CONNECTIONS AND TENSIONS AMONG SIBLINGS IN THE PRESENCE OF AUTISM SPECTRUM DISORDER: PARENTAL PERCEPTIONS OF THE IMPACT OF THE FAMILY SYSTEM ON SIBLING RELATIONSHIPS

by

KRISTY L. DYKSHOORN

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

GRADUATE COUNSELLING PSYCHOLOGY PROGRAM

We accept this thesis as conforming to the required standard

……..
Marvin McDonald, Ph.D., Thesis Supervisor & Thesis Coordinator

……..
Lily Dyson, Ph.D., Second Reader

……
Catherine Costigan, Ph.D., External Examiner

TRINITY WESTERN UNIVERSITY

September 6, 2013

ABSTRACT

For children with Autism Spectrum Disorder (ASD), sibling relationships can be their primary peer influences. The connections and tensions in sibling relationship may impact the development, well-being and life quality that children with ASD experience. Evaluating how ASD affects sibling relationships is imperative, because positive sibling relationships lead to a higher quality of life presently and in the future, for both children (Beyer, 2009). Similarly, the caregiver's impact on the sibling relationship and the development of each child has been evidenced (Doron & Sharabany, 2013; Dyson, 2003; Rivers & Stoneman, 2008). Parenting style is a significant part of a caregiver's role. Williams et al. (2009) provide evidence supporting the positive impacts of authoritative parenting and the negative consequences of authoritarian parenting on the development of children. Further, despite best intentions, parenting stress can make parenting in an effective way difficult (Mills-Koonce et al., 2011) and caregivers raising a child with ASD often experience increased stress levels (Dabrowska & Pisula, 2010). Finally, the interplay between sibling relationships, caregiver characteristics, and success in ASD intervention is of interest. Sibling-mediated interventions have been proven to be advantageous and effective (Ferraioli & Harris, 2011). The integrated use of parenting habits and positive sibling relationships in promoting greater caregiver-perceived success in ASD intervention is worth evaluating and enhancing. The present study addressed the following hypotheses: 1) parenting style and parenting stress impact the sibling relationship; 2) sibling involvement in ASD intervention and success in ASD intervention strengthen the sibling relationship; and 3) parenting style, sibling involvement in ASD intervention and positive sibling relationships promote greater degrees of success in ASD

intervention. Primary caregivers (N = 108) completed an online questionnaire and a hierarchical multiple regression was conducted. Results indicated: 1) Parenting stress explains 12% of the variance found in the warmth and closeness of sibling relationships; 2) Sibling involvement and success in ASD intervention cumulatively contributes to 13.5% of the variance found in the warmth and closeness of sibling relationships; and 3) warmth and closeness uniquely explains 7% of the variance of success in ASD intervention. Limitations, practical implications, and future research direction will be discussed.

Keywords: Autism, parenting, sibling relationships, systemic intervention

TABLE OF CONTENTS

List of Tables

Acknowledgements

First, I would like to thank Dr. Marvin McDonald for his continued support, guidance, wisdom, and ever-present encouragement, as I journeyed through this trying and rewarding research process. I would also like to thank Dr. Lily Dyson for offering me her expertise and editorial skills as my second reader. To my family and friends who believed in me even when I did not, continually encouraged me, and were patient with me when I was "too busy" to do anything else, I couldn't have done it without you and I am more grateful to you than I can express. Finally, and most importantly, I offer prayers of gratitude to my heavenly Father, Lord, and Saviour. Jesus Christ, in whom I found the strength and perseverance to not give up when things were challenging, graciously offered me the abilities necessary to take on this incredible experience. Thank you!

CHAPTER I – LITERATURE REVIEW

According to the 2011 census collected by Statistics Canada (2013), 55% of all families with children have two or more children. Although this number is decreasing, over half of all families are still choosing to provide siblings for their children and, thus, research on siblings and the nature of sibling relationships is essential in understanding the family dynamic. For children with Autism Spectrum Disorder (ASD), sibling relationships may be their only and/or primary peer-type relationship. In these situations, the connections and tensions found in this relationship may impact the overall development, well-being and quality of life that the child with ASD experiences.

The role of the caregiver in the development of positive sibling relationships is also of interest. The caregiver is a child's first and most impactful role model. When a caregiver is able to demonstrate, promote, and encourage positive sibling relationships, the primary peer relationships of the children can be seen as positive and nurturing rather than tumultuous and discouraging. When ASD is present in a family unit, how does a caregiver's well-being impact the development of positive sibling relationships? Are there specific parenting traits that can encourage healthy relationships? If so, how does the relationship impact the success of the child with ASD in his or her journey through ASD interventions?

This research project seeks to fill some gaps currently found in research on ASD and to answer the questions posed in the previous paragraph. Perhaps more than other people, positive peer relationships are extremely valuable for children with ASD to discover a sense of self and to develop important interpersonal skills (Kasari & Rotheram-Fuller, 2007). Using a positive psychology philosophy and a constructivist paradigm, the author hopes to offer helpful suggestions to both caregivers and

professionals regarding promotion of healthy family relationships and situations in the presence of Autism Spectrum Disorder.

As of now, sibling research neglects the impact ASD has on sibling relationships (Beyer, 2009). Similarly, there is very little awareness about how the parenting style or personal well-being of a caregiver impacts the sibling relationship in the presence of ASD. Caregivers of children with disabilities, particularly ASD, have been proven to experience higher levels of stress than parents of typically developing children (Dabrowska & Pisula, 2010). How this phenomenon impacts sibling relationships in the presence of ASD, is yet to be determined. The author will seek to marry the current literature on sibling relationships in the presence of special needs, literature on parenting styles and stress, as well as relevant information on the unique characteristics of ASD with the new information found in this project in order to answer three main research questions.

The primary research questions the author will seeks to answer are: (a) Do parenting style (first independent variable; IV1) and parenting stress (second independent variable; IV2) impact the quality of sibling relationship in the presence of ASD (dependent variable); (b) does involving the typical sibling in intervention (third independent variable; IV3) and parent-perceived success in ASD intervention (fourth independent variable; IV4) contribute to a more positive sibling relationship (dependent variable); and, (c) can parenting style (IV1), involvement of the typical sibling in ASD intervention (IV3), and a positive sibling relationship (fifth independent variable; IV5) help to make a child with ASD more successful in his/her ASD-specific intervention (dependent variable)? It is imperative to draw attention to the utilization of sibling relationship quality and success in ASD intervention as both independent variables and

dependent variables. Although this is controversial in traditional research and academia, the author is adhering to a systemic theoretical framework and, thus, the bi-directional nature of relationships with a family system is reflected in the formulation of these research questions.

A secondary set of questions will be explored using demographic information to the extent possible. The question asked: Do structural factors such as age gap, birth order, gender, religious affiliation, and/or cultural background relate to the relationship quality between ASD children and their typically developing (TD) sibling?

The author's primary objective in this study is to better understand what factors influence the quality of the relationship between children with ASD and their TD siblings. Through the findings of this study, caregivers and service agencies will have access to the necessary tools to promote healthier, more supportive sibling dynamics, which in turn may reduce the level of stress found in families with children with ASD.

Two of the variables, sibling involvement in ASD intervention (IV3) and parent-perceived success in ASD intervention (IV4), are considered to be exploratory within the context of the aforementioned research questions. These two variables have not been examined in the literature and after an extensive search the author failed to acquire an adequate measure to evaluate them. Based on the limited research and the author's professional experience, preliminary scales were developed to evaluate these two variables and the results will help to guide future research.

Two important theoretical models will be summarized and applied in this research project. The construct theoretical model of this proposed research is parenting styles and parenting stress. Parenting style, as a construct, was pioneered by Baumrind (1971), when she developed a list of 4 distinctive parenting styles: authoritarian, authoritative,

permissive and rejecting-neglecting. These four parenting styles have been linked to different constructs over the course of ongoing research programs, including the development and experiences of children within a family system (Yu & Gamble, 2008). Parenting stress, formulated as a construct in 1983 by Abidin, has also been used to evaluate the impact caregivers have on the developmental experiences of children. Because research suggests that sibling relationships have a unique impact on the development of children that go beyond the impact of caregivers (Criss & Shaw, 2005), this research project connects parenting style and parenting stress with sibling relationships, this time within an ASD-TD sibling relationship dyad.

The importance of both parents and sibling relationships is consistent with systems models of counselling and psychological research (Padilla-Walker, Harper, & Jensen, 2010). The current study will maintain a theoretical model aligned with the systemic approach. Systems theorists suggest that all parts of the family unit are equally important in the development and socialization of children (Padilla-Walker et al., 2010). Each child, both children with ASD and their TD siblings, as well as the primary caregiver(s) play an active and important role in the family dynamic. By better understanding the unique roles each member plays in the family unit, practitioners and individual family members can strive to foster more positive, adaptive, and effective family units.

Upon review of the current literature, the author discovered a noticeable gap. Although parenting, sibling relationships and ASD have all been researched in great depth individually, there has been little combination of these concepts to better understand the impact they have on one another. There has been no research suggesting the impact siblings involvement in ASD intervention has on the relationship quality and

there seems to be little research on factors that make success in ASD intervention more likely. The following sections review the literature within each of the main topics of interest for this study.

Sibling Relationships

There has been a great deal of research done on siblings of children with special needs. There is strong evidence suggesting that siblings of children with special needs experience the world differently than their peers with TD siblings. There is limited research, however, on the dyad as a single unit. Without looking at either sibling specifically, sibling relationships are unique, important, and play an important role. For example, sibling relationships promote understandings of others' cognitive and affective processes (Smith & Hart, 2002). Sibling behaviours and the quality of relationships are woven intricately within the family dynamic (Schuntermann, 2007), therefore it is important to understand typical sibling relations to help frame a sibling dyad with a child with ASD.

Cutting and Dunn (2006) researched the link between relationship quality and social understanding. The researchers observed 43 four-year-old children having a conversation with either a sibling or with a friend. The authors of this study clearly indicated that there are some significant differences between sibling relationships and peer relationships; communication styles, cooperation, and conflict resolution. In sibling dyads, more non-verbal communication was used, conflict was not shared with the caregiver, but rather friendliness and affection was communicated. Arguments were much more frequent in the sibling dyads even when the children's relationship was considered warm and close. In some of the sibling dyads there was an atmosphere of competition. This was likely because they had to fight for their caregivers' attention,

which promoted hostility. These findings emphasize the important role that parents play in the development of sibling relationships. Cutting and Dunn also found that the more positive the relationship the more success the children had on the theory of mind skills and emotional understanding. Social understanding is linked to the relationship quality children have with siblings. Cutting and Dunn's study provides evidence for the importance of positive sibling relationships for children. Children with ASD would likely benefit from positive relationships, perhaps to a lesser extent, but benefit nonetheless.

Happiness in the home and the quality of life within a family is greatly influenced by how well the children can get along (Kramer & Kowal, 2005). If children develop positive relationships with their siblings, it is likely that the relationship will remain positive for the majority of their childhood and early adolescents (Kramer & Kowal, 2005). Therefore, if parents can foster positive relationships in their young children, that quality will stay relatively consistent. Kramer and Kowal (2005) wanted to understand how relationship quality with caregivers and friends later influenced sibling relationship quality. They predicted that the quality of the relationship established with their caregiver prior to the birth of their sibling would provide an indicator for how their sibling relationship would develop. The results of their study were summarized to conclude that when a more positive caregiver-child relationship is established prior to the birth of the sibling, the more likely the relationship with that sibling will be positive (Kramer & Kowal, 2005). Caregivers are able to positively impact the sibling relationship by enhancing the TD sibling's social skills and maintaining a close relationship with the TD sibling. This positive relationship may have a positive influence on the child's social and personal development. If these results can be applied to children with ASD, one would assume that if caregivers maintain a positive relationship with their TD child in early

childhood, a more positive TD-ASD sibling relationship might be a result. Their social and personal development may be positively impacted and they may have a more positive social life.

Adolescents' values are directly linked to their social interactions and experiences (Kretschmer & Pike, 2010). The research provides evidence that positive interactions lead to an increase in intrinsic values and negative or cold interactions lead to an increase in extrinsic values. Many parents desire their children to have the intrinsic values of "universalism and benevolence", rather than the extrinsic values of "materialism, power and achievement" (Kretschmer & Pike, 2010). It suggests that positive, nurturing relationships between siblings lead to positive outcomes in value development. It is also suggests that negative, hostile, and un-nurturing relationships between siblings lead to negative value development. Finally, siblings were found to mostly have similar values, even more so than the parent-child comparison (Kretschmer & Pike, 2010). It can be implied from this research that if a TD sibling can be encouraged to develop positive values and a positive relationship with their sibling with ASD, the child with ASD may then develop a more positive value system.

These two sibling relationship studies communicate the importance of sibling relationships. Both members of a sibling dyad can be positively or negatively impacted depending on the nature of the relationship. Parents are also found to remain in a highly impactful position in the family, which can influence the siblings' relationship when educated on how to do so.

Sibling relationships and Autism Spectrum Disorder. To restate what Beyer articulated in 2009:

> The question of how do autism spectrum disorders (ASD) affect sibling relationships is important to answer because positive sibling relationships can foster a better quality of life both in the present and in the future, such as once parents may be unable to care for their child with ASD. (p. 444)

By doing so, caregivers, the academic community, and professional agencies can gain insight into possible ways to enhance sibling relationships in the presence of ASD.

As with typically developing (TD) sibling dynamics (Kaminsky & Dewey, 2001), children with a disability (CD) can have either close relationships with their TD siblings or distant relationships, and these relationships can have different impacts on the children's behaviours (Floyd et al., 2009). For instance, when a TD sibling takes on an active role in the CD's various life activities, a warm and close relationship is more likely to emerge (Kersh, 2007). Researchers also provide evidence that the child with a developmental disability, regardless of age, will often take on a younger sibling role in the relationship, allowing opportunity for the TD sibling to provide care and become involved, regardless of birth order (Kaminsky & Dewey, 2001). Furthermore, research shows that as TD children's knowledge about ASD increases, their nurturing tendencies toward their ASD sibling also increases (Sage & Jagatheesan, 2010). Unfortunately, the task of forming positive, healthy sibling bonds is left, largely, up to the TD sibling (Beyer, 2009). Harris (2007) explains that the cognitive limitations, social deficits, and behavioural characteristics of a child with ASD can make this relationship formation quite challenging for the TD sibling (as cited in Beyer, 2009).

Some researchers have suggested that siblings of children with ASD experience more loneliness, more difficult relationships with peers (Bagenholm & Gillberg, 1991), and experience adjustment difficulties later in life (Coie & Dodge, 1983; Hymel, Rubin,

Rowdem, & LeMare, 1990; Rubin & Mills, 1988). Fortunately, positive sibling relationships in the presence of ASD can be mutually beneficial (Kaminsky & Dewey, 2002). Not only are the children with ASD benefiting from having a nurturing, supportive TD sibling, the TD sibling appears to be just as socially adjusted, experience less loneliness, and received the same amount of social support as their same-age counterparts without siblings with a special need. The effect of this was greater in larger families, but, nevertheless, TD siblings are experiencing some benefits from having healthy relationships with their siblings with ASD (Kaminsky & Dewey, 2002). In fact, the TD siblings in Mascha and Boucher's (2006) qualitative study recalled and described positive events and experiences with their siblings with ASD. TD siblings also spoke of feeling proud of being able to teach their siblings with ASD new skills and activities (Foden, 2007) suggesting that, though difficult, the processes of fostering positive sibling relationships can be rewarding.

In contrast to evidence of positive aspect of sibling relationships, Smith and Elder (2010) provide evidence that siblings of children with ASD report higher levels of stress, which can affect a child's well-being (Vandermeulen, 1997). More stress may lead to strain on the relationship with the sibling with ASD. Furthermore, children with ASD sometimes, but not always, show greater degrees of aggression, causing TD siblings to shy away from consistent interaction, which in turn adds more stress to the sibling relationship (Ross & Cuskelly, 2006). Concern about the sibling with ASD's future may also be a contributor to the added stress experience by TD siblings (Knott et al., 1995). Similarly, parents of children with ASD also report higher stress levels (Dyson, 1996), but, as Gutstein (2009) suggests, caregivers, when educated, can greatly impact the social interaction of the ASD child. Therefore, although added stress is common when one

family member has ASD, caregivers and siblings can learn to better understand their relationship and the impact the stress may have on the family as a whole. The impact of stress on the family is not limited to the stress caused by having a child with ASD. Other stress-causing factors, such as marital stress, can have a negative impacted on the children and their relationships with each other (Rivers & Stoneman, 2003). Rivers and Stoneman (2003) found that seeking informal support to help manage marital stress had a healthy effect on the relationship among the children. This, however, was not true when formal supports were sought.

When caregivers provide more support, a TD sibling often feels more positive affect toward the ASD sibling (Orsmond et al., 2009). However, when TD siblings recognize and become dissatisfied with the "differential treatment" toward the ASD sibling, their relationship with the ASD sibling may be compromised (Rivers & Stoneman, 2008). These findings suggest that caregivers play a powerful role in fostering positive relationships between their children, which may lead to better social development for both children; a reduction in stress for the TD sibling, and positive social interactions and learning for the child with ASD.

Kaminsky and Dewey (2001) conducted a study investigating sibling relationships of children with ASD and their TD siblings. They concluded that sibling relationships are unique and important within the family composition. Positive sibling relationships are essential in the development of social skills in early childhood and can be an important source of social support for children with ASD (Kaminsky & Dewey, 2001). Positive relationships with a TD sibling have led to higher levels of self-esteem and lower levels of loneliness and inappropriate behaviours. An important finding from this study is that the TD siblings often ranked their sibling with ASD as less nurturing and less of a

companion (Kaminsky & Dewey, 2001). This is likely due to the child with ASD's social deficits, but education for the child with TD, and continual support from a caregiver, may help to reduce the distress these reactions might cause. When TD children can accept their role as a family member, do not become burdened by perceived parental favouritism, adapt with coping skills, have an active understanding of their sibling's disability, and when their minds are at ease about the future of their sibling with ASD, they are more likely to report positive sibling relationships with their sibling with ASD (McHale et al., 1986).

Kelly, Garnett, Attwood, and Peterson (2008) researched the influence of family conflict on depression in children with ASD. The researchers found that conflict in the family was a better predictor of depression in children with ASD than peer bullying (Kelly et al, 2008). It was also found that family conflict out-influenced positive peer support for the child with ASD (Kelly et al, 2008). This research suggests that family support, often including sibling relationships, is more important than peer relationships for children with ASD in preventing depression or other negative consequences. Nevertheless, peer relationships are an important contributor to the development of any child including one with ASD.

Relationships with peers for children with ASD. In light of the limited research focusing on sibling dyads in the presence of ASD, the author has chosen to include a section on peer relationships for children with ASD. Peer relationships have been more consistently researched and, although different from sibling relationships, can shed some light on how children with ASD experience relationships. Given that sibling relationships are often the first "peer" relationships children experience, there can be a lot of similarities between these two types of relationships. Within the following section, the

author hopes to draw attention to how peer relationships can reflect similar successes and challenges as sibling relationships.

Although under-researched, the peer relationships of children with ASD have been investigated. The majority of ASD peer-focused research has been conducted with non-relative, similar-aged peers rather than siblings. Although we have already indicated that sibling relationships are significantly different than peer relationships, the literature can still be informative and useful. Cutting and Dunn (2006) help to clarify some of the significant similarities and differences between sibling relationships and peer relationships in the presence of ASD. The development of social cognitive skills assisted in successful communication (a common ASD-related deficit) for the child with ASD in both the sibling relationship and the peer relationship. Similarly, social cognitive skills lead to more joint pretend play (another deficit for children with ASD) in both types of relationships, suggesting that development of these skills has overlapping benefits. Conversely, language skills had a more significant impacted on the conversations and pretend play with friends. Evidently, siblings are able to communicate in non-verbal ways more successfully than peers. Addressing non-verbal communication (such as body language, facial expressions, joint play, and proximity) in interventions regarding sibling relationships would, therefore, be advantageous for children with ASD and their families (Cutting & Dunn, 2006).

