partiality with sibling understanding for the need of differential treatment and sensitive parenting. However, the true reasons for the lack of differences can only be known through interviewing the participants of the current study. Ultimately, when working with families with children with disabilities, it is important to be cognizant of the fact that the effects on siblings are complex and multifaceted.

References

Abramovitch, R., Stanhope, L., Pepler, D., & Corter, C. (1987). The influence of Down syndrome on sibling interaction. *Journal of Child Psychology and Psychiatry, 28,* 865-879.

Achenbach, T. M. (1991) *Manual for the child behaviour checklist/4-18 and 1991 profile.* Burlington, VT: University of Vermont, Department of Psychiatry.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.)., *Text revision.* Washington, DC: Author.

Andersson, E. (1988). Siblings of mentally handicapped children and their social relations. *British Journal of Special Education, 15,* 24-26.

Atkinson, N., & Crawforth, M. (1995). *All in the family: Siblings and disability*. London: NCH Action for Children.

Bagenholm, A., & Gillberg, C. (1991). Psychosocial effects on siblings of children with autism and mental retardation: A population-based study. *Journal of Mental Deficiency Research, 35,* 291-307.

Baldwin, K., Brown, R. T., & Milan, M. (1995). Predictors of stress in caregivers of attention deficit hyperactivity disordered children. *American Journal of Family Therapy, 23,* 149-160.

Bank, L., Patterson, G. R., & Reid, J. B. (1996). Negative sibling interaction patterns as predictors of later adjustment problems in adolescent and young adult males. In G. Brody (Ed.), *Sibling relationships: Their causes and consequences* (pp. 197-229). Norwood, NJ: Ablex.

Bendor, S. J. (1990). Anxiety and isolation in siblings of paediatric cancer patients: The

need for prevention. *Social Work in Health Care, 14,* 17-35.

Berndt, T. J., & Bulleit, T. N. (1985). Effects of sibling relationships on preschoolers' behaviour at home and at school. *Developmental Psychology, 21,* 761-767.

Bischoff, L. B., & Tingstrom, D. H. (1991). Siblings of children with disabilities: Psychological and behavioural characteristics. *Counselling Psychology Quarterly, 4,* 311-321.

Breslau, N. (1982). Siblings of disabled children: Birth order and age-spacing effects. *Journal of Abnormal Child Psychology, 10,* 85-96.

Breslau, N., & Prabucki, K. (1987). Siblings of disabled children: Effects of chronic stress upon the family. *Archives of General Psychiatry, 44,* 1040-1046.

Brody, G. H. (1998). Sibling relationship quality: Its causes and consequences. *Annual Review of Psychology, 49,* 1-24.

Brody, G. H. (2004). Siblings' direct and indirect contributions to child development. *Current Directions in Psychological Science, 13,* 124-126.

Brody, G. H., Stoneman, Z., Davis, C. H., & Crapps, J. M. (1991). Observations of the role relations between older children with mental retardation and their younger siblings. *American Journal on Mental Retardation, 95,* 527-536.

Brody, G. H., Stoneman, Z., & Gauger, K. (1996). Parent-child relationships, family problem-solving behaviour, and sibling relationship quality: The moderating role of sibling temperaments. *Child Development, 67,* 1289-1300.

Buhrmester, D., & Furman, W. (1990). Perception of sibling relationships during middle childhood and adolescence. *Child Development, 61,* 1387-1398.

Cantwell, D. P. (1996). Attention deficit disorder: A review of the past 10 years. *Journal*

of the American Academy of Child and Adolescent Psychiatry, 35, 978-987.

Carr, J. (1988). Six weeks to twenty-one years old: A longitudinal study of children with Down syndrome and their families. *Journal of Child Psychology and Psychiatry, 29*, 407-431.

Chesler, M. A., Allswede, J., & Barbarin, O. O. (1992). Voices from the margin of the family: Siblings of children with cancer. *Journal of Psychosocial Oncology, 9,* 19-42.

Cleveland, D., & Miller, N. (1977). Attitudes and life commitment of older siblings of mentally retarded adults: An exploratory study. *Mental Retardation, 3,* 38-41.

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.

Coleby, M. (1995). The school-aged siblings of children with disabilities. *Developmental Medicine and Child Neurology, 37,* 415-426.

Crnic, K. A., & Leconte, J. M. (1986). Understanding sibling needs and influences. In R. R. Fewell, & P. F. Vadasy (Eds.), *Families of handicapped children: Needs and supports across the life-span* (pp. 75-98). Austin, TX: Pro-Ed.

Crocker, A. (1981). The involvement of siblings of children with handicaps. In A. Milunsky (Ed.), *Coping with crisis and handicap* (pp. 219-223). New York: Plenum Press.

Cuskelly, M. (1999). Adjustment of siblings of children with a disability: Methodological issues. *International Journal for the Advancement of Counselling, 21*, 111-124.

Cuskelly, M., & Gunn, P. (1993). Maternal reports of behaviour of sibling of children with Down syndrome. *American Journal on Mental Retardation, 97,* 521-529.

Cuskelly, M., & Gunn, P. (2006). Adjustment of children who have a sibling with Down syndrome: Perspectives of mothers, fathers and children. *Journal of Intellectual Disability Research, 50,* 917-925.

Deater-Deckard, K., Dunn, J., & Lussier, G. (2002). Sibling relationships and social-emotional adjustment in different family contexts, *Social Development, 11,* 571-590.

DeHart, G. B. (1999). Conflict and averted conflict in preschoolers' interactions with siblings and friends. In W. A. Collins & B. Laursen (Eds.), *Relationships as developmental contexts: The Minnesota Symposia on Child Psychology, Volume 30* (pp. 281-303). Mahwah, MJ: Erlbaum.

Dodd, L. W. (2004). Supporting the siblings of young children with disabilities. *British Journal of Special Education, 31,* 41-49.

Dunn, J. (1983). Sibling relationships in early childhood. *Child Development, 54,* 787-811.

Dunn, J. (1993). *Young children's close relationships: Beyond attachment.* Thousand Oaks, CA: Sage.

Dunn, J. (1996). Brothers and sisters in middle childhood and adolescence: Continuity and change in individual differences. In G. Brody (Ed.), *Sibling relationship: Their causes and consequences* (pp. 31-46). Norwood, NJ: Ablex.

Dunn, J. (2004). Sibling relationships. In P. K. Smith and C. H. Hart (Eds.), *Blackwell Handbook of Childhood Social Development* (pp. 223-237). Oxford, United Kingdom: Blackwell.

Dunn, J., Deater-Deckard, K., Pickering, K., & Golding, J. (1999). Siblings, parents and

partners: Family relationships within a longitudinal community study. *Journal of Child Psychology and Psychiatry, 40,* 1025-1037.

Dunn, J., & McGuire, S. (1991). Sibling and peer relationships in childhood. *Journal of Child Psychology and Psychiatry, 33,* 67-105.

Dunn, J., & Plomin, R. (1990). *Separate lives: Why siblings are so different.* New York: Basic Books.

Dunn, J., Slomkowski, C., Beardsall, Y., & Rende, R. (1994). Adjustment in middle childhood and early adolescence: Links with earlier and contemporary sibling relationships. *Journal of Child Psychology and Psychiatry, 35,* 491-504.

Durand, C. M., Betancur, C., Boeckers, T. M., Bockmann, J., Chaste, P., Fauchereau, F., et al. (2006). Mutations in the gene encoding the synaptic scaffolding protein SHANK3 are associated with autism spectrum disorders, *Nature Genetics, 39,* 25-27.

Epkins, C. C., & Dedmon, A. M. M. (1999). An initial look at sibling reports on children's behaviour: Comparisons with children's self-reports and relations with siblings' self-reports and sibling relationships. *Journal of Abnormal Child Psychology, 27,* 371-381.

Faux, S. A. (1993). Siblings of children with chronic physical and cognitive disabilities. *Journal of Paediatric Nursing, 8,* 305-317.

Featherstone, H. (1980). *A difference in the family: Life with a disabled child.* New York: Basic Books, Inc.

Fisman, S., Wolf, L., Ellison, D., & Freeman, T. (2000). A longitudinal study of siblings of children with chronic disabilities. *Canadian Journal of Psychiatry, 45,* 369-375.

Fisman, S., Wolf, L., Ellison, D., Gillis, B., Freeman, T., & Szatmari, P. (1996). Risk and protective factors affecting the adjustment of siblings of children with chronic disabilities. *Journal of the American Academy of Child and Adolescent Psychiatry, 35,* 1532-1541.

Furman, W., & Buhrmester, D. (1982). The contribution of peers and siblings to the parenting process. In M. Kostelnik (Ed.), *Child nurturance: Vol. 2. Patterns of supplementary parenting* (pp. 69-100). New York: Plenum.