Bauminger, Shulman and Agam (2004) conducted a study investigating the "friendships of high-functioning children with autism and the link between perceptions of self and of social relationships in these children" (p. 193). Friendships provide some of the first independent relationships that children develop. It is through these relationships that children begin to develop a sense of self, by obtaining greater understanding about

their own internal processes (Bauminger et al., 2004). Once a better understanding of the self has been achieved, children are then more equipped to have more intimate, close relationships with friends. The "interpersonal self", as defined by Bauminger et al., is the ability to see oneself as a social being, and as an object of others' concern and appraisal. There is partial support that children with ASD have a difficult time understanding and defining friendship (Hobson, 1993). When evaluating positive sibling relationships, parallels can be drawn between the construct of friendship and the construct of sibling relationships. The evidence for this is based on speculation and very little empirical evidence is provided (Bauminger et al., 2004). When considering a three-dimensional definition, children with ASD were most likely to leave out the affective dimension ("a friend is someone who likes/loves you") and had some difficulty with the intimacy dimension (sharing one's inner world). On the other hand, they demonstrated understanding of the companionship dimension (an individual with whom one plays with) with a friend equally as well as their TD counterparts (Bauminger & Kasari, 2000). The results of the Bauminger and Kasari (2000) study, evaluating definitions of friendship, indicated that the high-functioning children with ASD were able to recognize friendship when seen in a photograph, but their TD counterparts were more likely to label the picture with an affective experience (i.e., "best friend"). The child with ASD was more likely to merely name the picture as friendship without the affective component. When asked to describe what was happening in the photo the children with ASD were more likely to describe the activities and proximity of the children, rather than the intimacy or affective stories that the TD counterparts shared (Bauminger et al., 2004). Children with ASD reported their friendships as high in closeness and companionship, but low in positive emotion and intimacy. Describing one's friend with positive qualities was also negatively

correlated with loneliness for both children with ASD and TD children, indicating that children with ASD can recognize when a friendship is positive, but may have difficulty talking about the friendship qualitatively (Bauminger et al, 2004). The results of this study may lead us to more questions about the nature of the friendships of children with ASD, but it can be concluded that, even though children with ASD cannot define friendship in the same way as TD children, they are able to recognize positive qualities and be positively influenced by them. Given the conclusions regarding friendship and ASD, as well as the parallels between friendship and positive sibling relationships, it can be concluded that focusing on the physical aspects when evaluating sibling relationships may be more effective than focusing on the emotional aspects of the relationship. If the emotional aspects are the main focus, all sibling relationships in the presence of ASD may be defined as "negative" or not warm and close, but if the physical aspects of the relationship are evaluated, a more "positive" conclusion may be drawn.

Positive peer relationships can be an asset to children with ASD, but positive relationships are not the only kind of peer interactions children with ASD encounter. Children with ASD are four times more likely to experience bullying in peer-focused settings (i.e., school, clubs, teams, etc.) than their TD counterparts (Little, 2002). Kelly et al. (2008) sought to evaluate the impact of negative peer experiences on the development and well-being of children with ASD. The results of this study demonstrated that there was a significant association between ASD symptomatology and the presence of anxiety and depression in children with ASD. The presence of bullying by peers predicted an increase in anxiety and depression that positive relationships could not protect against. In other words, "negative relationships had more weight than positive relationships in the prediction of anxiety/depression and ASD symptomatology" (Kelly et al., 2008, p. 1077).

This evidence leads one to believe that children with ASD are aware of and impacted by the relationships they encounter. Caregivers and professionals must take extra precautions to ensure that the social experiences of children with ASD are nurturing and supportive.

The development of peer relationships in children with ASD has lasting effects, and can impact the social experiences of adolescents and adults with ASD. Orsmond, Krauss, and Seltzer (2004) were interested in investigating the predictive factors of social and recreational involvement among adolescents and adults with ASD. As children with ASD get older, there is a tendency towards seeking more social relationships (Mesibov, 1983; Mesibov & Handlan, 1997; Rutter, 1970; Volkmar & Klin, 1995), and a propensity to relate better to adults in their lives (Travis & Sigman, 1998; Volkmar, 1987). Adolescents and adults with ASD have fewer friendships, fewer peer relationships, and participate less frequently in social and recreational activities (Orsmond et al., 2004). According to Orsmond et al., (2004) being of a younger age and having less social interaction impairment were predictors of having more peer relationships. Similarly, greater participation in recreational activities was associated with more independence, more social interaction skills, and more internalizing behaviours (contrary to the hypothesis of Orsmond et al., 2004). The findings of this study provide evidence for the importance of beginning social skill development at a young age. By investing time in ASD services and integrated school settings that focus on social skill development, as well as, engaging in recreational activities as a family, children with ASD may develop the necessary skills to have meaningful peer relationships as they get older. Orsmond et al. (2004) emphasized the role caregivers play in the socialization of their child with ASD. Because of this role, caregivers, when educated, can significantly improve the

relationships their children with ASD encounter and can encourage the positive qualities and benefits of such relationships.

Parenting

Although the term "parenting" is widely accepted and understood both among scholars and lay-people alike, no one has yet developed a comprehensive and accepted definition of what parenting actually is (Smith, 2011). Typically, parenting includes elements of promoting language and learning, fostering of a stimulating home environment, warmth, positive encouragement, and promotion of beliefs and/or attitudes. Bornstein (2011) offers this description: "parenting beliefs encompass perceptions, expectations, knowledge, ideas, goals, and values about all aspects of child-rearing and development" (as cited in Smith, 2011, p. 158). Although the exact nature and behaviours associated with the above characteristics may manifest differently in different caregivers, caregivers can relate to and understand parenting behaviours categorized in this way. Several factors influence the way caregivers come to parent their children. For example, socialization of the caregiver, warmth and affection, parental control (Maccoby & Martin, 1983), characteristics of the child, child temperament, reciprocal interaction (Rutter, 1979), familial relationships (Hinde & Stevenson-Hinde, 1987), and caregiver mental well-being (Radke-Yarrow, 1999) all influence the parenting behaviour of a caregiver. The complex nature of parenting (parental personality, child characteristics, parental developmental history, marital satisfaction, social network support, economic status, and educational status) makes it nearly impossible to evaluate all aspects of the influence parents have in the family atmosphere (Smith, 2011). It is for this reason that researchers must break down the factors of parenting and evaluate them separately.

The role caregivers play in the development of their children's social and personal identity has been widely researched. Caregivers are the first and most influential relationships children encounter and, thus, caregivers have the ability to shape and promote children's well-being. For example, factors associated with family function (i.e., family relationship and an emphasis on personal growth) can promote social competence and reduce negative behaviours in TD children (Dyson, 2003). That being said, parents can only be effective at parenting when their own emotional well-being is cared for. Parents of children with ASD seem to have more difficult marital and/or intra-familial relationships (Baxter, Cummins, & Yiolitis, 2000). Doron and Sharabany (2013) found that the severity of a child's ASD symptoms did not correlate with marital satisfaction or emotional well-being. Nevertheless, it was found that when couples received satisfying support from family and friends, the marital relationships was perceived as closer and the emotional well-being of both members of the couple was healthier. When marital satisfaction is higher, parents are more equipped to parent as a unified team, and thus more effective at parenting in a way that supports and promotes healthy development in their children (Doron & Sharabany, 2013).

The importance of parenting on children's well-being has clearly been established, which leads to the question: how does parenting impact the sibling relationship in the presence of ASD? Rivers and Stoneman (2008) sought to answer this question. Differential parenting, or not treating the siblings the same, has repeatedly been associated with negative sibling relationships (Brody, Stoneman, & Burke, 1987; Brody, Stoneman, & McCoy, 1992; McHale, Crouter, McGuire, & Updegraff, 1995; Stocker, Dunn, & Plomin, 1989; Volling & Belsky, 1992). Other factors seem to play an important role as well, but those factors are more stable and less susceptible to change

(i.e., child temperament). Given that differential treatment is, at times, necessary in the presence of disabilities, it is important to note that it is not, ultimately, the presence or amount of differential treatment that leads to the problem, but rather when the differential treatment is perceived as being unfair or unnecessary by the TD sibling (Kowal, Kramer, Krull, & Crick, 2002). Rivers and Stoneman (2003) replicated the aforementioned findings with families affected by the presence of ASD. From this, it can be concluded that differential parenting, though unavoidable in some situations, needs to be assessed and evaluated in light of the perceptions of the TD sibling in order to avoid detrimental effects on the sibling relationships. The way in which parents implement differential treatment and other aspects of parenting in general, often can be attributed to a caregivers tendency towards one style or method of parenting.

Parenting style. Parenting styles have been studied in great depth since 1971 when Baumrind developed her model, initially proposed by Baldwin in 1948 (Darling & Steinberg, 1993). Three core parenting styles were presented: authoritarian, authoritative, and permissive. Late literature also includes a fourth parenting style, namely, rejecting-neglecting (Heaven, Ciarrochi, & Leeson, 2010). For the purpose of this study, however, this parenting style will not be included. The authoritarian parenting style is described as stricter and less warm. It may include things like verbal aggression, corporal punishment, non-reasoning, disciplinary strategies and harsh directive tendencies (Yu & Gamble, 2008). Authoritative parenting, on the other hand, is characterized by warmth, a willingness to reason, child participation in decision-making, and a good-natured attitude (Yu & Gamble, 2008). Permissive parents can be described as feeling uncertainty about parenting, ignoring inappropriate behaviour of their children, and lacking follow-through when it comes to disciplinary action (Williams et al., 2009).

There are significant ways that each of the three parenting styles influences the development and socialization of children. Typically parents engaging in authoritative parenting raise well-adjusted children who experienced less internalizing behaviour problems (Buri, 1991; Williams et al., 2009). Parents primarily resorting to more authoritarian or permissive parenting styles, on the other hand, raise children with interpersonal deficits, behavioural problems and lack the ability to adjust to differing environments (Williams et al., 2009).

Research shows that children of authoritarian parents often have lower self-esteem than other children their age (Heaven et al., 2010). Self-esteem can influence the way children make friendship, perform academically and behave in public and private situations. Lower self-esteem may be a result of the authoritarian parenting refusing to allow the child to make any decisions for him/her self. Often authoritarian parents require their children to agree with and act upon their wishes immediately, which may convey the message that the child is not bright enough to make any decisions on his/her own. This suggests that if parents desire their children to have higher self-esteem, authoritarian parenting would not be a good method. Williams et al. (2009) also found that authoritarian parenting leads to an increase in behavioural problems. Perhaps the more strict and restrictive parenting styles lead to an increase in acting out and rebellion in the children. On the other hand, Rodriguez (2010) suggested that in some ethnic groups (e.g., African American and Chinese American families), authoritarian parenting had some benefits (Baumrind, 1972; Chao, 1994). Nevertheless, authoritarian parenting is still seen as problematic in most cultural groups. Child abuse is more prevalent in authoritarian homes (Rodriguez, 2010), which often leads to more aggression between siblings and towards peers (Yu & Gamble, 2008). Yu and Gamble (2008) also found that

children of authoritarian parents are often more emotional and have difficulty with emotional regulation. Research shows that Taiwanese children with ASD, whose parents are more authoritarian and over-protective, when compared to authoritative and warm parents, display more severe behavioural problems and their TD siblings may show the same trend (Gau et al., 2010). This research may be generalized to other cultures and the knowledge may be used to impact the relationship between the siblings as has been evidenced in research between two TD siblings (Yu & Gamble, 2008).

Although research often suggests that authoritarian parenting leads to the most negative outcomes, permissive parenting can be equally detrimental (Rodriguez, 2010). Rodriguez (2010) suggests that permissive parenting could provide similar results as neglectful parenting, leading to poor decision-making, high-risk behaviour and stunted interpersonal skills. In young children, internalizing problems and behavioural problems are also related to permissive parenting (Williams et al., 2009).

Authoritative parenting has been proven to be the most effective kind of parenting. Children of parents who maintain authoritative parenting practices report higher levels of happiness and self-esteem (Heaven et al., 2010). Williams et al. (2009) found that authoritative parenting lead to fewer internalizing and externalizing problems as well as behavioural problems and decision-making and high-risk behaviour tendencies. Authoritative parents raise less disruptive and more socially competent, well adjusted children (Williams et al., 2009). Research suggests that authoritative parenting is essential for instilling social responsibility in children and adolescents. Parents with higher educations are more likely to practice authoritative parenting, suggesting that this kind of parenting can be taught and practiced (Yu & Gamble, 2008). Finally, and most importantly, Yu and Gamble (2008) provides evidence indicating that positive,

supportive, and cooperative parenting styles promote warm, supportive, cooperative, and intimate sibling relationships.

Despite the large number of studies researching parenting style, very few parenting style scales have been subjected to psychometric testing. The Parental Authority Questionnaire-Revised (PAQ-R; Reitman, Rhode, Hupp, & Altobello, 2002) has been used by a number of different researchers in recent years and has also been psychometrically tested. The author suggests that the current study, while using the PAQ-R, will yield similar results to those found above. Authoritarian and permissive parenting styles will be associated with less adaptive, negative, hostile relationships between children with ASD and their TD siblings; whereas children of authoritative parents will be more likely to develop close, warm, nurturing relationships as seen by those parents.

Unfortunately, the style in which a caregiver rears his/her children is not the only thing that impacts the development of the children in the family. Other factors contribute to the emotional well-being, development, social interactions, and sibling relationships of both TD children and their siblings with ASD. Not among the least of these factors is parenting stress.

Parenting stress. As previously mentioned, a caregiver's emotional well-being can greatly influence the way children interact inside and outside of the home. One major contributor to an unhealthy emotional state is stress. Stress can be caused by a number of factors, including, but not limited to, marital, occupational, economic, mental health related issues, and, of most interest to the author, parenting stress. This knowledge is beneficial but without knowing how and why parents become stressed, one is unable to adequately assess levels of stress and the impact of stress on children.

Mills-Koonce et al. (2011) were interested in the factors that put mothers at greater risk for experiencing stress. Additionally, they sought to understand how increased stress influences maternal parenting tendencies. More specifically, Mills-Koonce et al. evaluated adult attachment styles in mothers and observed how stressed interfered with or influenced their parenting practices. Roisman et al. (2007) established that, when experiencing stressful situations, insecurely attached individuals have a tendency to become anxious or avoidant. The avoidant attachment style in mothers is often associated with higher levels of parenting stress and lower levels of parental satisfaction (Rholes, Simpson, & Friedman, 2006). Mills-Koonce et al. (2011) suggested that mothers who have attachment styles other than secure styles would find highly stressful parenting situation, having a child with ASD, for example, as especially problematic. Educating caregivers about attachment styles, coping skills, and the importance of interpersonal support, may assist caregivers, particularly susceptible to stress, counteract the negative impacts of stressful parenting situations. This kind of education is particularly important when parenting children with ASD.

Having a child with a disability is, arguably, one of the most stressful parenting situations for a caregiver. Caregivers of children disabilities felt more stress related to meeting the needs of their child while balancing the needs and expectations of the other family members (Lardieri, Blacher, & Swanson, 2000). Dyson (1996) described the nature of parental stress in the presence of learning disabilities. Although there are significant differences between learning disabilities and ASD, Dyson's research can clarify different ways parental stress impacts family functioning in the presence of a special need. Dyson (2003) found that when parents demonstrated greater stress about their child's learning disability, the child demonstrated less social competence and more

behavioural problems. Difficulties experienced by the parents of the children with learning disabilities were essentially associated with behavioural deficits and insufficient skills (Dyson, 1996). Dyson (1996) recommends enhanced support for families who have children with disabilities. Greater social support, school-based programs and earlier recognition of the disability can promote better coping and less stress for the caregivers of the children with a disability.

Stress and the impact stress has on parenting skills and child outcomes were researched by Murphy, Marelich, Armistead, Herbeck, and Payne (2010). Their research consisted of evaluating the stress levels of mothers living with HIV and how that stress impacted the effectiveness of their parenting. Again, stress caused by a physical disease may be conceptually different than stress caused by the disability of a child, but the findings of this study can shed some light on the possible impact of parenting stress on parenting children with ASD. Murphy et al. concluded that mothers with higher levels of stress demonstrated poorer parenting skills. More specifically, these mothers engaged less often in family routines with their children, had weaker parent-child communication skills, and were less consistent in disciplining their children. Naturally, negative child outcomes were a direct result of the deficit in parenting skills. Murphy et al., recommend that parenting interventions include: (a) education on how stress impacts family function; (b) different strategies and coping skills for managing stress; (c) parenting skills; and (c) communication skills. All of these recommendations can be applied to parenting stress in the presence of a child's ASD, as one can assume similar outcomes for the children in these environments.

Dabrowska and Pisula (2010) were interested in whether parenting stress and coping skills were different in the presence of ASD compared to parents of children with

Down syndrome. According to Sharpley, Bitsika, and Efremidis (1997) the most noteworthy causes of stress experienced by parents of children with ASD are prognosis of ASD, lack of acceptance of the child's behavioural deficits by family and society, and inadequate professional services. Interestingly, Dabrowska and Pisula (2010) found that parents of children with ASD experienced more stress than parents of children with Down syndrome, suggesting that further research into the unique experiences of caregivers of children with ASD is needed.

Dabrowska and Pisula went on to evaluate the coping strategies caregivers use. They found that parents of children with ASD were less likely to use the social diversion method of coping (using social outings, friends, and activities as a way to cope with their stress). This information, in light of Dyson's (1996) recommendations, is quite interesting. To reiterate, Dyson recommends that family services educate caregivers on the value of seeking formal and informal supports. Because caregivers of children with ASD are less likely to seek social support to cope with parenting stress, and because social support can play an important role in parental well-being, interventions need to emphasize the importance of seeking support from trusted individuals. Finally, Dabrowska and Pisula (2010) found that when emotion-oriented coping was most prominent, parents experienced greater amounts of total parental stress. This finding suggests that although emotion-oriented coping may be a justified response to the stresses associated with parenting a child with ASD, more effective coping strategies can be taught and effectively used by these caregivers.

The impact of parenting stress on parental well-being, child well-being and overall family function likely influences the sibling relationship as well. Unfortunately, very little research has been conducted on the direct impact parenting stress has on the sibling

dyad, particularly in the presence of ASD. The research outlined in this section can provide insights into the impact of parenting styles and parenting stress on children with ASD and the ASD-TD sibling dyad. ASD, however, is unique and thus further investigation is warranted. How the distinctive attributes of ASD interact with parenting features and sibling relationships is yet to be determined.

ASD Specific Factors

To understand how family-based factors interact with factors specific to ASD, one must first address the characteristics that make ASD unique. According to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association [APA], 2000), ASD has been categorized with "Pervasive Developmental Disorders" (p. 69). Under this umbrella term, there are five disorders listed: (a) Autistic Disorder; (b) Rett's Disorder; (c) Childhood Disintegrative Disorder; (d) Asperger's Disorder; and (e) Pervasive Developmental Disorder Not Otherwise Specified (p. 69). These five disorders have popularly become known as Autism Spectrum Disorders. Children with any one of the five ASDs display similar types of symptomatology, with some minor differences in onset, prevalence, and prognosis. In general, children with ASD, display deficits in social interaction, communication, and behavioural patterns. More specifically, Children with Autistic Disorder display: (1) at least two social interaction impairment symptoms; (2) at least one impairment in communication symptom; (3) at least one "restricted repetitive and stereotyped patterns of behaviour, interests, and activities" symptom; along with (4) onset prior to age 3; and (5) the dysfunction is not better explained by Rett's Disorder or Childhood Disintegrative Disorder (p. 75).

Rett's Disorder requires the following diagnostic criteria: (A) all of the following; (1) apparently normal prenatal and perinatal development; (2) apparently normal psychomotor development through the first 5 months after birth; and (3) normal head circumference at birth. (B) Onset of all of the following after normal development; (1) slowing of head growth between ages 5 and 48 months; (2) loss of acquired fine motor skills with subsequent stereotyped hand movements; (3) loss of previously displayed social interactions; (4) poor large motor skills; and (5) significant impairment to language development and psychomotor skills (APA, 2000, p. 77).

Children with Childhood Disintegrative Disorder display the following symptomatology: (A) typical development for the first two years of life; (B) loss of at least two previously acquired skills before the age of 10 (e.g., language skills, social skills, bowel or bladder control, play, or motor skills); (C) abnormal function in at least two areas (e.g., impairment in social interaction, impairments in communication, or stereotyped patterns of behaviour); and (D) dysfunction is not better explained by another disorder (APA, 2000, p. 79).

According to American Psychiatric Association (2000), children living with Asperger's Disorder would display the following diagnostic criteria: (A) at least two qualitative impairments in social interaction; (B) at least one symptom of behaviour (restricted, repetitive, and stereotyped); (C) significant impairment in functioning; (D) no significant language deficits; (E) no significant cognitive deficits; and (F) pattern of symptoms is not better account for by another disorder (p. 84).