Furman, W., & Buhrmester, D. (1985). Children's perceptions of the qualities of sibling relationships. *Child Development, 56,* 448-461.

Gamble, W. C., & McHale, S. M. (1989). Coping with stress in sibling relationships: A comparison of children with disabled and non-disabled siblings. *Journal of Applied Developmental Psychology, 10,* 353-373.

Goizet, C., Excoffier, E., Taine, L., Taupiac, E., El Moneim, A. A., Arveiler, B., et al. (2000). Case with autistic syndrome and chromosome 22q13.3 deletion detected by FISH. *American Journal of Medical Genetics, Part B: Neuropsychiatric Genetics, 96,* 839-844.

Gold, N. (1993). Depression and social adjustment in siblings of boys with autism. *Journal of Autism and Developmental Disorders, 23,* 147-163.

Gray, D. E., & Holden, W. J. (1992). Psycho-social well-being among the parents of children with autism. *Australia and New Zealand Journal of Developmental Disabilities, 23,* 147-163.

Hannah, M. E., & Midlarsky, E. (1985). Siblings of the handicapped: A literature review for school psychologists. *School Psychology Review, 14,* 510-520.

Hannah, M. E. & Midlarsky, E. (1999). Competence and adjustment of siblings of children with mental retardation. *American Journal on Mental Retardation, 104,* 22-37.

Harter, S. (1985). *Manual for the self-perception profile for children.* Denver, CO: University of Denver.

Havens, J. M., Visootsak, J., Phelan, M. C., Graham, J. M. (2004). 22q13 deletion syndrome: An update and review for the primary paediatrician. *Clinical Paediatrics, 43,* 43-53.

Hetherington, E. M., Henderson, S. H., Reiss, D., Anderson, E. R., Bridges, M., Chan, R., et al. (1999). Adolescent siblings in stepfamilies: Family functioning and adolescent adjustment. *Monographs of the Society for Research in Child Development, 64.*

Hollidge, C. (2001). Psychological adjustment of siblings to a child with diabetes. *Health and Social Work, 26,* 15-26.

Howlin, P. (1988). Living with impairment: The effects on children of having an autistic sibling. *Child: Care, Health, and Development, 14,* 395-408.

Irish, D. P. (1964). Sibling interaction: A neglected aspect of family life research. *Social Forces, 42,* 279-288.

Jenkins, J. M., & Smith, M. A. (1990). Factors protecting children living in disharmonious homes: Maternal reports. *Journal of the American Academy of Child and Adolescent Psychiatry, 29,* 60-69.

Jones, K. B., Welsh, R. K., Glassmire, D. M., & Tavegia, B. D. (2006). Psychological functioning in siblings of children with Attention Deficit Hyperactivity Disorder.

Journal of Child and Family Studies, 15, 757-763.

Kaminsky, L., & Dewey, D. (2001). Sibling relationships of children with autism. *Journal of Autism and Developmental Disorders, 31,* 399-410.

Kaminsky, L., & Dewey, D. (2002). Psychosocial adjustment in siblings of children with autism. *Journal of Child Psychology and Psychiatry, 43,* 225-232.

Kendall, J. (1999). Sibling accounts of attention deficit hyperactivity disorder. *Family Process, 38,* 117-136.

Knott, F., Lewis, C., & Williams, T. (1995). Sibling interaction of children with learning disabilities: A comparison of autism and Down's syndrome. *Journal of Child Psychology and Psychiatry, 36,* 965-976.

Kowal, A., & Kramer, L. (1997). Children's understanding of parental differential treatment. *Child Development, 68,* 113-126.

Lamorey, S. (1999). Parentification of siblings of children with disability or chronic disease. In N. D. Chase (Ed.), *Burdened children: Theory, research, and treatment of parentification* (pp. 75-91). Thousand Oaks, CA: Sage.

Lobato, D. (1983). Siblings of handicapped children: A review. *Journal of Autism and Developmental Disorders, 13,* 347-364.

Lobato, D. J. (1990). *Brothers, sisters and special needs: Information and activities for helping young siblings of children with chronic illnesses and developmental disabilities.* Baltimore, MD: Paul H Brookes.

Lobato, D., Barbour, L., Hall, L. J., & Miller, C. T. (1987). Psychosocial characteristics of preschool siblings of handicapped and nonhandicapped children. *Journal of Abnormal Child Psychology, 15,* 329-338.

Lobato, D., Faust, D. & Spirito, A. (1988). Examining the effects of chronic disease and disability on children's sibling relationships. *Journal of Paediatric Psychology, 13,* 387-407.

Lobato, D. J., & Kao, B. T. (2002). Integrated sibling-parent group intervention to improve sibling knowledge and adjustment to chronic illness and disability. *Journal of Paediatric Psychology, 27,* 711-716.

Lobato, D., J., & Kao, B. T. (2005). Brief report: Family-based group intervention for young siblings of children with chronic illness and developmental disability, *Journal of Paediatric Psychology, 30,* 678-682.

Manning, M. A., Cassidy, S. B., Clericuzio, C., Cherry, A. M., Schwartz, S., Hudgins, L., et al. (2004). Terminal 22q deletion syndrome: a newly recognized cause of speech and language disability in the autism spectrum. *Paediatrics, 114*, 451-457.

Marks, S. U., Matson, A., & Barraza, L. (2005). The impact of siblings with disabilities on their brothers and sisters pursuing a career in special education. *Research and Practice for Persons with Severe Disabilities, 30,* 205-218.

Mates, T. E. (1990). Siblings of autistic children: The adjustment and performance at home and school. *Journal of Autism and Developmental Disorders, 20,* 545-553.

McCubbin, H. I. & Patterson, J. M. (1983). The family stress process: The double ABCX model of adjustment and adaptation. In H. I. McCubbin, M. B. Sussman, & J. M. Patterson (Eds.), *Social stress and the family: Advances and development in family stress theory and research* (pp. 7-37). New York: Haworth Press.

McGuire, S., Manke, B., Eftekhari, A., & Dunn, J. (2000). Children's perceptions of sibling conflict during middle childhood: Issues and sibling (dis)similarity. *Social*

Development, 9, 173-190.

McHale, S. M., & Crouter, A. C. (1996). The family contexts of children's sibling relationships. In G. H. Brody (Ed.), *Sibling relationships: Their causes and consequences* (pp. 173-195). Norwood, NJ: Ablex.

McHale, S. M., & Gamble, W. C. (1988). The social networks of children with disabled and nondisabled siblings. In S. Salzinger, J. Antrobus, & M. Hammer (Eds.), *Social networks of children, adolescents, and college students.* Hillsdale, NJ: Lawrence Erlbaum Associates.

McHale, S. M., & Gamble, W. C. (1989). Sibling relationships of children with disabled and nondisabled brothers and sisters. *Developmental Psychology, 25,* 421-429.

McHale, S. M., Sloan, J., & Simeonsson, R. J. (1986). Sibling relations of children with autistic, mentally retarded, and non-handicapped brothers and sisters. *Journal of Autism and Developmental Disorders, 16,* 399-413.

McKeever, P. (1983). Siblings of chronically ill children: A literature review with implications for research and practice. *American Journal of Orthopsychiatry, 53,* 209-218.

Moore, K. A., & Keyes, C. L. M. (2003). A brief history of well-being in children and adults. In M. Bornstein, L. Davidson, C. L. M. Keyes, & K. A. Moore (Eds.), *Well-being: Positive development across the life course, cross currents in contemporary psychology* (pp.1-11). Mahwah, NJ: Erlbaum.

Morgan, S. B. (1988). The autistic child and family functioning: A developmental family-systems perspective. *Journal of Autism and Developmental Disorders, 18,* 263-280.

Nixon, C. L., & Cummings, E. M. (1999). Sibling disability and children's reactivity to conflicts involving family members. *Journal of Family Psychology, 13,* 274-285.

Phelan, M. C., Rogers, R. C., Saul, R. A., Stapleton, G. A., Sweet, K., McDermid, H., et al. (2001). 22q13 deletion syndrome. *American Journal of Medical Genetics, 101,* 91-99.

Piers, E. V., Harris, D. B., & Herzberg, D. S. (2002). *Piers-Harris children's self-concept scale – second edition manual.* Los Angeles, CA: Western Psychological Services.

Pit-Ten Cate, I. & Loots, G.. (2000). Experiences of siblings of children with physical disabilities: An empirical investigation. *Disability and Rehabilitation, 22,* 399-408.

Reynold, C. R., & Kamphaus, R. W. (2004). *BASC-2: Behaviour assessment system for children (2nd edition) manual.* Circle Pines, MN: AGS Publishing.