Finally, children who become diagnosed with Pervasive Developmental Disorder Not Otherwise Specified (PDDNOS) typically display significant impairment in social

interactions, verbal or nonverbal communication, or abnormal behavioural patterns, but do not meet the criteria for any of the other disorders listed here (APA, 2000, p. 84).

Generally speaking, Autistic Disorder, Asperger's Disorder, and PDDNOS are better understood by lay-people and are more frequently diagnosed by professionals. For the purpose of this study and for the sake of simplicity, all five disorders outlined here will be referred to as ASD and the diagnostic criteria that will be focused on are: (a) deficits in social interaction; (b) deficits in communication (verbal and/or nonverbal); and (c) abnormal behavioural patterns.

The *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; American Psychiatric Association, 2013) has suggested some changes to the diagnostic criteria of the Pervasive Developmental Disorders. In the DSM-V, the previously defined Autistic Disorder, Asperger's Disorder, Childhood Disintegrative Disorder, and PDDNOS have been grouped within a single "Autism Spectrum Disorder". This change reflects the understanding that all four disorders are actually one single disorder with varying levels of symptomatology. The recognition of ASD is still characterized by: (1) social communication and social interaction problems; and (2) abnormal behavioural patterns (APA, 2013). In light of these changes, the utilization of the term "ASD", in this study, is both appropriate and fitting.

Given the common deficits children with ASD experience. It is important to consider how family functioning impacts the development, treatment, and success of the child with ASD. Social interaction, regardless of where on the spectrum a child is, is one of the defining deficits faced by children with ASD. It follows that considering the promotion of sibling interaction in the home and in formal ASD intervention is a relevant quest. Similarly, addressing how the interplay between family characteristics, such as

sibling interaction, parenting factors, and TD sibling involvement in ASD intervention, impact the success children with ASD experience in intervention is necessary. In order to do so, an outline of what successful ASD intervention entails is necessary.

Intervention for ASD with sibling involvement. Although Cash and Evans first suggested using typically developing (TD) siblings as "behaviour modifiers" for siblings with disabilities in 1975 (as cited in Tsao & Odom, 2006), relatively little research has been done on the effectiveness of sibling-mediated interventions for children with ASD. Even less has been done evaluating the impact sibling-mediated interventions have on the sibling relationships quality. A select few researchers have evaluated peer-mediated interventions for children with ASD. From that, some researchers felt that sibling-mediated interventions deserved some attention as well. Both peer and sibling-mediated intervention strategies can help to uncover the impact TD siblings have when included in the treatment process.

Peer-mediated intervention strategies are based on behaviourism principles and Bandura's (1977) social learning theory (as cited in Sperry, Neitzel, & Engelhardt-Wells, 2010). Sperry et al. (2010) suggested that "peer-mediated instruction and intervention strategies are a set of focused intervention practices designed to systematically teach typically developing peers ways of successfully engaging children with ASD in positive social interactions" (p. 256). Training TD children in these skills is necessary because without explicit instruction, TD children are more likely to limit their interactions to only their TD peers (DiSalvo & Oswald, 2002).

In 2011, Trottier, Kamp, and Mirenda evaluated the effectiveness of using peers to teach children with ASD to use speech-generating devices in the classroom. Because communication is a core deficit for children with ASD, assisting them to use

communication devices effectively is imperative. Trottier et al. sought to teach two children with ASD how to use speech-generating devices in the classroom using six TD peers. The results demonstrated that not only were the TD children able to learn the skills necessary to promote the use of the speech-generating devices, but the children with ASD increased their appropriate communicative acts in the classroom. A study by Trembath, Balandin, Togher, and Stancliffe (2009) evaluated whether positive results would be observed when speech-generating devices were not used. They found that peer-mediated naturalistic teaching, both with and without the use of speech-generating devices, improved communicative behaviours in children with ASD (Trembath et al., 2009). The results of these studies demonstrate the appropriateness of using similar-aged peers or siblings as a way to enhance social interactive behaviours in children with ASD.

Peer-mediated interventions for children with ASD result in reduced social impairments (Goldstein, Kaczmarek, Pennington, & Shafer, 2013; Kamps, Royer, & Dugan, 2002; Peirce & Schreibman, 1997; Sasso, Hughes, Swanson, & Novak, 1987). Similarly, peer-mediated interventions have positive effects on educational, relational, and personal-social development (Sperry et al., 2010). Naturally, addressing how sibling-mediated interventions compare takes the literature one step closer to addressing the impact sibling involvement in ASD intervention has on children with ASD.

In 2006, Tsao and Odom conducted a research projected designed to evaluate the effectiveness of sibling-mediated interventions. They were particularly interested in how these interventions enhance the social behaviours of children with ASD. Previously, social interaction interventions were based largely in the classroom. Tsao and Odom suggested that many children with ASD spend limited to no time in the classroom, thus siblings may make an adequate substitute for the proven peer-mediated interventions. In

particular, Tsao and Odom explored whether TD siblings could be taught to use social skills strategies for relating to their sibling with ASD and whether using such skills resulted in improved social competencies in the children with ASD. The results demonstrated the TD siblings did increase the amount of time the spent interacting with their sibling with ASD. Additionally, the children with less severe social impairment increased the frequency with which they engaged in social interaction. For the children, with nearly no social interaction at baseline, improvements in social interaction only lasted for the duration of the study but did not continue at follow up (Tsao & Odom, 2006).

Finally, and most recently, Ferraioli and Harris (2011) evaluated the promotion of joint attention through sibling-mediated behavioural interventions. Joint attention, as defined by Mundy, Sigman, and Kasari (1994), includes "gestures and eye contact to coordinate attention with another person in order to share the experience of an interesting object or event" (as cited in Ferraioli & Harris, 2011, p. 261). Joint attention is of particular interest because deficits in joint attention are common among all children with ASD. It has also been demonstrated that improvements in joint attention are correlated with an increase in other social skills (Jones, Carr, & Feeley, 2006). The results of Ferraioli and Harris's (2011) study varied depending on the severity of the ASD symptoms. Nevertheless, there was meaningful change in each of the participant children with ASD. All of the children with ASD improved in responding to joint attention, whereas only the higher-functioning children demonstrated an improvement in initiating joint attention after the sibling-mediated joint attention intervention (Ferraioli & Harris, 2011).

The previously mentioned studies suggest that similar-aged peers and siblings can implement useful and effective interventions for children with ASD. The author found no evidence suggesting that TD siblings have been included in therapist-led or parent-led interventions and thus no evaluation of how inclusion of siblings affected the outcomes of the interventions. Nevertheless, one can hypothesize that, when used appropriately, inclusion of TD siblings in therapist or parent-led intervention can improve the generalizability of skills acquired by the child with ASD. In order to evaluate the generalizability of skills and/or the acquisition of skills in a particular kind of intervention, one needs to address the ways in which parents and scholars define "success" of an intervention.

Success in Autism Spectrum Disorder interventions. At one point, a diagnosis of ASD brought with it tremendous hopelessness and despair. Children who received this diagnosis were assumed to have no future and no hope of improvement. Since then, however, evidence has been provided that offers caregivers and family members a great deal of hope. Children with ASD now not only have the opportunity to improve but can improve to the point of living happy and independent lives because of intervention (Freeman, 1997). It is important to note, however, that although there is hope, the severity of ASD symptomatology and comorbid conditions greatly impacts the child's prognosis and future with the disorder.

In light of the diagnostic criteria mentioned above, caregivers and professionals would deem an intervention successful when symptomatology decreases. The three types of symptoms present in ASD are: (1) social interaction symptoms; (2) communicative symptoms; and (3) abnormal behavioural symptoms (APA, 2000). A reduction in social interaction symptoms may manifest as: (a) an increase in eye-to-eye gaze; (b) greater use

of facial expressions; (c) more appropriate body posturing; (d) appropriate use of gestures in social interactions; (e) increase in developmentally appropriate peer relationships; (f) increase in seeking others to share in enjoyment, interests, or achievements; and/or (g) an improvement in social or emotional reciprocity. Positive changes to ASD-related communication impairments may be observed by: (a) an increase in verbal or nonverbal attempts to communicate; (b) improvements in initiating and sustaining verbal or nonverbal conversations; (c) observed decreases in stereotyped or repetitive language; and/or (d) an increase in developmentally appropriate varied and spontaneous pretend play. Finally, successful changes to a child's stereotyped or repetitive behaviour may be demonstrated by: (a) a decrease in intensity and focus on stereotyped or restricted patterns of thought; (b) an increase in ability to tolerate changes to routine and rituals; (c) reduction in stereotyped mannerisms (e.g., hand flapping); and/or (d) reduced preoccupation with specific parts of objects or toys (p. 75).

One would assume that professionals' and caregivers' assumptions about what constitutes successful intervention would be similar. Stone and Rosenbaum (1988) found that parents commonly held misconceptions about cognitive, developmental, and emotional features of ASD. This information is 25 years old, however, and it may be safe to assume that the current climate of awareness and education has improved their findings. Regardless, the author recommends surveying and interviewing caregivers in their expectations for their children in ASD treatment. Given that this has not been done, the author will assume that caregivers' evaluation of success in ASD intervention will be similar to that of professionals and academics in the field of ASD intervention evaluation.

Because ASD interventions are continually being created, re-created, and improved, Powers (1992) provides the following guidelines for caregivers when faced

with the overwhelming task of choosing a treatment plan. Treatment plans should: (a) rely on the principles of applied behavioural analysis; (b) include parental involvement in the home and community; (c) begin as early as possible; (d) be implemented intensely; (e) be focused on generalizability; (f) emphasize the development of social and communication skills; and (g) involve TD peers when and if possible (as cited in Freeman, 1997, p. 646). Similarly, Ogletree (2007), a speech-language pathologist, concludes that the interventions are only successful if they result in meaningful, socially valid outcomes. In other words, if the improvements are only observed in a closed, clinical setting, it has not truly been successful. Generalizability of outcomes is imperative (Ogletree, 2007).

When focusing on outcomes, Freeman (1997) postulates that the most successful persons with autism are those who are aware of their ASD and have an understanding of what it means to be living with ASD. Caregivers should also be included in the prioritization of outcomes. What are their expectations? What do they hope for their child with ASD? Treatments that work successfully for one child with ASD, may not work for the next, therefore it is necessary to evaluate each intervention from a case-by-case, family-by-family viewpoint.

Because success in ASD intervention is as unique to each individual with ASD as the way the ASD manifests itself, it is difficult to provide an outlined list of necessary principles to determine success. The author suggests that because caregivers are truly the experts in the lives of their children, they are most equipped to determine whether ASD interventions have been successful or not. It is with this in mind that the evaluation of success in ASD intervention was conducted. Caregiver-perceived ASD success is,

ultimately, the best way to honour the unique experiences of each child with ASD in his/her family.

Summary

The literature reviewed here provides information about the different areas of interest this study aims to address. In summary, siblings provide an opportunity for a unique and important relationship for children (Schuntermann, 2007; Smith & Hart, 2002). Sibling relationships can teach, comfort, and develop social awareness and identity (Cutting & Dunn, 2006). Because sibling relationships are significant in typical family units in promoting happiness and quality of life (Kramer & Kowal, 2005), it can be assumed that the sibling relationships are equally as important in families with a special need. For example, adequate socialization with TD siblings in the home may lead to healthier relationships with peers (Kramer & Kowal, 2005). Not only do positive sibling relationships help the children with ASD, but also they appear to be mutually beneficial for both members of the sibling dyad (Kaminsky & Dewey, 2002). Relationships, in general, are observed and understood differently by children with ASD but are still valued and important to these children (Bauminger & Kasari, 2000). Conversely, negative relationships encountered by the child with ASD may promote anxiety and depression in the child (Kelly et al., 2008). Given the importance of sibling relationships, promoting positive, nurturing sibling relationships becomes imperative.

Parenting is the first line of support and encouragement in promoting sibling relationships. Caregivers begin the process of a child's social and personal identity development (Dyson, 2003). Parenting style and parental well-being are both influential in a caregiver's ability to promote children's well-being. Furthermore, parenting style influences children in a number of different ways. Authoritative parenting styles yield the

most positive outcomes (Yu & Gamble, 2008) whereas authoritarian and permissive parenting can lead to maladaptive and destructive behaviour (Williams et al., 2009). Additionally, children of parents who adhere to the authoritative parenting style tend to have more warm, supportive, cooperative, and intimate sibling relationships (Yu & Gamble, 2008). Parenting stress impacts parenting skills, child development and sibling relationships (Mills-Koonce et al., 2011). Despite the fact that caregivers of children with disabilities naturally experience greater amounts of stress (Lardieri et al., 2000), there are familial interventions and skills that can be taught to reduce the negative impact of stress (Dyson, 1996).

ASD, with the unique symptomatology that is used to identify ASD, plays an integral role in the relationships found in the family dynamic. When combining the notion of sibling relationship quality and ASD intervention, one must consider the use of similar-aged peers/sibling in the intervention process. Peer-mediated interventions have been proven to enhance children with ASD's display of social interaction skills (Sperry et al., 2010; Trembath et al., 2009; Trottier et al., 2011). Similarly, sibling-mediated interventions demonstrated effectiveness in improving joint attending and initiation (Ferraioli & Harris, 2011; Tsao & Odom, 2006). Unfortunately, no research has been conducted on the use of TD sibling in therapist/parent-led interventions. One can assume, however, that such methods may increase generalizability of skills learned in intervention, and can enhance social skills. Finally, evaluating the success of a child's ASD intervention largely relies on symptom reduction (Freeman, 1997), and generalizability of skills acquired (Ogletree, 2007). Nevertheless, given the unique expectations of each child, his/her caregiver(s), and the family as a whole, professionals must constantly be evaluating the effectiveness of any given treatment protocol.

Given the review of previous literature, the author is seeking to bridge a gap in knowledge regarding the complex relationships found within the family. Given sibling relationships, parenting style, parenting stress, sibling involvement in ASD intervention, and success in ASD intervention, the author sets forth to address the following hypotheses.

Hypotheses

The researcher provides three main hypotheses for this study; first, the author is seeking to reconfirm the role parenting style and parenting stress play in the quality of sibling relationships. More specifically, the researcher hopes to reconfirm that authoritarian parenting (independent variable; IV) and parenting stress (IV) significantly impact the formation of a warm and close sibling relationship (dependent variable; DV). Second, the author hopes to evaluate the impact success in ASD intervention and sibling involvement in intervention has on the quality of sibling relationship. In other words, success in ASD intervention (IV) and sibling involvement in ASD intervention (IV) will lead to a warmer and closer sibling relationship (DV). Finally, given the complex multi-directional nature of systems research, the author hopes to evaluate how parenting style, sibling involvement in ASD intervention and the quality of sibling relationship effect the experience of success in ASD intervention. Again, the author believes authoritative parenting (IV), sibling involvement in intervention (IV), and a warm and close sibling relationship (IV) will contribute to greater amounts of success in ASD interventions (DV). To clarify "interventions", as stated in hypotheses two and three, are defined as any and all formal actions taken to improve the functioning, symptomatology, and well-being of the child with ASD. The author adopted this definition in order to draw data from a wider range of ASD severities and service environments. Additionally,

hypotheses two and three may seem to contradict each other. As stated previously, the transition of warmth and closeness from dependent variable to independent variable, as well as the transition of success in ASD intervention from independent variable to dependent variable, reflects the bi-directionality of these variables as seen from a systemic framework. Simply stated, the hypotheses are:

1) Authoritarian parenting and higher levels of parenting stress will contribute to the variance found in the warmth and closeness factor of sibling relationships.
2) Greater degrees of success in ASD intervention and more frequent sibling involvement in ASD intervention will contribute to the warmth and closeness factor of sibling relationships.
3) Higher levels of authoritative tendencies, greater frequency of sibling involvement in intervention and high levels of the warmth and closeness factor of sibling relationships will lead to a higher success rate in ASD intervention.

Again, the transition of the warmth and closeness factor of sibling relationships variable from DV to IV, as well as the change of the ASD success variable from IV to DV in hypotheses two and three may be considered controversial. Nevertheless, given the complex nature and multi-directional impact of variables within the family, this shift can be justified. The professional experience of the author suggests that one variable does not simply impact another in isolation but rather they are continually influencing, changing, and strengthening each other. Without considering the possibility of a two-way influence of these two variables, the author fears that valuable information and knowledge may be lost. These hypotheses will be tested using a series of empirically validated questionnaires, which will be described in detail in the following sections.

CHAPTER II – METHODS

To restate, the author is seeking to strengthen the current literature on the influence parenting style and parenting stress has on sibling relationships in the presence of ASD and to broaden the current literature on the impact of successful intervention and sibling involvement in intervention on the sibling relationship. Finally, the author hopes to understand better how parenting style, sibling relationships and sibling involvement can be utilized to promote greater degrees of success in intervention for children with ASD. The author employed a quantitative, cross-sectional research design in which a multivariate correlational analysis (specifically, a hierarchical multiple regression) was applied to the current project. In doing so, several things had to be considered in light of the research focus and questions: inclusion and exclusion criteria for participants, recruiting techniques, data collection and sample size, appropriate statistical analysis, and rigour and validation strategies.

Participants

Because the desired sample is relatively structured, inclusion/exclusion criteria were defined prior to recruitment. Two of the primary variables for this research project were parenting style and parenting stress, thus the participant were required to be the primary caregiver in a family. The primary caregiver's family also needed to satisfy the other criteria in the proposed project. The families included, at least, one child currently diagnosed with ASD and one typically developing (TD) child. When caregivers gave informed consent they were indicating that the diagnosis of ASD had been made by a psychologist, psychiatrist, or physician using the Diagnostic and Statistical Manual, fourth edition (DSM-IV) criteria. The child with ASD was currently engaging in some form of ASD intervention, in order to answer the questions pertaining to the sibling

involvement in ASD intervention and the success in ASD intervention questions. Finally, participant caregivers had to have access to the Internet to complete the online questionnaire.

The sample (see Appendix L), primarily female (95%), ranged from 26 to 60 years of age. The respondents' educational level was requested and the majority of respondents indicated they had some college education (24%), a two-year college diploma (24%) or a four-year university degree (33%). Seven percent of participants had a high school degree or an equivalent GED and ten percent had completed a Master's degree. One participant indicated he or she had a professional degree. Income levels range from less than $10, 000 annually to over $100, 000 annual with the largest number of participants (26%) indicating the latter. Seventy-eight percent of participants were married, while some indicated they were "single, never married" (5%), "common-law" (8%), "separated" (3%), or "divorced" (5%). One participant selected the *other* option and indicated that they were engaged and about to be married. The participants' Religious/Spiritual/Cultural affiliations were also requested. A wide range of responses were collected. "None" received the greatest number of responses at 32%, Roman Catholic (24%) and Protestant Christian (23%), the second most frequent, and Buddhist (3%), Muslim (1%), and Aboriginal (2%) received much fewer responses. Finally, many (16%) participants selected the "other" category, such as the following: Pagan; Sikh; Not Relevant; Latter Day Saints; Celticism; Greek Orthodox; Jehovah's Witness; Agnostic; and Non-practicing Catholic.

The respondents were asked what cultural heritage they most identified with. Seventy-five percent indicated they identified most as Canadian, eight percent selected Western European, with 12% choosing *other* (Latino, American, Mediterranean, and

Italian, for example). Two percent identified as Asian while only one percent selected Eastern European, Pacific Islander, South East Asian, and Aboriginal/First Nations. Despite the intentions of the author to recruit only Canadian participants, the survey was accessed by individuals in other countries. Specifically, 79% of respondents were living in Canada, 19% from the United States of America, two percent in the United Kingdom, while one participant was from Mexico. The generational status of each participant was also calculated using the respondent's country of birth, his/her mother's country of birth and his/her father's country of birth. Approximately four percent of participants were first generation status, five percent were one and a half generation status, and seven percent were second-generation immigrants, while 85% were identified as being greater than second-generation status immigrants.

Finally, demographic information pertaining to the children in the family was collected. There was a fairly even gender split for the TD children with 55% being female and 45% being male. The mean age for the TD children was 8.6 years old, ranging from 0.6 years old to 27 years old. The data from the participants with very young or much older children was evaluated for being overly influential. Because this data did not seem to be largely affecting the trend of the data, it was left in the data set. Similarly, there was a relatively even split of older and younger TD siblings (44% and 56%, respectively). There were significantly more male children with ASD than there were female (81% and 19%, respectively). This gender bias reflects the accepted evidence that males have a higher likelihood to develop ASD than females (Autism Speaks Canada, 2012). The children with ASD ranged in age from two years (children cannot be diagnosed with ASD until at least 2 years of age; Autism Speaks Canada, 2012) to 26 years, with a mean age of 8.5 years old. Finally, there was an average of 30.5

months between the TD children and their siblings with ASD, ranging from 0 months (twins) to 114 months (9.5 years) between the siblings.

The demographic information outlined in this section provides a thorough characteristics overview of the sample that was used to conduct the analysis and answer the outlined research questions. Demographic information was not utilized in any of the primary analyses, but the author considered them in detail when interpreting the results. Additionally, a correlation matrix (Appendix M) was created to assess the possibility of third variable influence by the background/demographic information on the main variables used in the study. Furthermore, the author did not use manipulation of any of the independent variables, therefore all five variables were pre-existing categories that were determined by the following questionnaires and then used during the data analysis phase.

Materials

Participants were asked to complete a battery of online scales (further detail of the online questionnaires can be found in the Procedure section of this chapter). The questionnaire included the Sibling Relationship Questionnaire – Revised (Parent; Furman & Buhrmester, 1985), the Parental Authority Questionnaire – Revised (Reitman, Rhode, Hupp, & Altobello, 2002), the Parenting Stress Index – Short Form (Abidin, 1990), questions developed for this study to address sibling involvement in ASD intervention, as well as parent-identified success in ASD intervention, and a background questionnaire. The participants were asked to complete them independently and to answer honestly to the best of their ability. Using an online questionnaire made distribution to other provinces possible, making the sample reflect a wider range of ASD services systems.

Sibling Relationship Quality. Sibling Relationship Quality was operationally defined in accordance with the creators of the Sibling Relationship Questionnaire, Furman and Buhrmester (1985). The original Sibling Relationship Questionnaire was designed for children to complete independently. Thus the Sibling Relationship Questionnaire – Revised (Parent; SRQ-R; Appendix G) was used for this study. In Furman and Buhrmester's quest to create an adequate measure to assess sibling relationship quality, four factors emerged as being relevant: (1) warmth and closeness, (2) relative status/power, (3) conflict, and (4) rivalry. Warmth and closeness manifest in a number of different ways, including: "intimacy, prosocial behaviour, companionship, admiration, nurturance, perceived similarity, and affection" (Furman & Buhrmester, 1985, p. 450). Relative status and power refers to the degree to which one sibling exerts power and control over the other. Some sibling relationships would consist of an egalitarian relationship, when both siblings share power and neither child controls the other (Furman & Buhrmester, 1985). Depending on the ages of the children some higher relative status and power relationships were seen as positive. Therefore, it is necessary to take age and birth order into account when using Relative status and power as a determinant for Sibling Relationship Quality (Furman & Buhrmester, 1985). Conflict was defined by Furman and Buhrmester as including arguing, dislike, competition, and perceived parental favouritism. Finally, rivalry, a small but relevant piece of the sibling relationship quality definition, includes both competition and perceived treatment by parents and other outsiders (Furman & Buhrmester, 1985). Furman and Buhrmester noted that rivalry is a unique characteristic to sibling relationships because of "shared biological and affective ties with parents" (p. 457). The SRQ-R provided the author with a numeric value for each of the subscales, which were used to calculate scores for the

factors listed above. The author then used the warmth and closeness factor total (and the subscale scores found within) as the primary dependent variable for the first two hypotheses and an independent variable for the third hypothesis.

Participants completed an online version of the *Sibling Relationship Questionnaire – Revised (Parent*; Furman & Buhrmester, 1985). As previously mentioned, this questionnaire was to be completed by the children in the sibling dyad. Because the primary caregiver was the only informant, a few minor wording changes were necessary to make the items of the SRQ-R appropriate. The SRQ-R is a 48-item 5-point Likert format (1 = Hardly at all to 5 = Extremely much) questionnaire. Warmth and closeness consists of 15 items, rivalry consists of 6 items, status/power consists of 12 items, and conflict consists of 6 items (Moser & Jacob, 2002).

Moser and Jacob (2002) sought to measure the test-retest reliability, the internal consistency, and the convergent validities for the SRQ-R 39-item version (a shortened version developed prior to the 48-item SRQ-R used in this study). Although the authors of the SRQ-R (Furman & Buhrmester, 1985) conducted psychometric testing on the original 51-item SRQ, Moser and Jacob (2002) felt that re-evaluating the shortened version was necessary. The test-retest reliability was calculated for the four factors from two administration of the SRQ-R. The warmth and closeness factor yielded $r = .85$, $p < .01$; rivalry yielded $r = .69$, $p < .01$; conflict yielded $r = .68$, $p < .01$; and status/power yielded $r = .67$, $p < .01$. Internal consistency for warmth and closeness, rivalry, conflict and status/power was reported as $\alpha = .90$, $\alpha = .74$, $\alpha = .68$, $\alpha = .79$, respectively. Finally, Moser and Jacob (2002) evaluated the construct validity of the SRQ-R. The authors expected that convergent validity would be demonstrated by positive correlations of the warmth and closeness factor scale of the SRQ-R with the affect and activities subscale of

the Family Environment Scale (FES; $r = .58$, $p < .01$ and $r = .47$, $p < .01$, respectively). They also assumed that the conflict and rivalry scales of the SRQ-R would be negatively correlated with the affect ($r = -.59$, $p < .01$, and $r = -.29$, $p < .01$, respectively) and activity ($r = -.33$, $p < .01$, and $r = -.37$, $p < .01$, respectively) scales of the FES. Finally, the authors expected the status/power SRQ-R factor to be positively correlated with the control factor of the FES, which it did not demonstrate ($r = -.16$), however the results were non-significant.

To demonstrate divergent validity, the authors expected that the warmth and closeness factor, and the conflict and rivalry factors of the SRQ-R would not correlate significantly with the control factor ($r = .17$, $r = -.21$, $p < .05$, and $r = -.15$, respectively) of the FES. Only the correlations between conflict (SRQ-R) and control (FES) were significant. The authors also demonstrated divergent validity assuming there would be no correlation between status/power (SRQ-R) and the affect or activities ($r = -.15$, and $r = .09$, respectively) factors (FES). Although not all (2 of the 12 correlations were unexpected), most of the predicted convergent and divergent validity correlations were demonstrated (Moser & Jacob, 2002).

A few limitations were found in this psychometric study of the SRQ-R. First the participants were all from intact families. The results may differ if the participants were from more diverse home life situations. The sample characteristics may have also impacted the status/power factor of the SRQ-R and it's correlations with factors of the FES because there was a lack of variability in responses (Moser & Jacob, 2002). Despite these limitations there are some notable strengths found in this psychometric testing. First, Moser and Jacob were not the creators of the SRQ-R and therefore have less of an investment in the results of the testing. Secondly, they performed the psychometric

testing on the most widely used version of the SRQ-R, making it applicable to research today. Finally, they used a widely used and appreciated scale (the Family Environment Scale) as a way to demonstrate construct validity (Moser & Jacob, 2002). Because of these strengths and despite the limitations, the author felt justified in using the SRQ-R for this study.

Reliability analysis of the present sample showed Cronbach's alphas of each of the factors in the scale ($N = 108$): warmth and closeness $\alpha = .93$, rivalry $\alpha = .81$, and conflict $\alpha = .92$. The Cronbach's alpha of the status/power factor was not calculated because it was calculated as a difference between two sets of subscales (nurturance of ASD sibling by TD sibling and dominance of ASD sibling by TD sibling, minus nurturance of TD sibling by ASD sibling and dominance of TD sibling by ASD sibling). Given this definition, Cronbach's alpha calculations were not appropriate. During analysis of the corrected item-total correlations for each subscale ($N = 117$), it became evident that one subscale, and particularly one item in that subscale, did not fit for this sample. The Maternal Partiality Subscale (items 2, 18, and 34) was used to calculate the rivalry factor and yet item 18 ("who gets more attention from mother, the typical child or the ASD child?") did not correlate with the other items, $r = .20$, and thus, brought down the Cronbach's alpha, $\alpha = .59$. Without item 18, the Cronbach's alpha improved to $\alpha = .87$. This information leads the author to believe that a Maternal Partiality Subscale, and particularly the wording of item 18 may not be appropriate for: (a) a caregiver version of the Sibling Relationship Questionnaire, and (b) a population of caregivers who have a child with a special need. When parenting a child with extra, different, or more demanding needs, it is expected that the caregiver will need to "pay more attention to" that child. That being said, the caregivers were consistently commenting that they did

their best to be fair and to spend quality time with both children. Nevertheless, because the warmth and closeness factor of the SRQ-R was of primary interest and was the only factor used in the formal analysis of this data, the author did not attempt to correct or improve this subscale or factor. Reporting the reliability information for the SRQ-R, in its entirety, offers important implications about the use of the SRQ-R with this population. Although sufficient for this study, it is clear that some revision to the SRQ-R is needed to better evaluate sibling relationships in the presence of ASD.

Parenting Style. The Parenting Style variable was defined using an instrument that was developed in accord with Baumrind's (1971) framework. Authoritative parents are considered to be both warm and demanding. Authoritative parents provide their children with clear and firm direction but moderate this with reason, flexibility, and discussions (Buri, 1991). Authoritative parenting is seen as the middle ground, between Permissive parenting and Authoritarian parenting. Permissive parenting is seen as having high warmth and low demand. These parents place very little demand on their children, use relatively little punishment and are non-controlling (Buri, 1991). At the other extreme, Authoritarian parenting has low warmth and high demand placed on the children. Authoritarian parents are extremely directive advice-givers, they expect unwavering and unquestioning obedience, and will use more severe methods of punishment to display their authority over their children (Buri, 1991). The use of the Parental Authority Questionnaire-Revised (PAQ-R; Appendix E; Reitman, Rhode, Hupp, & Altobello, 2002) is justified because of the nature of the researcher's hypothesis. In other words, it is hypothesized that the authoritarian parenting style contributes to a decrease in warmth and closeness between siblings in the presence of ASD and an increase in authoritative parenting will contribute to greater degrees of success in ASD

intervention for children with ASD. Using the authoritarian and authoritative parenting subscales allows the researcher to test this hypothesis from the varying degrees of different styles by evaluating the impact on variance found in the independent variables. This interval variable represents the different amounts of demand and warmth offered to the children by the primary caregiver.

Participants completed the PAQ-R (Reitman et al., 2002) in order to assess their parenting style. The PAQ-R is a 30-item scale with three 10-item subscales representing each of the three parenting styles. The original PAQ was designed to be completed by children about their parents, the revised version, on the other hand, was edited so parents could fill out the scale about themselves. This revision is appropriate for the proposed project, as the primary caregiver of a family filled out the online questionnaires.

According to Reitman et al. (2002), an item level principle components analysis was conducted on the PAQ-R to examine whether the items supported a three-factor structure. All thirty items had a loading of .30 or higher on at least one of the subscales. It was also discovered that the internal consistency of the scale was considered modest (considering that $\alpha = .80$ is considered desirable), as the coefficient alpha ranged from .72 to .77 on a predominantly Caucasian population (Reitman et al., 2002). Convergent validity and social desirability bias of the PAQ-R were also explored. To test the convergent validity the authors calculated the correlations between the "Laxness and Overreactivity" scales of the Parenting Scale and the "Communication and Limit Setting" scales of the Parent-Child Relationship Inventory. The authors discovered that the Permissive subscale was associated with greater "Laxness" and less "Limit Setting". It was also, surprisingly, associated with greater "Overreactivity" and less "Communication". Authoritative parenting was, as expected, associated with greater

"Communication" but was not significantly correlated with any of the other factors. Finally, the Authoritarian subscale was positively correlated to the "Overreactivity" scale and, interestingly, the Communication scale. The authors concluded that there was a minimal Social Desirability bias, as the Authoritative and Permissive subscales demonstrated non-significant correlations, and the Authoritarian subscale demonstrated a significant correlation ($r = .26$, $p < .01$) with the Social Desirability scale of the Parent-Child Relationship inventory (Reitman et al., 2002). Reitman et al. openly communicated that there were several limitations to their psychometric testing. The authors stated that, along with all psychometric testing of parenting scales, there is no optimal scale to compare the PAQ-R to. Another limitation to Reitman et al.'s psychometric study is that they were not able to use constructs based on Baumrind's original theory but rather constructs that were conceptually similar to the three parenting styles originally presented. That being said, Reitman et al. employed a rigorous testing model that evaluated a number dimensions within the PAQ-R. Similarly, it is important to note that the authors used Baumrind's original definitions of the parenting styles to ascertain what constructs would be adequate to use as comparisons. The current author concluded that the results of the factor analysis, internal consistency test, convergent validity test and the social desirability bias test were acceptable for the purpose of the proposed project.

In the present study, sample reliability and factorial validity of the scale were examined. The Cronbach's alphas ($N = 108$) for the authoritarian subscale, authoritative subscale, and permissive subscale that Reitman et al. (2002) calculated were largely re-produced in this study, $\alpha = .74$, $\alpha = .67$, and $\alpha = .73$, respectively. Regarding factorial validity, a principal component analysis with orthogonal rotation was conducted ($N = 133$), as Reitman et al. did, since the subscales are considered independent. It was noted

that all ten items loaded at greater than .30 for the authoritarian subscale, eight out of ten items loaded greater than .30 on the authoritative subscale (with the exception of items 8, .05, and 20, .28), and loadings for the permissive subscale ranged from .20 to .77. Item 8 ("I direct the activities and decisions of my children by talking with them and using rewards and punishments") cross-loaded on the authoritarian subscale (.40) rather than on the authoritative subscale. This could be because, when parenting a child with ASD, the use of rewards and punishments such as token economies or point systems is seen as more hands on and directive than allowing the child to choose his/her activities independently. Nevertheless, standard scoring was maintained.

Parenting stress. In this study, the parenting stress variable was evaluated and obtained using a measure developed by Abidin (1983). This measure, entitled the Parenting Stress Index, was originally created to evaluate the amount of stress a parent experiences due to parenting activities, difficulties and frustrations. It was initially designed to have caregivers answer 101 five-point Likert style questions, however, it has since been shortened and the 36-item Parenting Stress Index – Short Form (PSI-SF; Appendix F) has become more popular (Abidin, 1990). The PSI-SF evaluates a parent's stress levels based on three defined subscales: a) the Parental Distress subscale; b) the Parent-child Dysfunctional Interaction subscale; and c) the Difficult Child subscale. In calculating these subscale scores, a Total Parental Stress score is also determined. Abidin (1990) included a Defensive Responding score in this measure, as well. Presumably, this was because, when evaluating something like parental stress, caregivers may have a tendency to under-estimate or over-estimate the amount of distress they are currently feeling. If a parent has had a particularly trying week or a major disciplinary incident had just occurred, he/she may feel that things are worse than they actually are in general.

Similarly, if the caregiver has a protective personality or feels guilty for discussing sensitive topics about his/her children, he/she may under estimate the amount of stress he/she is experiencing.

A theoretical model of the common stressors associated with parenting guided the development of the PSI-SF. Child characteristics and parental factors including personal, pathological, and situational factors were used in the development of the original 101 items. In the shortened form of the PSI-SF, the same factors are used, however, the total number of items used to calculate each subscale score and generate a total parenting stress score is reduced.

In 2006, Haskett, Ahern, Ward, and Allaire sought to determine the psychometric properties of the PSI-SF using a sample of 185 mothers and fathers. Firstly, Haskett et al. identified the factor structure of the PSI-SF and to determine if Abidin's three-factor model remained appropriate. Two-, three-, and four-factor models were evaluated. When observing the two-factor model, only two items failed to load on one of the two factors at .40 or higher (item 8 loaded on the first factor at .19, and item 31 loaded on the second factor at .37). The first factor included all items from the Parent Distress subscale (labelled Personal Distress by Haskett et al.), while the second factor included the items from the Parent-Child Dysfunctional Interaction and Difficult Child subscales (labeled Childrearing Stress by Haskett et al.). The three-factor model was then evaluated. This model included four items that did not load on any of the factors. There were also items that cross-loaded on more than one factor. Two items in this model were associated with a factor that differed from that which Abidin (1983) indicated. Finally, the four-factor model included two items that did not load on any factor, as well as three items that loaded on factors other than what was expected. Haskett et al. (2006) determined that the

two-factor model was the most appropriate. Reliability scores were calculated for the Personal Distress and Childrearing Stress factors, $\alpha = .78$ and $\alpha = .91$, respectively, compared to $\alpha = .87$ for parental distress, $\alpha = .80$ for parent-child dysfunctional interaction that Abidin (1995) found. The two-factor model recommended by Haskett et al. fits with the present study, as only the Total Parental Stress score was utilized, which had a internal consistency of $\alpha = .83$ (Haskett et al., 2006).

To test for construct validity, Haskett et al. (2006) compared their two-factor (Personal Distress and Childrearing Stress) model with the Symptom Checklist – 90 – Revised (SCL-90-R), and the Conflict Tactics Scale (CTS). Haskett et al. found the personal distress factor was significantly related to the Global Severity Index of the CTS, $r(185) = .54$, $p < .001$, and the childrearing stress factor was significantly correlated with the parenting behaviour subscale of the SCL-90-R, $r(163) = .23$, $p < .01$ (Haskett et al., 2006). Some researchers have indicated that a five-factor model may be more appropriate for certain populations (McKelvey, Whiteside-Mansell, Faldowski, Shears, Ayoub, & Hart, 2009; Whiteside-Mansell et al., 2007). These researchers found adequate evidence for both models and found that reliability was maintained for both.

Of particular relevance to the present study, Zaidman-Zait et al. (2010) performed psychometric testing on the PSI-SF with a population of caregivers with children with ASD. Zaidman-Zait et al. adhered to the original three-factor model that Abidin (1992) proposed. They found their factor analyses supported the model. All loadings ranged from .47 to .74 for the parenting distress subscale, from .28 to .81 for the parent-child dysfunctional interaction subscale, and from .31 to .74 for the difficult child subscale. Zaidman-Zait et al. (2010) also conducted reliability testing to determine Cronbach's alpha for each of the subscales. For the parental distress subscale, $\alpha = .88$. For the

parent-child dysfunctional interaction subscale, α = .80. Finally, for the difficult children subscale, α = .82. Given this information, the PSI-SF is highly appropriate in assessing parenting stress in the presence of ASD.

The author also conducted basic reliability testing and examination of factorial validity on the current sample. The Cronbach's alphas for the parental distress subscale, parent-child dysfunctional interaction subscale, and difficult child subscale were quite similar to that of Zaidman-Zait et al. (2010), α = .85, α = .85, and α = .87, *N* = 108, respectively. Cronbach's alpha was also determined for the total parenting stress score, α = .92, N = 108. Regarding factorial validity, a principal component analysis with orthogonal rotation (*N* = 126), identified some cross-loading of items. Nevertheless, all items loaded at .40 or higher on at least one of the factors. This basic psychometric testing suggests the appropriateness of the PSI-SF for the current sample. Abidin (1992) offered guidelines for what would be considered "normal" levels of stress, and what would be considered "high" amounts of stress. Not surprisingly, stress levels were consistently found within the high range of stress for the current population. The stress level variable remained normally distributed and there were no outliers. This lead the author to believe that although the PSI-SF is appropriate for the current sample, parents of children with ASD should be expected to have higher levels of stress than those with TD children.

Novel Instruments

During the literature search, the author failed to identify established measures of sibling involvement in ASD intervention or of caregiver-perceived success in ASD intervention. Preliminary measures were developed to assess these variables.

Sibling Involvement in ASD Intervention. The author developed a seven-item, five-point Likert-style scale (Appendix H). These items have high face validity, exploring the extent to which the TD siblings participate both in the ASD intervention and in other tasks around the home. Questions regarding involvement around the home were included because it is to be expected that children who are more involved in the home would be more involved in the activities of the other children in the home. The TD children who readily do chores, help with decision-making, and participate in activities, may be more likely to involve themselves in the activities of his/her sibling with ASD. The author calculated a total sibling involvement score by averaging six of the seven items (excluding item six). This data gave the author a better idea about whether this construct should be further researched in greater depth. In order to do so, psychometric testing was conducted.