Rodrigue, J. R., Geffken, G. R., & Morgan, S. B. (1993). Perceived competence and behavioural adjustment of siblings of children with autism. *Journal of Autism and Developmental Disorders, 23,* 665-674.

Roeyers, H., & Mycke, K. (1995). Siblings of a child with autism, with mental retardation and with a normal development. *Child: Care, Health and Development, 21,* 305-319.

Rolland, J. S. (1994). *Families, illness, and disability: An integrated treatment model.* New York: Basic Books.

Ross, P., & Cuskelly, M. (2006). Adjustment, sibling problems and coping strategies of brothers and sisters of children with autism spectrum disorder. *Journal of Intellectual and Developmental Disability, 31,* 77-86.

Rossiter, L., & Sharpe, D. (2001). The siblings of individuals with mental retardation: A

quantitative integration of the literature. *Journal of Child and Family Studies, 10,* 65-84.

Seligman, M., & Darling, R. (1997). *Ordinary families, special children* (2nd ed.). New York: Guildford Press.

Siegel, B., & Silverstein, S. (1994). *What about me?: Growing up with a developmentally disabled sibling.* New York: Plenum.

Stocker, C. M. (1994). Children's perceptions of relationships with siblings, friends, and mothers: Compensatory processes and links with adjustment. *Journal of Child Psychology and Psychiatry, 35,* 1447-1459.

Stocker, C., Dunn, J., & Plomin, R. (1989). Sibling relationships: Links with child temperament, maternal behaviour, and family structure. *Child Development, 60,* 715-727.

Stoneman, Z., & Brody, G. H. (1993). Sibling relations in the family context. In Z. Stoneman & P. Bermon (Eds.), *The effects of mental retardation, disability & illness on sibling relationships: Research issues and challenges* (pp.3-30). Baltimore, MD: Paul H. Brookes.

Stoneman, Z., Brody, G. H., Davis, C. H., Crapps, J. M., & Malone, D. M. (1991). Ascribed role relations between children with mental retardation and their younger siblings. *American Journal on Mental Retardation, 95,* 537-550.

Sullivan, R. C. (1979). Siblings of autistic children. *Journal of Autism and Developmental Disorders, 9,* 287-298.

Summers, C. R., White, K. R., & Summers, M. (1994). Siblings of children with a disability: A review and analysis of the empirical literature. *Journal of Social*

Behaviour and Personality, 9, 169-194.

Taylor, V., Fuggle, P., & Charman, T. (2001). 'Well sibling psychological adjustment to chronic physical disorder in a sibling: How important is maternal awareness of their illness, attitudes and perception?' *Journal of Child Psychology & Psychiatry, 42,* 953-962.

Tucker, C. J., Updegraff, K. A., McHale, S. M., & Crouter, A. C. (1999). Older siblings as socializers of younger siblings' empathy. *Journal of Early Adolescence, 19,* 176-198.

Vadasy, P. F., Fewell, R. R., Meyer, D. J., & Schell, G. (1984). Siblings of handicapped children: A developmental perspective on family interactions. *Family Relations, 33,* 155-167.

Van Riper, M. (2000). Family variables associated with well-being in siblings of children with Down syndrome, *Journal of Family Nursing, 6,* 267-286,

Wilson, H. L., Wong, A. C. C., Shaw, S. R., Tse, W. Y., Stapleton, G. A., Phelan, M. C., et al. (2003). Molecular characterization of the 22q13 deletion syndrome supports the role of haploinsufficiency of SHANK3/PROSAP2 in the major neurological symptoms. *Journal of Medical Genetics, 40,* 575-584.

Wolfman, L. C., Noh, S., Fisman, S. N., & Speechley, M. (1989). Psychological effects of parenting stress on parents of autistic children. *Journal of Autism and Developmental Disorders, 19,* 157-166.

Youngblade, L. M., & Dunn, J. (1995). Individual differences in young children's pretend play with mother and sibling: Links to relationships and understanding of other people's feelings and beliefs. *Child Development, 66,* 1472-1492.

Appendix A

Consent Forms and Parent Questionnaire (PMS and ADHD)

Child's Name (please print): _____

Child's Date of Birth: _____

Signature: _____ Date: _____

Dear Brother or Sister:

We are studying whether how you get along with your brother or sister with XXX, affects who you are. We would like you to answer some questions about how you get along with your brother or sister with XXX and about what you think of yourself. We want to use this to help other children like you who have brothers or sisters with other disabilities.