First, the author used Cronbach's alpha to determine the reliability of all seven items. For Sibling Involvement in ASD Intervention, Cronbach's $\alpha = .65$, $N = 108$. It was evident when evaluating the corrected item-total correlations that item six ("In my opinion, my typical child should spend more time helping with the ASD intervention") did not fit with the scale as the rest of the items did. When item six was removed Cronbach's alpha improved, $\alpha = .69$, thus Item 6 was dropped for the final scoring of the scale. A Pearson's correlation matrix was also formulated with correlations ranging from $r = -.15$ and $r = .75$. This pattern strongly suggests the presence of more than one factor in the questionnaire. Thus, the factorial validity was examined using principle component analysis with oblique rotation. Communalities ranged from .52 to .86. When considering Eigen values over one, a three-factor model was implied. This three-factor model explained 71% of the variance found within the scale results. Items 1, 3, 5, and 7 loaded

on one factor at .82, .75, .71, and .57, respectively. Items 2 and 4 loaded on another factor at .91, and .94, respectively. Finally, Item 6 (reverse scored) loaded on a third factor at .92. The author suggests that, in the future, three subscales could be used to evaluate sibling involvement in ASD intervention. Items 1, 3, 5, and 7 reflect the TD siblings actual involvement in ASD intervention. Items 2 and 4 are part of the TD involvement in household chores subscale, and Item 6 is the caregiver's expectations subscale. Further use of this scale may include the development of more items pertaining to each of the subscales found in this initial form.

It can be concluded from this information that the TD sibling involvement in ASD intervention is a worthwhile, appropriate, and justified question to ask. The scale development and further psychometric testing is necessary in order to adequately evaluate all parts of the concept, but these seven items provide a starting point for further development.

Success in ASD Intervention. Similar to the previous variable Success in ASD Intervention has never (to the knowledge of the author) been evaluated in relationship with sibling relationship quality, parenting style, parenting stress, or sibling involvement in ASD intervention. Similarly, an instrument utilizing caregiver perceptions has not been developed or used in the current literature. Given this lack of previously tested measures, the author developed an 8-item scale, Success in ASD Intervention Questionnaire (Appendix I), in order to understand the way caregiver-perceived success is impacted and impacts the other variables in the current study. The items were developed using a few concepts. First, the author was interested simply in what the caregiver determined as success. For example, "my child with ASD has been successful with his/her ASD intervention" (Item 1), addresses the caregiver's perception of success.

Secondly, the author used previous knowledge of the symptoms of ASD as well as professional experience witnessing children being successful in ASD intervention to develop questions pertaining to specific ASD diagnostic criteria. For example, "my child with ASD is gradually becoming more responsive, as he/she progresses through the intervention" (Item 5), addresses a common ASD symptom, namely, unresponsiveness. The first six items in the questionnaire were five-point Likert-style questions, while the Item 7 provided an opportunity for the caregiver to indicate what (if anything) has contributed to their child with ASD's success in his/her intervention. Item 8 invited the caregiver to indicate which formal and informal interventions their child with ASD was currently engaged in. Items 7 and 8 provided the author with qualitative information regarding intervention, with which the other information could be informed. Averaging the first six items to create a total ASD success score scored the questionnaire. Items 7 and 8 were not included in the score, but as previously stated, provided contextual information for the author.

Reliability and factorial analyses were conducted on the first 6 items of the questionnaire. Items seven and eight were removed from the analyses because they did not contribute to the total scoring of the questionnaire or any of the data analyses conducted. Cronbach's alpha was used to determine the reliability of the Success in ASD Intervention Questionnaire, $\alpha = .85$, $N = 108$. A Pearson's correlation matrix was also formulated in which all correlations were between $r = .36$ and $r = .69$. These relatively high correlations suggest one, possibly two, factors in this questionnaire. The factorial analysis was conducted, the principle component analysis with oblique rotation (because of the closely related items) yielded communalities, which were all greater than .5, providing further evidence that all of the items were closely related. When considering

Eigen values over one, 60% of the variance was explained by one factor. All of the items in the questionnaire loaded on a single factor at .7 or higher. When allowing for two factors, an additional 13% (total of 73%) of the variance was explained by the second factor. Items 2, 4 (reverse scored), and 6 loaded on the first factor, .77, .86, and .92, respectively. Items 1, 3, and 5 loaded on the second factor, .91, .78, and .82, respectively. Given the two-factor model, the author can conclude that Items 2, 4, and 6 relate to progress, and Items 1, 3, and 5 relate to success and success awareness. Nevertheless, the author concluded that the two "subscales" were similar enough, and the factor analysis provided enough evidence that a one-factor model is more appropriate. Thus, the Success in ASD Intervention questionnaire does not have any subscales, rather the six items in the survey all evaluate one thing, namely, the caregiver's subjective understanding of the ASD child's progress and/or success in intervention.

In the future, additional measures of success in ASD are recommended. The caregiver's perceptions of success are especially relevant for the present study. The results of the reliability and validity testing for the Success in ASD Intervention provides evidence that the initial form of this questionnaire is worthwhile, effective, and justified for use. Continuing to develop items, test the psychometric properties, and understand caregiver's subjective understanding of success in ASD intervention is warranted.

Procedure

The following section outlines the steps taken during the preliminary development, recruitment, and data collection phases of the current study. To begin, the author developed a theoretical, conceptual, and paradigmatic basis for the current research. This process required extensive literature review, in which the author explored

different methods of evaluating family dynamics in the presence of ASD, researched development of positive-focus psychological studies, and identified gaps in the research.

Once the theoretical groundwork was laid, the online survey was compiled. The author found publically accessible versions of the Sibling Relationship Questionnaire – Revised (Parent) and the Parental Authority Questionnaire – Revised. R. R. Abidin was then contacted for a copy of the Parenting Stress Index – Short Form, of which he provided the questionnaire and the scoring information. Furman was also contacted for the original version of the SRQ-R (Furman & Buhrmester, 1985). The Sibling Relationship Questionnaire was adapted slightly in order to be applicable to this population. For example, item one of the SRQ-R (parent version) states "Some siblings do nice things for each other a lot, while other siblings do nice things for each other a little. How much do both _____ and this sibling do nice things for each other?" (Furman & Buhrmester, 1985). In the current study, however, item one states, "Some siblings do nice things for each other a lot, while other siblings do nice things for each other a little. How much do your typical child and your ASD child do nice things for each other, in general?" This kind of adaptation was made for each item in the scale in order to simplify things for the caregiver filling out the survey. All the items of the three established instruments were transcribed into an online survey using Survey Monkey. As identified earlier, the author made a typographical error in transcribing the PSI-SF and only 35 items were included in the Survey Monkey version of the instrument. The missing item ("Since having my child I feel that I am almost never able to do things that I like to do") was item 5 in the original PSI-SF (Abidin, 1983). Once the three established instruments were included in the online version, the author transcribed the seven and eight items of the Sibling Involvement in ASD Intervention questionnaire and the Success

in ASD Intervention questionnaire, respectively. The online survey was then distributed as outlined in the following section.

Recruiting. The author used the Strategic Sampling method of recruitment for the current study. The author was already partially grounded in the ASD community as a result of previous professional experience in Applied Behavioural Analysis – Intensive Behavioural Intervention (ABA). Additionally, the author sought to further ground herself in the community by becoming involved in various online ASD support groups and communities. There were several purposes this sampling method fulfilled. First, the author found it necessary to go beyond the ABA clinics she was initially acquainted with and seek families experiencing a wide range of different ASD interventions through a number of different venues. This allowed for a wider range of symptomatology and severity of ASD in the children with ASD and their families. Second, with the use of Anglophone Canadian Facebook pages and websites (Appendix K), the author was able to recruit participants from all areas of the country as well as gain exposure in other countries (the United States of America, the United Kingdom, and Mexico). The author is unable to state with absolute certainty that this is a national study, but the evidence demonstrates that the survey was made available in all regions of Canada.

The author included any participants who volunteered and met the above-mentioned inclusion/exclusion criteria for the present study. Conducting a quantitative research project traditionally requires a relatively large sample size, therefore, the author believed that opening up the study to any family that meets the criteria, would likely lead to recruitment of larger numbers of participants. A large sample size is necessary to ensure the methodological assumptions of a correlational analysis are met. Some of these assumptions that would be impacted by the size of the sample would include:

unconstrained range of scores in the outcome variable, variability in the predictor variable, and normal distribution of residuals or errors. Recruitment continued until the author achieved an adequate sample size. The author closed the survey when a total of 161 surveys had been started. After removing the incomplete surveys, managing missing data, and removing potential outliers, a sample size of $N = 108$ was established. Using G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007), a sample this size with a medium effect size of $f^2 = .15$ and an α error probability of .05, achieved power of $(1 - \beta) = .99$ for regression with these predictors.

Finally, it is interesting to note that there was a 68% completion rate for those who started the survey. This may have been due to the length of the online survey. This survey ended up being approximately one hour in length, which is longer than is most often recommended for collected data by this method. Nevertheless, the author believed, given the stereotypical dedication of caregivers of children with ASD, the slightly longer online survey would be justified. Sixty-eight percent, though not extremely high, is an acceptable completion rate, and the author feels the extra data collected was of greater value than shortening the survey for the sake of reduced attrition rates. The following section describes the actual data collection procedure.

Data Collection. Once an adequate sample size was achieved, the resulting data was stored anonymously in a secured database located in the USA (Survey Monkey is an American company) and then transferred to the author's personal computer and a password protected account at Trinity Western University. The author's personal computer is password protected and each of the files containing data was encrypted and passwords were required to access each file. In addition, the computer was and is locked in the author's personal desk located at her home when the author is not using it. The raw

data and data output was saved in encrypted files on the password-protected computers located at Trinity Western University.

Once the raw data was downloaded, the author created, named, and labelled variables for each of the 151 items in the *Connections and Tensions among Siblings in the Presence of Autism* online questionnaire. An anonymous ID variable was also created in order to identify each case when switching between files. The raw data was reviewed, recoding was completed when necessary, and when participants chose "other" the author was required to make an educated judgment indicating the most appropriate response. Next, the author created an "informed consent" file and an email address file separate from the raw data in order to maintain the anonymity of the participants. The email addresses were collected as part of an incentive protocol frequently adopted by researchers using the online mode of data collection. Five email addresses were chosen at random and a $20.00 gift card (Subway, Starbucks, Tim Horton's, Chapters, or Shoppers Drugmart) were offered to five of the participants.

The author removed all of the incomplete surveys for each section of the online questionnaire. The PAQ-R had $N = 133$ completed surveys, the PSI-SF had $N = 126$ completed surveys, the SRQ-R had $N = 117$ completed surveys, and the Sibling Involvement in ASD Intervention and Success in ASD Intervention had $N = 108$ (the final sample size). Once the data set was reduced to $N = 108$, the author reviewed the data and managed the missing data for each case. Missing data was either replaced with the scale mean or the case-wise subscale mean. Descriptive statistics were calculated for each of the items.

All of the subscale scores and total scores were calculated using the prescribed scoring methods offered by the authors of each scale (See Appendices E – I). All items

were scored using a five-point Likert scale, ranging from Strongly Disagree to Strongly Agree (in the Parental Authority Questionnaire – Revised, the Parenting Stress Index – Short Form, the Sibling Involvement in ASD Intervention Questionnaire, and the Success in ASD Intervention Questionnaire) or Hardly at all to Extremely Much (in the Sibling Relationship Questionnaire – Revised). Total Parenting Stress was calculated by averaging the three subscale scores using 35 items of the Parenting Stress Index – Short Form. Both Authoritarian Style and Authoritative Style scores were the average of 10 items from the Parental Authority Questionnaire - Revised. Twenty-one items were used to calculate the warmth and closeness factor of sibling relationships (averaging seven, three-item subscales) from the Sibling Relationship Questionnaire – Revised (Parent). The total sibling involvement score was calculated by averaging seven items from the Sibling Involvement in ASD intervention questionnaire, and finally, the total ASD success score was calculated by averaging the first six items of the Success in ASD Intervention questionnaire. No individual items were used, only the average scores (either total or subscale) were used in the analysis of the data. As demonstrated in the Instruments section of this chapter, reliability and factor analysis for each of the scales was calculated prior to the primary data analysis. This was essential because most of the scales have not been used, with much consistency, with this population, with the exception of the PSI-SF.

Finally, all of the subscale items and total score items were plotted in histograms and skewness and kurtosis was evaluated. A few of the subscales were determined to need transformations. Transformations were conducted on: a) the authoritarian subscale of the PAQ-R; b) the maternal partiality (both directional and non-directional) subscale of the SRQ-R; c) the paternal partiality subscale of the SRQ-R; d) the companionship

subscale of the SRQ-R; e) the intimacy subscale of the SRQ-R; f) the competition subscale of the SRQ-R; and g) the rivalry factor of the PSI-SF. The authoritarian subscale distribution was made normal using a log 10 transformation, improving the skewness from .601 to .021 (*SE* of skewness = .233). The directional maternal partiality subscale was made normal using a square root transformation, improving the skewness from .519 to -.176 (*SE* of skewness = .233). The non-directional maternal partiality subscale was made minimally better by using a log 10 transformation. This was sufficient because the maternal partiality subscale were not used in any of the primary analyses for the current study. The companionship subscale was made normal using a square root transformation, improving the skewness from .544 to .154 (*SE* of skewness = .233). The lack of normalcy found in the intimacy subscale was corrected using a log 10 transformation, which made the skewness = .034 (*SE* of skewness = .233). The competition subscale was not normally distributed, and thus a square root transformation was used to improve the skewness to .146 (*SE* of skewness = .233). Finally, the rivalry subscale was not normally distributed. The author attempted to transform this data and was unsuccessful, which was not of major concern as the rivalry subscale was not included in any of the hypotheses for the current study. Once all of the data preparation was completed, the author began to focus on preparing to run the primary data analyses for the current study.

Assumptions. Prior to the primary data analysis of this project, the author took steps to ensure the statistical assumptions of hierarchical multiple regression were met. Parametricity is required for many statistical procedures, and proper use of multiple regression assumes parametric data (Field, 2009). This section reviews each of the assumptions and the steps taken by the author to ensure those assumptions have been met.

First, for hierarchical multiple regression all predictor variables and outcome variables must be continuous interval data. This assumption is met because each scores utilized in the regression models are scale level scores. Second, the predictor variables must have non-zero variance. This assumption is met because all of the predictor variables display some variation in the data collected. Third, parametric data should display homoscedasticity, meaning at each level of the predictor variables, the variance of the residual terms should be constant. In other words, the residuals at each level of the predictors should have the same variance. When the variances are very unequal there is said to be heteroscedasticity. Residual plots were formed and evaluated by the author. Given the plots, the author determined that the assumption of homoscedasticity has been met.

Durbin-Watson statistics were requested for each of the regression analyses. This test statistic can vary between zero and four with a value of two meaning that the residuals are uncorrelated, or independent. A value greater than two indicates a negative correlation between adjacent residuals, whereas a value below two indicates a positive correlation. For each regression analysis conducted, the Durbin-Watson statistic was observed and the author concluded the assumption of independence of errors was met.

The fifth assumption required for parametricity is normally distributed errors. Residuals in this model are random, normally distributed variables with a mean of near 0. Thus the fifth assumption has been met. Independence is the sixth assumption. This theoretical assumption requires that all of the values of the outcome variables are independent. Assessing each of the independent variables, the author can conclude that none of them are contingent on any other of the variables. This assumption has also been met. Linearity is required as the seventh assumption. The mean values of the outcome

variable for each increment of the predictor(s) lie along a straight line. This assumption has also been met given the nature of the data collected.

The eighth and final assumption is the absence of multicollinearity. Essentially, there should be no perfect correlations between the predictors. A correlation matrix of all of the predictor variables (authoritarian parenting style, authoritative parenting style, total parenting stress, warmth and closeness of sibling relationships, total sibling involvement in ASD intervention, and total ASD success) was formulated. Correlations higher than $r = .80$ indicate a problem with multicollinearity (Field, 2009). None of the correlations between the six predictor variables were correlated higher than $r = .34$, thus the absence of multicollinearity can be assumed. Given that all eight of the assumptions for parametricity had been met, the author was able to move forward with analyzing the three hypotheses and conduct post hoc tests.

Ethics. It is important to note that the Research Ethics Board (REB) at Trinity Western University approved of this study. The author submitted an REB form with all required appendices to the board and the application was approved without any revisions on April 13, 2012. The survey was immediately distributed indicating the ethics approval and data collection commenced.

CHAPTER III – RESULTS

The following sections describe and summarize the collected data as well as the analyses conducted that are relevant to the research questions outlined above.

Preliminary Analyses

Upon completion of the data collection phase, a detailed description of the sample was collected. As seen in Appendix L, several background or demographic questions were asked. The purpose of these items was to gain a better awareness of the type of participant base that was being reached through the author's recruitment process.

Table 1 displays the selected characteristics about the sample that were revealed through this process. First, it is of interest to know that significantly more females than males responded to the survey (95% and 5%, respectively). This indicates that, for this sample, "mothers" typically fill the primary caregiver position for these children. Second, the majority of respondents indicated that they were either married or living common-law (87%). This characteristic of the sample may be slightly higher than the national average, as the average in 2006 was roughly 75% of parents living in "couple families" (Statistics Canada, 2013). A potential reason for this may be that caregivers who have a partner in parenting may have more time to fill out an online survey. Third, although participants were only recruited using Canadian Anglophone websites and support groups, the online survey did gain exposure in Mexico, the United Kingdom, and the United States of America (1%, 2%, and 19%, respectively). Fourth, the higher number of male children with ASD (81%) is interesting and expected. ASD is more prevalent in boys (one in 54 boys affects versus one in 88 overall; Autism Speaks Canada, 2012). This sample reflects this gender-bias. Finally, the range of the age of both the children with ASD and the TD children was larger than expected. Nevertheless, the

Table 1

Selected Individual and Family Characteristics

Characteristic	Percentage	Characteristic	Percentage
Gender		Marital Status	
Male	95	Single, never married	5
Female	5	Married[a]	87
Age		Divorced	5
26-30	7	Separated	3
31-40	56	Other[b]	1
41-50	31	Typical Child Older?	
51-60	7	Yes	44
Country of Residence		Child w/ ASD Gender	
Canada	79	Female	19
Mexico	1	Male	81
United Kingdom	2	Typical Child Older?	
USA	19	Yes	44

Note. $N = 108$
[a]Includes common-law. [b]Engaged

older children did not cause outliers or abnormal data patterns, and thus were included in the study sample.

Upon completion of the data collection process, as well as the necessary data clean up steps, the author then focused on the five main variables. In Table 2 the author provides the correlation matrix, means, and standard deviations of all five variables.

Hypothesis #1

A hierarchical multiple regression was used to test the null hypothesis that the authoritarian parenting (A1) style and total parenting stress (TPS) does not contribute to the amount of warmth and closeness felt between siblings in the presence of ASD. The A1 average score variable was placed in step one, while the TPS variable was placed in step two (see Table 3). This sequence was chosen because the author believed that parenting style is more distal to the sibling relationship than parental stress. As noted in Table 3, the authoritarian parenting style did not significantly contribute to predicting warmth and closeness between siblings, F (1, 106) = .226, p = .636. Parenting stress, however, explained an additional 12% of the variance of the warmth and closeness factor in this model, F (1, 105) = 7.31, $p < .01$, after authoritarian parenting style was accounted for. Together A1 and TPS explained 12% of the variance. Since A1 did not contribute significantly to the model, a second regression analysis was completed to find the unique variance of TPS. TPS uniquely explained 12% of the variance found in warmth and closeness of sibling relationships, F (1, 106) = 13. 72, $p < .01$.

To explore the effect of the interaction term as shown in Step 3 of Table 3, the interaction between A1 and warmth and closeness was calculated and included in the model. The additional information indicating that moderation is not a factor. In light of these results, the author can confidently reject the null hypothesis and conclude that,

Table 2

Intercorrelations, Means, and Standard Deviations of TPS, A1, A2, W-C, TSI, and TAS

Measure	1	2	3	4	5	6
1. TPS	–					
2. A1	-.12	–				
3. A2	-.02	-.09	–			
4. W-C	-.34**	-.05	-.03	–		
5. TSI	-.20*	-.17	-.16	.26**	–	
6. TAS	-.28**	.02	-.08	.27**	.03	–
M	3.43	.47	1.92	3.07	3.22	3.74
SD	.54	.07	.33	.64	.64	.74

Note. $N = 108$. TPS = Total Parenting Stress; A1 = Authoritarian Parenting Style; A2 = Authoritative Parenting Style; W-C = Warmth and Closeness Factor of Sibling Relationships; TSI = Total Sibling Involvement; TAS = Total Autism Spectrum Disorder Success.
*$p < .05$. **$p < .01$.

Table 3

Hierarchical Multiple Regression Analysis Predicting Warmth and Closeness between Siblings from Authoritarian Parenting and Total Parenting Stress

Variable	β	R^2	F	ΔR^2	ΔF
Step 1		.002	.226	.002	.226
A1	.046				
Step 2		.122	7.307	.120*	14.359*
A1	.088				
TPS	-.349*				
Step 3		.123	4.845	.000	.053
A1	.229				
TPS	-.511				
A1 x TPS	-.203				

Note. $N = 108$
*$p < .01$.

although the authoritarian parenting style does not contribute to the understanding of warmth and closeness between typical siblings and their siblings with ASD, total parenting stress does contribute significantly to our understanding.

Hypothesis #2

In order to further test the predictors of warmth and closeness in sibling relationships in the presence of ASD, a hierarchical regression was conducted on the variables total ASD success (TAS) and total sibling involvement (TSI). TAS was included in step one because it was decided that it is more distal to sibling relationship factors and TSI was placed in step two due to the variable being more proximal to sibling relationship factors (Table 4). Referring to the first step of this model, TAS uniquely explains 7% of the variance in the warmth and closeness variable, F (1, 106) = 8.11, p = .005. In step two, TSI contributes an additional 6%, F (1, 105) = 8.17, p = .001, therefore, TAS and TSI contribute 14% of the variance of the warmth and closeness variable. In order to test for the unique variance of TSI, another regression analysis was conducted. This test revealed that TSI uniquely explained 7% of the variance, F (1, 106) = 7.75, p = .006, of the warmth and closeness variable in this model. Finally, to test for the effect of the interaction term the interaction between TAS and TSI was calculated and included in the model. This addition did not produce a significant contribution to the variance explained, and thus it was concluded that there was no moderation effect. Once again, the author can reject the null hypothesis of this model, and conclude that sibling involvement in ASD intervention, as well as success in ASD intervention, significantly contribute to the understanding of warmth and closeness between sibling in the presence of ASD.

Table 4

Hierarchical Multiple Regression Analysis Predicting Warmth and Closeness between Siblings from Total Sibling Involvement and Total ASD Success

Variable	β	R^2	F	ΔR^2	ΔF
Step 1		.071	8.11	.071*	8.11*
TSI	.267*				
Step 2		.135	8.17	.064*	7.71*
TSI	.258*				
TAS	.252*				
Step 3		.135	5.42	.001	.064
TSI	.385				
TAS	.377				
TSI x TAS	-.182				

Note. $N = 108$
*$p < .01$.

Hypothesis #3

In this model, success in ASD intervention was taken as the dependent variable of interest. As previously mentioned, relationships within a family system are multi-faceted, complex and rarely uni-directional. For this reason, the previous dependent variable, warmth and closeness, can also be considered an independent variable in a model predicting ASD success. The author tested how the authoritative (A2) parenting style, sibling involvement in ASD intervention (TSI), and the warmth and closeness factor contribute to success in ASD intervention (TAS). Table 5 demonstrates the steps used in this regression model as well as the results of the regression analysis. A2 was in the first step, due to its more distal nature from success in ASD intervention. TSI was included in step two for two reasons. First, there has been no evidence suggesting that parents and therapists are typically including siblings in intervention either within the home or in a clinical setting (other than the professional experience of the author, as previously outlined), and second, it appears to be more distal than warmth and closeness, and more proximal than A2. Finally, the warmth and closeness variable was included in the third step because the author believes it is more closely related to a child's success in ASD intervention than the other two variables.

The results of the regression analysis revealed that the authoritative parenting style and sibling involvement in ASD intervention do not contribute significantly to the explaining success in ASD intervention. Nevertheless, the warmth and closeness variable did significantly contribute to explaining 7% of the variance of the TAS variable, F (1, 104) = 2.994, p = .005. In light of these results, the author conducted a second regression analysis to obtain the unique variance explained by the warmth and closeness variable, $\Delta R2$ = .072, F (1, 106) = 8.113, p = .005. Warmth and closeness between siblings

Table 5

Hierarchical Multiple Regression Analysis Predicting Total ASD Success from Authoritative Parenting, Total Sibling Involvement, and Warmth and Closeness Between Siblings

Variable	β	R^2	F	ΔR^2	ΔF
Step 1		.007	.758	.007	.758
A2	-.084				
Step 2		.008	.400	.000	.048
A2	-.081				
TSI	.022				
Step 3		.079	2.99*	.072**	8.13**
A2	-.085				
TSI	-.052				
W-C	.278**				
Step 4		.116	1.866	.036	1.02
A2	-4.76*				
TSI	-5.29				
W-C	-5.68				
A2 x TSI	6.69				
A2 x W-C	7.64				
TSI x W-C	9.06				
A2 x TSI x W-C	-9.974				

Note. $N = 108$
*$p < .05$. **$p < .01$.

uniquely explains 7% of the variance found in the success in ASD intervention variable.

Finally, the author was interested to know whether there was a interaction effect found in this model. The regression analysis was continued with step 4, including the calculated interaction terms. Table 5 shows that the interaction terms did not contribute significantly to the model, and therefore it was conclude that there was no moderation. The results of this series of analysis indicate that we can reject the third null hypothesis and conclude that, for this sample, only warmth and closeness contribute significantly to understanding the variance found in the Total ASD Success variable.

Post-Hoc Analysis

After completing the planned comparisons to test the hypothesis, two post-hoc analyses were conducted. First, Table 6 demonstrates the global analysis of the primary variables utilized in the previous models. In this analysis, all of the subscale scores for the Parental Authority Questionnaire – Revised (PAQ-R) and the Parenting Stress Index – Short Form (PSI-SF) were included in the first two steps rather than the total scores. In the last step, the total ASD success (TAS) score and the total sibling involvement (TSI) scores were included. This was done to get a general awareness of the contributing factors to determining warmth and closeness between siblings in the presence of ASD.

As seen in Table 6, the PSI-SF contributes 15% to explaining the variance in the warmth and closeness variable, F (3, 101) = 3.19, p = .007. Additionally, the TAS and the TSI contribute 7% when PAQ-R and PSI-SF are controlled for, F (2, 99) = 3.63, p = .001. Interestingly, the beta statistics provides more insight into the nature of the contribution for each block. The dysfunctional interaction subscale of the PSI-SF has the strongest effect size, β = -.309, t = 2.50, p = .014. The author can assume that although total parenting stress contributed significantly to the above models, it is the dysfunctional

Table 6

Global Hierarchical Multiple Regression Analyses Predicting Warmth and Closeness in Siblings from the Subscales of the PAQ-R and PSI-SF, Total Sibling Involvement, and Total ASD Success

Variable	β	R^2	F	ΔR^2	ΔF
Step 1		.005	.173	.005	.173
A1	.063				
A2	-.035				
P1[a]	-.046				
Step 2		.159	3.19**	.154**	6.18**
A1	.144				
A2	-.027				
P1[a]	-.124				
Parental Distress	-.028				
Dysfunctional Int.	-.309*				
Difficult Child	-.116				
Step 3		.227	3.63**	.067*	4.317*
A1	.094				
A2	.030				
P1[a]	-.108				
Parental Distress	.047				
Dysfunctional Int.	-.279*				
Difficult Child	-.092				
TSI	.197*				
TAS	.201*				

Note. $N = 108$
[a]P1 = Permissive Parenting Style
*$p < .05$. **$p < .01$.

interaction component that most influences that statistical relationship. The three steps, PAQ-R, PSI-SF, TSI, and TAS, combine to explain 23% of the variance found in the warmth and closeness variable. Essentially, this global analysis summarizes the hypotheses.

Secondly, a post-hoc analysis to further explore the contributing factors for success in ASD intervention was conducted. In this regression analysis, parental distress (PD; one of the subscales from the PSI-SF), and conflict (one of the subscales from the SRQ-R) were the independent variables used to analyze and explain the variance found in the total ASD success (TAS) variable. Table 7 displays the results formulated from this hierarchical multiple regression. Step one includes the conflict variable, demonstrating that conflict does not significantly contribute to the model. Step two reveals that 10% of the variance of TAS can be explained by parental distress, F (1, 105) = 6.021, p = .003.

Summary

Conclusions can be drawn from these regression results. First, total parenting stress (TPS) contributes significantly to warmth and closeness between siblings in the presence of ASD. More specifically, TPS explains 12% of the variance found within the warmth and closeness variable. Secondly, TSI and TAS contribute significantly to the understanding of the warmth and closeness variables in the unique environment of ASD. Additionally, these results provide evidence for the continued exploration and development of adequate measures for evaluating parent-observed sibling involvement in ASD intervention and parent-observed success in ASD intervention. The preliminary scales developed by the author show substantial import in these results, and further development is therefore suggested.

Thirdly, these results highlight the complex nature of relationships within the

Table 7

Post-hoc Regression Analyses Predicting Total ASD Success from Sibling Conflict and Parental Distress

Variable	β	R^2	F	ΔR^2	ΔF
Step 1		.000	.025	.000	.025
Conflict	.015				
Step 2		.103	6.02*	.103*	12.02*
Conflict	.088				
PD	.329*				
Step 3		.105	4.06	.002	.212
Conflict	.278				
PD	.456				
Conflict x PD	-.209				

Note. $N = 108$
*$p < .01$

family system. The examination of warmth and closeness, as a dependent variable, is warranted in an effort to explore the bidirectional relationship between quality of sibling relationship and success in ASD intervention. Warmth and closeness contributed to 7% of the variance found within TAS. Essentially, a warm and close relationship between siblings can contribute to success in ASD intervention, just as success in ASD intervention can promote warm and close relationships between siblings. The implications of these findings will be discussed in the next chapter.

CHAPTER IV – DISCUSSION

The present study was conducted to address three main hypotheses. Interestingly, each hypothesis was deemed to be partially correct or entirely correct. The following sections will break down each hypothesis, the impact of those hypotheses and the impact of the findings. Finally, limitations of the current study will be outlined and possible improvements will be suggested.

Sibling Relationships in the Presence of ASD

In hypothesis one, the assumption that authoritarian parenting style and parenting stress would impact the warmth and closeness of the sibling relationship was made. This hypothesis was partially incorrect in that authoritarian parenting did not contribute to the variance found in the sibling relationship factor. The authoritarian parenting style was used in this hypothesis because of evidence suggesting that a more strict and less warm parenting style leads to children with social-interpersonal deficits, behavioural issues, and an inability to adjust to challenging situations (i.e., having a sibling with ASD; Williams et al., 2009). These factors are all contributors to a less warm and close sibling relationship. It was assumed that authoritarian parenting would have a negative impact on the warmth and closeness of the sibling relationship. Parenting stress (when parenting style was controlled for), on the other hand, did play a significant role in determining how warm and close the relationship between siblings would be.

Parenting stress was included in this hypothesis because of evidence suggesting that, when highly stressed, caregivers are more likely to employ maladaptive and/or damaging parenting techniques (Mills-Koonce et al., 2011). These maladaptive parenting techniques may manifest as authoritarian-like parenting as typically individuals with higher stress levels have lower levels of patience, disrupted coping abilities, and a

reduced ability to engage in parent-child interactions (Mills-Koonce et al., 2011). Additionally, children of more stressed caregivers displayed less social competence and more behavioural and interpersonal problems (Dyson, 2003). This implies that caregivers can impact the sibling relationship even in the presence of ASD. The results of the current study demonstrated a negative relationship between parental stress and the warmth and closeness of the sibling relationship. In other words, high stress levels are associated with a less warm and close sibling relationship. The results of the current study support the literature currently available about the impact of parental stress.

During the author's professional experiences conducting therapy with children with ASD, it was observed that children of caregivers who primarily displayed disengagement from the intervention process and from maintaining a professional relationship with the author, also demonstrated a detachment from their sibling with ASD and the interventions he/she was involved in. These children with ASD, in turn, struggled more with their intervention programs. It is impossible to conclude what caused the caregivers' disengagement but two possibilities may include parenting style and higher levels of stress (either occupational, marital, or personal). It is also impossible to conclude that the parenting style and stress caused the TD siblings' disengagement, but again this was raised as a possibility. Given these possibilities, the author felt justified in including these observations in the current study. The results indicated that the possibilities may have been accurate to some degree.

A possible explanation for the lack of impact found by parenting style may be due to the nature of ASD symptomatology. Children with ASD are less impacted by the people around them than TD children are by people around them. Their social deficits may make their sensitivity to more subtle personality and/or parenting changes less acute.

Additionally, having the primary caregiver complete the online questionnaire may impact the accuracy and effectiveness of assessing parenting style. Caregivers are often aware of what is socially acceptable and this may have impacted their responses during questionnaire completion. Parents of children with ASD often have a great deal of support, ASD-specific education, and parenting strategies. Given this reality, the way caregivers parent their children with ASD may end up looking quite similar to other caregivers of children with ASD, despite differences in the way they parent their TD children. Changes to their natural parenting style may be made when directly parenting their child with ASD. Finally, if parents who experience higher levels of stress (occupational, marital, financial, or personal) resort to more authoritarian-type parenting techniques (regardless of their preferred parenting style), and increased stress negatively impacts the quality of sibling relationship, then, despite the results of the analysis, the author can assume that there is an indirect relationship between parenting style and sibling relationship quality. In that case, the study also indirectly supports the findings of Williams et al., (2009), which provides evidence that authoritarian parenting negatively impacts the social competence of children. In combining the results of the current study with the author's professional experiences and the current literature, it can be concluded that high levels of parental stress directly impacts the quality of sibling relationship in the presence of ASD. On the other hand, parenting style indirectly (through increased external stress factors) may impact the sibling relationships of children with ASD and their TD siblings.

Hypothesis two, the impact of ASD specific factors on the sibling relationship, was accepted, as the null hypothesis could confidently be rejected. Both sibling involvement in the ASD intervention and success in ASD intervention contributed a

significant amount to the degree of warmth and closeness found within the sibling relationship. From this model, it would appear that sibling involvement contributes slightly more to the sibling relationship than success in ASD intervention. This finding may be particularly encouraging to both caregivers and professionals as, sometimes, success in ASD intervention is unattainable. Some children with ASD cannot make improvements to their outward symptomatology. After years of dedicated work by interventionist, psychologists, and caregivers, these children seem to make little to no improvement and their major deficits remain intact. If this is the case, success in ASD intervention cannot be manipulated to promote better sibling relationships. In response, a focus on the other variable, sibling involvement in ASD intervention, may help to improve the relationship quality.

Sibling involvement in ASD intervention was included as part of this model because of both the author's professional experience and the relevant literature found by the author. While conducting ABA – Intensive Behavioural Intervention (IBI) therapy with children with ASD, the author observed that when the IBI therapist and caregivers encouraged the TD siblings to participate, help, and conduct some of the intervention programs, the child with ASD trusted and sought out the TD sibling more frequently. The child with ASD improved more quickly and progressed through the IBI programs at a more rapid rate than similar peers with ASD in the program. Additionally, the child with ASD played and sought joint attention with the TD siblings outside of the IBI session (as reported by the caregivers) more frequently than before the TD sibling was included in the IBI therapy. Similarly, when the TD sibling was involved, he/she came to understand the needs of the child with ASD and was able to show more compassion and concern for his/her sibling's well-being. The anecdotal evidence provided by the author has been

discussed in the literature. Findings suggest that when TD children take an active role in the activities of a sibling with a disability, the TD sibling will define the relationship as being of higher quality (Kersh, 2007). For children with ASD, intervention is a highly significant life activity. Thus the author can conclude that including TD children in this activity would lead to not only better outcomes (Ferraioli & Harris, 2011) but also promote the TD child to experience more compassion, concern, and patience for the sibling with ASD. The results of the current study support both the professional experience and the current literature about the important of including siblings in the professional interventions chosen for the aid of children with ASD.

Success in ASD intervention was included in this model, in part, because of the evidence provided by Bagenholm and Gillberg (1991), suggesting that TD siblings of children with ASD experience more negative life stressors and factors than their peers and that this effect is stronger for the TD siblings of children with more severe forms of ASD. Additionally, the author's professional observations were taken into account when making this hypothesis. Throughout the intervention process, the author observed strengthened social relationships in the child who progressed through their IBI programs. The improvement in relationships appeared to be produced organically as a result of learning new social interaction skills, management of behavioural symptoms, and improved communication skills. The TD siblings of these clients appeared to find greater enjoyment in spending time with their siblings with ASD. They were able to relate to their siblings in a way they never could previously, and they were able to engage in mutually enjoyed activities that caused a formation of a bond that was never before present. Although these results are expected simply due to symptom reduction, it was the hope of the therapists and caregivers that the improved sibling relationship would lead to

other areas of improvement in the lives of the children and the caregivers in the family. In light of the author's experiences and the current literature, reducing the severity of symptomatology experienced by the child with ASD, would, therefore, contribute to a healthier TD sibling, and thus a healthier sibling relationship, as seen in the results of the current study.

Promoting Success in ASD Intervention

In hypothesis three, the author sought to address the contributors to success in ASD intervention. Authoritative parenting, sibling involvement in the ASD intervention and a warm and close sibling relationship was assumed to be significant contributors to promoting intervention-specific success by the child with ASD. Similar to hypothesis one, this hypothesis was partially correct and partially incorrect. The results indicated that parenting style and sibling involvement in intervention did not make a significant difference in the degree of success a child with ASD experienced in his/her ASD intervention.

Parenting style was included in this model because of evidence suggesting that an authoritative parenting style is the most effective parenting style at developing well-adjusted, happy, and social competent children (Williams et al., 2009). The author assumed that this well-founded phenomenon could be applied to children with ASD. Similarly, caregivers of the children the author worked with in the IBI clinic were observed. It appeared that the caregivers who displayed stereotypical authoritative parenting skills also had more successful children in the IBI therapy. Parenting style was not assessed at the IBI clinic, but the author observed caregivers who were well disciplined at maintaining order in the home while balancing that discipline with an encouraging and compassionate nature. These parents, in contrast to the parents noted

above that displayed more stereotyped authoritarian styles, had children with ASD that quickly became more responsive, more able to manage their restrictive behaviours, and better able to communicate, either verbally or non-verbally (using sign language or pictures).

Reasons for the lack of evidence in the current study are similar to those put forth above. Parents of children with ASD often receive a lot of support and parenting education, thus parenting styles became less varied when directly parenting the children with ASD. Variance in the data collected may have been due to the caregivers' recollection of the parenting experiences with their TD children rather than their children with ASD or their preferred parenting style rather than what they actually did on a day to day basis. Additionally, given the evidence in the current study that the warmth and closeness of the sibling relationship does, in fact, impact the success in ASD intervention, it is possible that there is an indirect relationship between parenting style and success in ASD intervention. Research has already provided evidence that parenting style and sibling relationship quality are connected (Dyson, 2003; Kramer & Kowal, 2005; Orsmond et al., 2009; Rivers & Stoneman, 2008). This study provided evidence that sibling relationship quality and success in ASD intervention are also connected, therefore, there may be an indirect link between parenting style and success in ASD intervention that this study did not detect.

Sibling involvement in ASD intervention was included as a result of the substantial amount of literature suggesting the effectiveness of sibling- and peer-mediated interventions (Ferraioli & Harris, 2011; Goldstein et al., 2013; Kamps et al., 2002; Peirce & Schreibman, 1997; Sasso et al., 1987; Sperry et al., 2010; Trembath et al., 2009; Trottier et al., 2011; Tsao & Odom, 2006). Additionally, the author observed sibling

involvement in IBI therapy and noticed more substantial success, and/or quicker progress for the children whose TD siblings became involved in the therapy. From this, the author assumed that the results of those studies and the evidence observed would be replicated in the current study. One reason why this may not have happened is due to nature of the sibling- and peer-mediated interventions used. In each of the mentioned studies, the interventions were implemented in a school or community setting. Often, however, children with ASD receive intervention therapies in the home or in private offices. The practice of including family and/or sibling in these kinds of interventions is not widely accepted and the inclusion of siblings by the therapists at the author's previous clinic may have been more unique to that specific clinic than expected. Thus, the inconclusive results may be due to therapists/psychologists/caregivers not including TD siblings in intervention rather than a lack of direct impact by the involvement variable on the success variable.