Please answer the questions on your own. If you have trouble understanding a sentence or question, you can ask your mother or father to explain it to you. Or, if you like, you can ask your mother or father to read the questions with you as you answer them.

If you would like to participate, please sign the consent form below. Thank you for help.

Thank you,
Amelia Woo

McGill University, Faculty of Education
Genetics and Developmental Disabilities Laboratory

Consent Form

I have read the description about and agree to participate in the study. My identity and that of my family will remain unknown. I understand that other than for the study, no one will know my answers to the questions.

Name (please print): _____

Signature: _____ Date: _____

Parent Questionnaire

Dear Parents:

This questionnaire takes less than 5 minutes. It is an important part of the study that your child is taking part in, and your time to complete this is greatly appreciated. This information will help us learn some details about your family.

Your Name: _____

Relationship to Child: _____

1. Father's Education Experience: _____

2. Mother's Education Experience: _____

3. How many children are there in your family? _____

4. What are the ages of your children? _____

5. Please elaborate and specify which child has XXX or other disabilities/special needs:

_____

_____

_____

Would you like to be contacted for future studies? YES/NO
(There is no obligation to participate when contacted – you are free to withdraw at any time.)

Once again, thank you very much for taking the time to complete this questionnaire.

Sincerely,
Amelia Woo

McGill University, Faculty of Education
Genetics and Developmental Disabilities Laboratory

Appendix B

Consent Forms and Parent Questionnaire (Typically Developing)

Child's Date of Birth: _____

Signature: _____ Date: _____

Dear Brother or Sister:

We are studying whether how you get along with your brother or sister affects who you are. We would like you to answer some questions about how you get along with your brother or sister and about what you think of yourself. We want to use this to help other brothers and sisters like you who have problems at school or at home.

Please answer the questions on your own. If you have trouble understanding a sentence or question, you can ask your mother or father to explain it to you. Or, if you like, you can ask your mother or father to read the questions with you as you answer them.

If you would like to participate, please sign the consent form below. Thank you for help.

Thank you,
Amelia Woo

McGill University, Faculty of Education
Genetics and Developmental Disabilities Laboratory

Consent Form

I have read the description about and agree to participate in the study. My identity and that of my family will remain unknown. I understand that other than for the study, no one will know my answers to the questions.

Name (please print): _____

Signature: _____ Date: _____

Parent Questionnaire

Dear Parents:

This questionnaire takes less than 5 minutes. It is an important part of the study that your child is taking part in, and your time to complete this is greatly appreciated. This information will help us learn some details about your family.

Name: _____

Relationship to Child: _____

1. Father's Education Experience: _____

2. Mother's Education Experience: _____

3. How many children are there in your family? _____

4. What are the ages of your children? _____

5. Do any of your children have a psychological disorder (including ADHD, learning disabilities), a disability, or any special needs? YES/NO

If yes, please elaborate and specify which child: _____

_____

_____

Would you like to be contacted for future studies? YES/NO
(There is no obligation to participate when contacted – you are free to withdraw at any time.)

Once again, thank you very much for taking the time to complete this questionnaire.

Sincerely,
Amelia Woo

McGill University, Faculty of Education
Genetics and Developmental Disabilities Laboratory

Appendix C

SPPC Instruction Sheet

INSTRUCTIONS FOR "WHAT I AM LIKE"

This survey is called "What I am like". We are interested in what kind of a person you are like. This is a survey, *not* a test. There are no right or wrong answers. Since kids are very different from one another, each of you will be putting down something different.

There are 36 questions. Each question talks about two kinds of kids, and we want to know which kids are most like you. Before you begin, look at the sample sentence at the top of the paper. The instructions below will teach you how to write your answer down.

1. First, decide whether you are more like the kids on the left side who "*would rather play outdoors in their spare time*", or whether you are more like the kids on the right side who "*would rather watch T.V.*" Don't mark anything yet, just decide which kind of kid is *most like you*, and go to that side of the sentence.

2. Then, think about whether the kind of kid you have decided on is *only sort of true for you* or *really true for you*. If it's only sort of true, then put an X in the box under "*sort of true for me*". If it's really true, then put an X in that box, under "*really true for me*".

So, for each sentence, you will only put an X in ONE of the four boxes. Sometimes it will be on one side of the page, another time it will be on the other side of the page. Your X will be on the side that talks about the kind of kids that are most like you.

Appendix D

Ethics Certificate