The quality of sibling relationship, on the other hand, uniquely contributed seven percent to the variance found in success in ASD intervention. This variable was included in this model because of the substantial literary evidence provided suggesting that positive sibling relationships contribute significantly to development of children over the course of their childhood and young adulthood (Cutting & Dunn, 2006; Kramer & Kowal, 2005; Kretschmer & Pike, 2010). Additionally, there has been no lack of evidence for the direct impact sibling relationships have on children with ASD. Positive relationships not only positively impact children with ASD, but they also provide the TD children with positive outcomes as well (Kaminsky & Dewey, 2002). Positive sibling relationships are essential in the development of social skills and offer a stable support for children with ASD (Kaminsky & Dewey, 2001). The significant amount of impact that a warm and

close sibling relationship can have on success in ASD intervention (as found in this study) is highly relevant because any insight into promoting improvement in the symptoms of a child with ASD is greatly valued by caregivers, family members, and professionals. Positive sibling relationships developed early in life are essential to the social development of both the TD child and the child with ASD (Kaminsky & Dewey, 2001), therefore, promoting positive relationships, either through involving the TD sibling in ASD intervention, or encouraging caregivers to educate, support, and emphasize the relationship, is a worthy cause. Given the results of the current study, interplay between sibling relationship quality and ASD symptom reduction can be concluded.

The conclusions drawn from the current study can be further expanded to both support and challenge the practices currently accepted in the ASD community. In the following sections, the author hopes to shed some light on the implications of the current findings, as well as draw attention to some important practical implications that can be gleaned from the current study.

Implications for Practitioners

As counselling practitioners, professionals are often asked to see a client without knowing the familial situation and climate. This practice of identifying a single client leads to a "we need to fix him/her" mentality that is then adopted by the family members, including TD siblings. Practitioners, who do not directly adhere to a systemic theoretical model, may be more likely to adopt this method of practice. This is even more common in ASD intervention clinics and or organizations directly dedicated to ASD-focused therapies. The children with ASD are individually treated and often the only family member present in the therapy session. There are certainly times when this kind of focused ASD intervention is necessary. Children, who display symptomatology that puts

themselves or others at risk, may need to be worked with independently, for a time, in order to manage those symptoms. Such symptoms may include physical aggression and/or self-harm. In fact, some non-evidence-based controversial treatments may make these symptoms more prominent (Autism Science Foundation, 2010). Therefore, practitioners must be highly educated and aware of all possible treatments their clients may be experiencing and what side effects may be present. Nevertheless, ignoring the impact the family system plays on the child with ASD would be ignoring a significant piece of the puzzle.

The author suggests that family-focused interventions for families in the presence of ASD are justified and would be highly beneficial, as evidenced by the current study. There are, however, times when family-focused counselling is not possible. Even in these situations, the author recommends focusing on systemic factors. Dedicating time during the treatment phase to address the relevant factors presented in this study, may greatly improve the prognosis of the child with ASD, the TD siblings ability to cope, and the caregivers ASD-related parenting stress.

Firstly, providing caregivers information on the impact of stress on the sibling relationship and the overall family functioning is recommended. Although parenting stress, to a certain degree, cannot be avoided, caregivers can be educated about the negative consequences of caregiver stress, recognizing the signs of stress, and healthy and adaptive ways of coping with stress. Most practitioners have a working knowledge of how stress impacts physical, emotional, and cognitive health. They are able to recognize stress symptoms and they have been equipped with tools to help clients manage their stress levels. Utilizing this expertise would be highly appropriate when working with children with ASD and their families. It is not a common practice to address parental

factors when conducting ASD-specific interventions, but the author suggests that changing this would benefit the entire family, including the child with ASD.

Second, involving TD siblings in the direct intervention with children with ASD would have two positive implications. First, as evidenced by the current study, this involvement would strengthen the relationship between the children within the family. Allowing the TD child to become educated in the needs, interventions, and realities of ASD will allow the TD child to develop greater compassion and love for his/her sibling with ASD. In doing so, the TD child may then seek to play a nurturing and caring role with his/her sibling. Regardless of whether the TD child is older or younger, encouraging the TD sibling to adopt an older sibling mentality by teaching him/her different nurturing and caring techniques will also promote a stronger, more positive sibling relationship. It has been suggested that more positive sibling relationships with children with ASD also promote positive development and stress reduction in the TD siblings (Kaminsky & Dewey, 2002). Reducing the TD child's stress, as with the caregiver, should also be a priority for practitioners working with children with ASD and their families, as stress has a direct impact on the TD child's ability to forge strong sibling relationships with his/her sibling with ASD. Second, the indirect impact on the success in ASD intervention could be a result. As indicated above, sibling involvement in ASD intervention promotes more positive sibling relationships. More positive sibling relationships, in turn, create greater success in ASD intervention. As practitioners, our primary focus is our clients' well being. The implications of this suggestion will enhance clients' well-being on multiple domains: a) interpersonally, b) symptom reduction, c) reduced familial stress.

The current study also supports the statement that warm and close sibling relationships in the presence of ASD promote greater success in ASD intervention.

Dedication, by practitioners, to the promotion of healthy sibling relationships is highly valued. There are many ways to accomplish this. They will not be outlined here. The author trusts that practitioners who work with children with ASD, TD children, and or families will have the resources available to determine the best course of action for each unique situation. No two sibling relationships are the same, just as no two children are the same, therefore, the development of positive sibling interactions, healthy communication, shared interests, joint attention and play, and mutual enjoyment must be developed out of the unique strengths and characteristics of the children and family involved.

Finally, despite the lack of statistical evidence for the impact of parenting style on the sibling relationship, the author can recommend with certainty that addressing parenting practices is essential when conducting a family-focused ASD intervention. It comes naturally for caregivers to parent the way they have always done so. Change is challenging and unnatural. Thus, as an educated practitioner, it is the professional's obligation to offer support, encouragement and direction when maladaptive parenting techniques are being employed. This is especially true when there is evidence that certain parenting practices are, in fact, damaging sibling relationships and healthy family dynamics. Ultimately, the caregiver needs to be made aware of how he/she is impacting his/her family. After this has been accomplished, they must be given an opportunity to change. Not all caregivers will accept this opportunity, unfortunately, and yet it is their right as caregiver. If this is the case, a different approach must be taken. Implementing the other recommendations outlined presently may be an alternative approach that would still yield positive results.

As you can see from the aforementioned recommendations, all of the conclusions drawn from the present study are interconnected. To separate them into different courses of action would be unproductive. Including all aspects of the family – their relationships, strengths, abilities, and addressing their weaknesses – in the counselling/intervention would be the most effective way to utilize the conclusions drawn from the present study. If this is not a possibility, professionals should be prepared to refer the caregivers of their clients to parenting courses and training seminars that are specific to children with ASD. Despite the helpful results and conclusions drawn, there are limitations to this study. The limitations will be outlined in the following section.

Limitations

Due to the unstandardized, tentative nature of the Sibling Involvement in ASD Intervention questionnaire and the Success in ASD Intervention questionnaire, the conclusions made as a result must be made with caution. This, however, is necessary in order to determine the relevance of further research on these two variables. The psychometric properties found and the results imply that these two questionnaires are worthwhile and further development would be worthwhile. Additionally, the subjective nature of the Success in ASD Intervention questionnaire lends itself to different interpretations. Some participants may have a stricter view of what success implies, whereas other participants may be more willing to highly value minor successes. Consulting with professionals, caregivers, and ASD researchers in the further development of this questionnaire is required.

Additionally, throughout this document the author makes suggestions regarding indirect impacts of variables and/or the possibility of third variables on the relationships found. The author did not formally explore the impact of the third variables, but has

included a correlation matrix (Appendix M) of all of the primary variables and background variables to suggest possible relationships between all of the variables. Further research into the impact of background variables on the sibling relationship and specific ASD factors is necessary.

Finally, the data collection method of online questionnaire has its limitations. First, the author did not collect information on the familial climate in which the survey was completed. External factors such as noise, public distractions, occupational or marital stress, and/or lack of time may impact the way caregivers responded to the questions included in the survey. The online survey is considered quite lengthy (at least one hour from start to finish), this may have caused fatigue and more careless responses at the end of the survey for those who made it there. Using another method, perhaps researcher observation and interviews/paper and pencil questionnaires, may have yielded different results than the ones found here. Nevertheless, given the sample size, one can assume that external factors were controlled for and the results are still generalizable to other caregivers in similar situations. Related to the data collection method, caregiver perception may limit the results of the study. The author was interested in the promotion of success in the ASD intervention, but each parent's perception may be different. Although the author believes that the caregiver's perception of success is relevant, there is a great deal of subjectivity present. Thus, some questions regarding the promotion of success in ASD intervention are left unanswered. In light of these limitations, the author will offer a future direction and research implications in the following chapter.

CHAPTER V – FUTURE DIRECTION

As seen through the literature review and discussion, many parts of this study explore areas that have not been extensively studied before. More specifically, the unique and complex nature of sibling relationships in the presence of ASD has not been adequately evaluated and theorized. Similarly, research evaluating how parenting style and parenting stress impact the sibling relationship quality in the presence of ASD leaves many questions unanswered. Furthermore, the utilization of TD siblings in therapist-led ASD interventions has been given very little, if any, attention in ASD intervention research and commentary. Lastly, the unique expectations for, assumptions about, and evaluations of the impact of ASD interventions on children with ASD by caregivers need to be considered. Given these relatively new and/or under developed areas of study, the author will suggest and promote various directions for future research and the enhancement of this program of study, as well as the theoretical implications that the results of this study have brought the author to consider.

Research Implications

Sibling relationships in the presence of ASD are very unique and complex. The very nature of ASD prevents children with ASD from having "typical" relationships, either with siblings, peers, or caregivers. Even the relationship a child with ASD experiences in a professional setting (teacher, therapist, doctor, etc.) has significant differences from that of TD children. Researchers are able to utilize other special needs literature to make assumptions and hypotheses about sibling relationships in the presence of ASD, but more thorough evaluation of the dyad itself is needed. Awareness about the implications of birth order, gender, and ASD severity need to be researched. Further, better understanding and awareness of how a positive sibling relationship in the presence

of ASD is defined as necessary. A relationship in the presence of ASD may be "positive" even if it would appear to be missing some of the accepted characteristics of a positive relationship between two TD individuals. Things like physical touch and affection, eye contact, communication of mutual appreciation, and interactive play may be lacking in relationship in the presence of ASD, and yet the relationship may still be considered positive by those involved. The author used the SRQ-R for the purpose of this study, but there were many items in this questionnaire that were not sensitive to the unique characteristics of a TD-ASD dyad. For example, sibling relationships were seen as more positive when the siblings shared secrets, do nice things for each other, or teach each other new things. Sibling relationships in the presence of ASD may or may not meet these criteria. Similarly, sibling relationships were evaluated as being more negative when the children would quarrel or insult each other. The study results indicated that some of the sibling relationships met these requirements and the caregivers were able to evaluate based on these descriptions. However, there were many comments offered by caregivers that implied these defining characteristics were not suitable for the children in the household. Children who were nonverbal could not demonstrate the act of sharing secrets or insulting one another. Fortunately, many caregivers were able to use their parental intuition to consistently evaluate the sibling relationship, but perhaps revision to the SRQ-R is necessary to better address the uniqueness of sibling relationships in the presence of ASD. Given the impact the quality of sibling relationship has on both the TD sibling and the sibling with ASD, creating an alternate mode of evaluating sibling relationships in the presence of ASD would be beneficial.

Parenting style as a construct is very well developed and the evaluation of and assessment of parenting style has been thoroughly tested. Nevertheless, the present study

did not yield the same results as was expected. Well-supported evidence suggests that parenting style significantly impacts sibling relationships and children's development. Nevertheless, this conclusion could not be directly drawn from the data available. In light of this, the author suggests further evaluation of the unique experiences of caregivers of children with ASD. Considering how parents have been educated by different ASD-relevant supports, interventions, and literature is imperative. Perhaps the parenting style schema put forth by Baumrind (1971) does not fit with this unique population's reality. The caregiver's in this study were presumably very involved parents. They were recruited through various online support groups and organizations. As a result, they were likely exposed to a certain level of education and awareness about parenting children with ASD. Perhaps this education impacted the results of the PAQ-R. It is also quite likely that caregivers use different techniques with their children with ASD than with their TD children. This differential treatment has been noted in the literature, and it is evident that it is not always a negative component of parenting children with ASD, but rather a necessary one (Rivers & Stoneman, 2008). It would be of interest to find out how parenting impacts children with ASD when there is no differential treatment, or perhaps when the caregivers have not been educated through support groups, interventions and literature. When a caregiver uses one parenting philosophy regardless of the needs of the child, negative outcomes would likely result. It would also be interesting to determine if different parenting techniques are being specifically taught to parents of children with ASD, and if so how they vary. Are some caregivers being encouraged to be very permissive, while others are taught that structure and control are more advantageous? Regardless, further research into the different parenting styles adopted by caregivers of children with ASD needs to be conducted in order to determine the appropriateness of the

PAQ-R with this population. If the PAQ-R is deemed inappropriate, development of a new evaluation tool is necessary. This tool would need to take into consideration the needs of the children these caregivers are parenting.

Sibling involvement in ASD intervention has been proven, through this study, to have practical implications in the lives of those affected by ASD. Nevertheless, the exact means by which this is accomplished has not been studied. The author recommends that research evaluating the impact of sibling involvement has on the ASD intervention situation, the sibling relationship, and the outcomes of the intervention be conducted. There is substantial evidence suggesting that sibling-mediated interventions are effective (Ferraioli & Harris, 2011; Tsao & Odom, 2006), and yet no research has been conducted in which siblings are simply involved as supports and encouragement in professional-mediated interventions. One of the most empirically validated interventions for children with ASD has been applied behavioural intervention using intensive behavioural intervention techniques (Dawson et al., 2010; Eikeseth, Smith, Jahr, & Eldevik, 2007; Eldevik et al., 2009; Hastings, 2003; Hastings & Johnson, 2001; Jensen & Sinclair, 2002; Remington et al., 2007). An adult (i.e., a therapist, teacher, or caregiver) implements this kind of intervention. Evaluation of the use of siblings as a support in this intervention is necessary. It may promote greater generalization, more rapid mastery of skills, and higher degrees of success in the programs that characterize this kind of intervention. Clinical trials including interventions both with and without sibling involvement would provide evidence of whether this application is worthwhile.

Finally, and most significantly to the author, is the family-focused intervention research. This kind of ASD intervention requires a significant theoretical shift (which will be outlined in the next section). The child with ASD would no longer be considered

the client but rather the family as a whole, and the community at large. Research evaluating the implications of this kind of theoretical shift is necessary. The author intends to extend the current findings to develop a dissertation project. It is the hope of the researcher that through the findings of the current study, as well as clinical work, the development of a family-focused intervention for ASD protocol can be formulated. By including each of the relevant factors found in this study, namely, promotion of positive sibling relationships, caregiver well-being and techniques, systemic therapeutic interventions, and the use of siblings in the promotion of symptom reduction, into a formal therapy protocol, the author feels confident that more whole family inclusive practices will emerge. Children do not develop, struggle, grow, and adapt in a vacuum. Interpersonal relationships are ever-present, even when the child is unable to recognize them or communicate with them. It is, therefore, safe to say that formal interventions should not happen in a therapeutic "vacuum". The author hopes to formally research the implications of this recommendation.

Theoretical Implications

In light of the research recommendation, the author suggests that there are some significant theoretical implications to this shift in research focus. At the time of the study, ASD research has been quite individualistic. The focus has remained on cause, cure, and treatment of the individual with ASD. Although this is a worthy cause, it is not the whole picture. Perhaps by focusing on the symptomatology and symptom reduction, the academic community at large has missed the unique strengths and beautiful reality that is a child with ASD. The author suggests that the next logical incremental step in understanding this unique population can be informed by taking on some of the theory attached to Down syndrome research. The focus is not to "cure" Down syndrome, or to

merely reduce the symptoms that these children face, but rather to help family, friends, and community adapt to and meet the unique needs of children with Down syndrome. These children offer something unique to our understanding of humanity and family. The community has come to appreciate and honour them for their innocence, joyful nature, and fierce loyalty and love for those who care for them. Perhaps society could offer children with ASD the same courtesy.

By adopting a systemic orientation in our approach to ASD and ASD intervention, the academic community not only becomes less individualistically oriented, but also opens up the possibility of a systemic basis for success. Up until now, symptom reduction has been a primary focus for ASD intervention. Essentially training children with ASD to be more responsive, make better eye contact, and reduce their abnormal behaviours has been the determinants of success. A systemic basis for success may allow for families to better understand how a child with ASD naturally responds; allow them to use eye contact differently when engaging with a child with ASD; and come to know what purpose the abnormal behaviours serve for the child with ASD. As a professional, the therapist/psychologist have been trained to evaluate the severity of the ASD by recognizing certain abnormalities, which, although worthwhile and necessary initially, is not the whole picture.

Furthermore, merely adopting a systemic orientation to working with children with ASD is not sufficient. Each systemic orientation has strengths and weaknesses that make them applicable to different familial situations. There is not, as of yet, a systemic orientation that accurately defines every family situations. The same can be said for family situations in the presence of ASD. By focusing on the characteristics that make sibling relationships and caregiver-children relationships in the presence of ASD mutually

beneficial, a new systemic framework to emerge. It is a well-known fact that children with ASD do not have the same capacity for relationship as TD individuals. This does not make them less able to experience relationship, or less able to gain benefit from positive relationship, it merely makes relationship with them and for them different. It is this difference that needs to be explored, valued, and promoted. Similarly, TD siblings of children with ASD do not experience the same sibling relationship as children with only TD siblings. This does not mean they cannot be fulfilled in their relationship with their sibling with ASD. Dedicating time and energy to better understand the sibling dyad in the presence of ASD, will not only benefit children with ASD, it will also benefit TD siblings, caregivers, and peers who can appreciate, understand, and honour those with ASD in a strength-focused way.

Conclusion

This study provides relevant findings about the experiences of families in the presence of ASD. Three hypotheses were formulated and tested, each one providing applicable information to caregivers and professionals, alike. First, the impact parenting stress has on the warmth and closeness of sibling relationships in the presence of ASD was found. The impacted leads the author to suggest the importance of the promotion of health well-being and stress reduction in caregivers of children with ASD. Second, the influence sibling involvement in ASD intervention and success in ASD intervention has on the warmth and closeness of a sibling relationship in the presence of ASD was explored. Both variables significantly impacted the sibling relationship, implying that despite the limitations of children with ASD healthy relationships can be promoted and achieved. Third, the relationship between sibling relationship quality and success in ASD intervention was determined. This finding provides evidence for the importance of

promoting positive relationships even with children who display significant social deficits. Despite the limitations outlined, the results of this study strongly support the relevance of family relationships and the influence family members can have on each other in the presence of ASD.

REFERENCES

Abidin, R. R. (1983). *Parenting Stress Index: Manual, administration booklet, and research update.* Charlottesville, VA: Pediatric Psychology Press.

Abidin, R. R. (1990). *Parenting Stress Index (PSI) Manual* (3rd edition). Charlottesville, VA: Pediatric Psychology Press.

Abidin, R. R. (1992). The determinants of parenting behaviour. *Journal of Clinical Child Psychology, 21*, 407-412. doi:10.1207/s15374424jccp2104_12

Abidin, R. R. (1995). *Parenting Stress Index (PSI)* (3rd edition). Odessa, FL: Psychological Assessment Resources.

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

American Psychiatric Association. (2013). *Highlights of Changes from DSM-IV-TR to DSM-5*. Washington, DC: American Psychiatric Publishing.

Autism Science Foundation. (2010). *Beware of non-evidence-based treatments.* Retrieved from Autism Science Foundation website http://www.autismsciencefoundation.org/what-is-autism/autism-diagnosis/beware-non-evidence-based-treatments

Autism Speaks Canada. (2012). *Facts and stats*. Retrieved from Autism Speaks Canada website http://www.autismspeaks.ca/about-autism/facts-and-stats/

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. doi:10.1111/j.1365-2788.1991.tb00403.x

Bauminger, N., & Kasari, C. (2000). Loneliness and friendships in high-functioning children with autism. *Child Development, 71*, 447-456. doi:10.1111/1467-8624.00156

Bauminger, N., Shulman, C., & Agam, G. (2004). The link between perceptions of self and of social relationships in high-functioning children with autism. *The Journal of Developmental and Physical Disabilities, 16,* 193-214. doi:1056-263X/04/0600-0193/0

Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology Monograph*, *4*(1, Pt. 2), 1–103.

Baumrind, D. (1972). An exploratory study of socialization effects on black children: Some Black-White comparisons. *Child Development, 43*, 261-267. doi:10.2307/1127891

Baxter, C., Cummins, R., & Yiolitis, L. (2000). Parental stress attributed to family members with and without disability: A longitudinal study. *Journal of Intellectual and Developmental Disability, 25*, 105-118. doi:10.1080/13269780050033526

Beyer, J. F. (2009). Autism spectrum disorders and sibling relationships: research and strategies. *Education and Training in Developmental Disabilities, 44,* 444-452.

Brody, G. H., Stoneman, Z., & Burke, M. (1987). Child temperaments, maternal differential behaviour, and sibling relations. *Developmental Psychology, 23*, 354-362.

Brody, G. H., Stoneman, Z., & McCoy, J. K. (1992). Parental differential treatment of siblings and sibling differences in negative emotionality. *Journal of Marriage and the Family, 54*, 643-651.

Buri, J. R. (1991). Parental authority questionnaire. *Journal of Personality Assessment, 57,* 110-119. doi:10.1207/s15327752jpa5701_13

Cash, W. M., & Evans, I. M. (1975). Training preschool children to modify their retarded siblings' behavior. *Journal of Behavioral Therapy and Experimental Psychiatry, 6*, 13-16. doi:10.1016/0005-7916(75)90004-X

Chao, R. K. (1994). Beyond parental control and authoritarian parenting styles: Understanding Chinese parenting through the cultural notion of training. *Child Development, 65*, 1111-1119. doi:10.2307/1131308

Coie, J. D., & Dodge, K. A. (1983). Continuities and changes in children's social status: A five-year longitudinal study. *Merrill-Palmer Quarterly, 29*, 261-282.

Criss, M. M., & Shaw, D. S. (2005). Sibling relationships as contexts for delinquency training in low-income families. *Journal of Family Psychology, 19,* 592–600. doi:10.1037/0893-3200.19.4.592

Cutting, A. L., & Dunn, J. (2006). Conversations with siblings and with friends: Links between relationship quality and social understanding. *British Journal of Developmental Psychology, 24,* 73-87. doi:10.1348/026151005X70337

Dabrowska, A., & Pisula, E. (2010). Parenting stress and coping styles in mothers and fathers of pre-school children with autism and Down syndrome. *Journal of Intellectual Disability Research, 54*, 266-280. doi:10.1111/j.1365-2788.2010.01258.x

Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin, 113*, 487-496. doi:10.1037/0033-2909.113.3.487

Dawson, G., Rogers, S., Munson, J., Smith, M., Winter, J., Greenson, J., . . . Varley, J. (2010). Randomized, controlled trial of an intervention for toddlers with autism:

The early start Denver model. *Pediatrics, 125*, 17-23. doi:10.1542/peds.2009-0958

DiSalvo, C. A., & Oswald, D. P. (2002). Peer-mediated interventions to increase the social interaction of children with autism: Consideration of peer expectancies. *Focus on Autism and Other Developmental Disabilities, 17*, 198-207. doi:10.1177/10883576020170040201

Doron, H., & Sharabany, A. (2013). Marital patterns among parents to autistic children. *Psychology, 4*, 445-453. doi:10.4236/psych.2013.44063

Dyson, L. L. (1996). The experience of families of children with learning disabilities: Parental stress, family functioning, and sibling self concept. *Journal of Learning Disabilities, 29,* 280-286. doi:10.1177/002221949602900306

Dyson, L. L. (2003). Children with learning disabilities within the family context: A comparison with siblings in global self-concept, academic self-perception, and social competence. *Learning Disabilities Research & Practice, 18*, 1-9. doi:10.1111/1540-5826.00053

Eikeseth, S., Smith, T., Jahr, E., & Eldevik, S. (2007). Outcome for children with Autism who began intensive behavioral treatment between ages 4 and 7: A comparison controlled study. *Behavior Modification, 31*, 264-278. doi:10.1177/0145445506291396

Eldevik, S., Hastings, R. P., Hughes, J. C., Jahr, E., Eikeseth, S., & Cross, S. (2009). Meta-analysis of early intensive behavioural intervention for children with Autism. *Journal of Clinical Child and Adolescent Psychology, 38*, 439-450. doi:10.1080/15374410902851739

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175-191. doi:10.3758/BF03193146

Ferraioli, S. J., & Harris, S. L. (2011). Teaching joint attention to children with autism through a sibling-mediated behavioral intervention. *Behavioral Interventions, 26*, 261-281. doi:10.1002/bin.336

Field, A. (2009). *Discovering statistics using SPSS* (3rd edition). Thousand Oaks, California: SAGE Publications Inc.

Floyd, F. J., Purcell, S. E., Richardson, S. S., & Kupersmidt, J. B. (2009). Sibling relationship quality and social functioning of children and adolescents with intellectual disability. *American Journal on Intellectual and Developmental Disabilities, 114*, 110-127. doi:10.1352/2009.114.110-127

Foden, J. (2007, December 17). Sibling studies: The good, the bad, and the contradictory. *Interactive Autism Network Community.* Retrieved from http://www.iancommunity.org/cs/articles/sibling_relationships

Freeman, B. J. (1997). Guidelines for evaluating intervention programs for children with autism. *Journal of Autism and Developmental Disorders, 27*, 641-651. doi:10.1023/A:1025850715183

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

Gau, S. S., Chou, M., Lee, J., Wong, C., Chou, W., Chen, M., . . . Wu, Y. (2010). Behavioural problems and parenting style among Taiwanese children with Autism and their siblings. *Psychiatry and Clinical Neurosciences, 64*, 70-78. doi:10.1111/j.1440-1819.2009.02034.x

Goldstein, H., Kaczmarek, L., Pennington, R., & Shafer, K. (2013). Peer-mediated intervention: Attending to, commenting on, and acknowledging the behaviour of preschoolers with autism. *Journal of Applied Behavior Analysis, 25*, 289-305. doi:10.1901/jaba.1992.25-289

Gutstein, S. E. (2009). Empowering families through relationship developmental intervention: An important part of the biopsychosocial management of Autism Spectrum Disorders. *Annals of Clinical Psychiatry, 21,* 174-182.

Haskett, M. E., Ahern, L. S., Ward, C. S., & Allaire, J. C. (2006). Factor structure and validity of the Parenting Stress Index – Short Form. *Journal of Clinical Child and Adolescent Psychology, 35*, 302-312. doi:10.1207/s15374424jccp3502_14

Hastings, R. P. (2003). Behavioral adjustment of siblings of children with Autism engaged in applied behavior analysis early intervention programs: The moderating role of social support. *Journal of Autism and Developmental Disorders, 33*, 141-150. doi:10.1023/A:1022983209004

Hastings, R. P., & Johnson, E. (2001). Stress in UK families conducting intensive home-based behavioral intervention for their young child with Autism. *Journal of Autism and Developmental Disorders, 31*, 327-336. doi:10.1023/A:1010799320795

Heaven, P. C. L., Ciarrochi, J., & Leeson, P. (2010). Parenting styles and religious values among teenagers: A 3-year prospective analysis. *The Journal of Genetic Psychology, 171,* 93-99. doi:10.1080/00221320903500861

Hinde, R. A., & Stevenson-Hinde, J. (1987). Interpersonal relationships and child development. *Developmental Review, 7*, 1-21. doi:10.1016/0273-2297(87)90002-5

Hobson, R. P. (1993). The emotional origins of social understanding. *Philosophical Psychology, 6*, 227-245. doi:10.1080/09515089308573090

Hymel, S., Rubin, K. H., Rowdem, L., & LeMare, L. (1990). Children's peer relationships: Longitudinal prediction of internalizing and externalizing problems from middle to late childhood. *Child Development, 61*, 2004-2021. doi:10.1111/j.1467-8624.1990.tb03582.x

Jensen, V. K., & Sinclair, L. V. (2002). Treatment of Autism in young children: Behavioral intervention and applied behavior analysis. *Infants & Young Children, 14*(4), 42-52. Retrieved from http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=6&sid=441ffa74-1c9f-45f8-acfd-bfae8b13769f%40sessionmgr112&hid=126

Jones, E. A., Carr, E. G., & Feeley, K. M. (2006). Multiple effects of joint attention intervention for children with autism. *Behavior Modification, 30*, 782-834. doi:10.1177/0145445506289392

Kaminsky, L., & Dewey, D. (2001). Siblings relationships of children with autism. *Journal of Autism and Developmental Disorders, 31,* 399-410. doi:10.1023/A:1010664603039

Kaminsky, L., & Dewey, D. (2002). Psychosocial adjustment in siblings of children with autism. *Journal of Child Psychology and Psychiatry, 43,* 225-232. doi:10.1111/1469-7610.00015

Kamps, D., Royer, J., & Dugan, E. (2002). Peer training to facilitate social interaction for elementary students with autism and their peers. *Exceptional Children, 68*, 173-178.

Kasari, C., & Rotheram-Fuller, E. (2007). Peer relationships of children with autism: Challenges and interventions. *Clinical Manual for the Treatment of Autism* (pp. 235-257). Arlington, VA: American Psychiatric Publishing.

Kelly, A. B., Garnett, M. S., Attwood, T., & Peterson, C. (2008). Autism spectrum symptomatology in children: The impact of family and peer relationships. *The Journal of Abnormal Child Psychology, 36,* 1069-1081. doi:10.1007/s10802-008-9234-8

Kersh, J. (2007). Understanding the relationship between siblings when one child has a developmental disability. *Dissertation Abstracts International: Section B: The Sciences and Engineering, 68*(5-B), 3425.

Knott, F., Lewis, C., & Williams, T. (1995). Sibling interactions of children with learning disabilities: A comparison of autism and Down's syndrome. *Journal of Child Psychology and Psychiatry, 6*, 965-976. doi:10.1111/j.1469-7610.1995.tb01343.x

Kowal, A., Kramer, L., Krull, J. L., & Crick, N. R. (2002). Children's perceptions of the fairness of parental preferential treatment and their socioemotional well-being. *Journal of Family Psychology, 16*, 297-306. doi:10.1037/0893-3200.16.3.297

Kramer, L., & Kowal, A. K. (2005). Sibling relationship quality from birth to adolescence: The enduring contribution of friends. *Journal of Family Psychology, 19,* 503-511. doi:10.1037/0893-3200.19.4.503

Kretschmer, T., & Pike, A. (2010). Associations between adolescent siblings' relationship quality and similarity and differences in values. *Journal of Family Psychology, 24,* 411-418. doi:10.1037/a0020060

Lardieri, L. A., Blacher, J., & Swanson, H. L. (2000). Sibling relationships and parent stress in families of children with and without learning disabilities. *Learning Disability Quarterly, 23*, 105-116. doi:10.2307/1511140

Little, L. (2002). Middle-class mothers' perceptions of peer and sibling victimization among children with Asperger's syndrome and nonverbal learning disorders. *Issues in Comprehensive Pediatric Nursing, 25*, 43-57.

Maccoby, E. E., & Martin, J. A. (1983). Socialization in the context of the family: Parent-child interaction. In E. M. Hetherington (Ed.) and P. H. Mussen (Series Ed.), *Handbook of Child Psychology, (vol. 4), Socialization, personality and social development* (pp. 1-101). New York: Wiley.

Mascha, K., & Boucher, J. (2006). Preliminary investigation of a qualitative method of examining siblings' experiences of living with a child with ASD. *Journal of Intellectual and Developmental Disabilities 52*, 19-28. doi:http://dx.doi.org/10.1179/096979506799103659

McHale, S., Sloan, J., & Simeonsson, J. (1986). Sibling relationships of children with autism, mentally retarded, and nonhandicapped brothers and sisters. *Journal of Autism and Developmental Disorders, 16*, 399-413. doi:10.1007/BF01531707

McHale, S. M., Crouter, A., McGuire, S., & Updegraff, K. (1995). Congruence between mothers' and fathers' differential treatment of siblings: Links with family relations and children's well-being. C*hild Development, 66*, 116-128. doi:10.2307/1131194

McKelvey, L. M., Whiteside-Mansell, L., Faldowski, R. A., Shears, J., Ayoub, C., & Hart, A. D. (2009). Validity of the short form of the Parenting Stress Index for fathers of toddlers. *Journal of Child and Family Studies, 18*, 102-111. doi:10.1007/s10826-008-9211-4

Mesibov, G. B. (1983). Current perspectives and issues in autism and adolescence. In E. Schopler & G. B. Mesibov (Eds.), *Autism in adolescents and adults* (pp. 37-53). New York: Plenum Press.

Mesibov, G. B., & Handlan, S. (1997). Adolescents and adults with autism. In D. J. Cohen & F. R. Volkmar (Eds.), *Handbook of autism and pervasive developmental disorders* (2nd ed., pp. 309-322). New York: John Wiley & Sons.

Mills-Koonce, W. R., Appleyard, K., Barnett, M., Deng, M., Putallaz, M., & Cox, M. (2011). Adult attachment style and stress as risk factors for early maternal sensitivity and negativity. *Infant Mental Health Journal, 32*, 277-285. doi:10.1002/imhj.20296

Moser, R. P., & Jacob, T. (2002). Parental and sibling effects in adolescent outcomes. *Psychological Reports, 91*(2), 463-479. doi:10.2466/PR0.91.6.463-479

Mundy, P., Sigman, M., & Kasari, C. (1994). Joint attention, developmental level, and symptom presentation in autism. *Development and Psychopathology, 6*, 389-401. doi:10.1017/S0954579400006003

Murphy, D. A., Marelich, W. D., Armistead, L., Herbeck, D. M., & Payne, D. L. (2010). Anxiety/stress among mothers living with HIV: Effects on parenting skills and child outcomes. *AIDS Care, 22*, 1449-1458. doi:10.1080/09540121.2010.487085

Ogletree, B. T. (2007). What makes communication intervention successful with children with autism spectrum disorders? *Focus on Autism and Other Developmental Disabilties, 22*, 190-192. doi:10.1177/10883576070220030601

Orsmond, G. I., Krauss, M. W., & Seltzer, M. M. (2004). Peer relationships and social and recreational activities among adolescents and adults with autism. *Journal of*

Autism and Developmental Disorders, 34, 245-256. doi:10.1023/B:JADD.0000029547.96610.df

Orsmond, G. I., Kuo, H., & Seltzer, M. M. (2009). Siblings of individuals with an Autism Spectrum Disorder: Sibling relationships and wellbeing in adolescence and adulthood. *Autism, 13,* 59-80. doi:10.1177/1362361308097119

Padilla-Walker, L. M., Harper, J. M., & Jensen, A. C. (2010). Self-regulation as a mediator between sibling relationship quality and early adolescents' positive and negative outcomes. *Journal of Family Psychology, 24*, 419-428. doi:10.1037/a0020387

Powers, M. D. (1992). Early intervention for children with autism. In D. E. Berkell (Ed.), *Autism: Identification, education and treatment*. Hillsdale, NJ: Erlbaum.

Radke-Yarrow, M. (1999). *Children of depressed mothers: From early childhood to maturity.* Cambridge, UK: Cambridge University Press.

Reitman, D., Rhode, P. C., Hupp, S. A., & Altobello, C. (2002). Development and validation of the Parental Authority Questionnaire - Revised. Journal of *Psychopathology and Behavioral Assessment, 24*, 119-127. doi:10.1023/A:1015344909518

Remington, B., Hastings, R. P., Kovshoff, H., delgi Espinosa, F., Jahr, E., Brown, T., … Ward, N. (2007). Early intensive behavioral intervention: Outcomes for children with Autism and their parents after two years. *American Journal on Mental Retardation, 112*, 418-438. doi:10.1352/0895-8017(2007)112[418:EIBIOF]2.0.CO;2

Rholes, W. S., Simpson, J. A., & Friedman, M. (2006). Avoidant attachment and the experience of parenting. *Personality and Social Psychology Bulletin, 32*, 275-285. doi:10.1177/0146167205280910

Rivers, J. W., & Stoneman, Z. (2003). Sibling relationships when a child has Autism: Marital stress and support coping. *Journal of Autism and Developmental Disorders, 33*, 383-394. doi:10.1023/A:1025006727395

Rivers, J. W., & Stoneman, Z. (2008). Child temperaments, differential parenting, and the sibling relationships of children with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 38*, 1740-1750. doi:10.1007/s10803-008-0560-z

Rodriguez, C. M. (2010). Parent-child aggression: Association with child abuse potential and parenting style. *Violence and Victims, 25,* 728-741. doi:10.1891/0886-6708.25.6.728

Roisman, G. I., Holland, A., Fortuna, K., Fraley, R. C., Clausell, E., & Clarke, A. (2007). The Adult Attachment Interview and self-reports of attachment style: An empirical rapprochement. *Journal of Personality and Social Psychology, 92*, 678-697. doi:10.1037/0022-3514.92.4.678

Ross, J., & Cuskelly, M. (2006). Adjustment of sibling problems and coping strategies of brothers and sisters of children with autism spectrum disorders. *Journal of Intellectual and Developmental Disabilities, 31*, 77-86. doi:10.1080/13668250600710864

Rubin, K. H., & Mills, R. S. L. (1988). The many faces of social isolation in childhood. *Journal of Consulting and Clinical Psychology, 56*, 916-924. doi:10.1037/0022-006X.56.6.916

Rutter, M. (1970). Autistic children: Infancy to adulthood. *Seminars in Psychiatry, 2*, 435-450.

Rutter, M. (1979). Maternal deprivation, 1972-1978: New findings, new concepts, new approaches. *Child Development, 50*, 283-305.

Sage, K. D., & Jegatheesan, B. (2010). Perceptions of siblings with autism and relationships with them: European American and Asian American siblings draw and tell. *Journal of Intellectual and Developmental Disability, 35,* 92-103. doi:10.3109/13668251003712788

Sasso, G. M., Hughes, M. J., Swanson, M., & Novak, C. G. (1987). A comparison of peer initiation interventions in promoting multiple peer initiators. *Education & Training in Mental Retardation, 22*, 150-155.

Schuntermann, P. (2007). The sibling experience: Growing up with a child who has pervasive developmental disorder or mental retardation. *Harvard Review of Psychiatry, 15,* 93-108. doi:10.1080/10673220701432188

Sharpley, C. F., Bitsika, V., & Efremidis B. (1997). Influence of gender, parental health, and perceived expertise of assistance upon stress, anxiety and depression among parents of children with autism. *Journal of Intellectual and Developmental Disability, 22*, 19-28. doi:10.1080/13668259700033261

Smith, M. (2011). Measures for assessing parenting in research and practice. *Child and Adolescent Mental Health, 16*, 158-166. doi:10.1111/j.1475-3588.2013.00585.x

Smith, L. O., & Elder, J. H. (2010). Siblings and family environments of persons with autism spectrum disorder: A review of the literature. *Journal of Child and Adolescent Psychiatric Nursing, 23,* 189-195. doi:10.1111/j.1744-6171.2010.00240.x

Smith, K., & Hart, H. (2002). *Blackwell handbook of childhood social development.* Malden, MA: Blackwell Publishing.

Sperry, L., Neitzel, J., & Engelhardt-Wells, K. (2010). Peer-mediated instruction and intervention strategies for students with Autism Spectrum Disorders. *Preventing School Failure, 54*, 256-264. doi:10.1080/10459881003800529

Statistics Canada. (2013). *Census families by number of children at home, by province and territory, 2011 census.* (Catalogue number 98-312-XCB). Retrieved from Statistics Canada website http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/famil50a-eng.htm

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

Stone, W. L., & Rosenbaum, J. L. (1988). A comparison of teacher and parent views of autism. *Journal of Autism and Developmental Disorders, 18*, 403-414.

Travis, L. L., & Sigman, M. (1998). Social deficits and interpersonal relationships in autism. *Mental Retardation and Developmental Disabilities Research Review, 4*, 65-72. doi:10.1002/(SICI)1098-2779(1998)4:2<65::AID-MRDD2>3.0.CO;2-W

Trembath, D., Balandin, S., Togher, L., & Stancliffe, R. J. (2009). Peer-mediated teaching and augmentative and alternative communication for preschool-aged children with autism. *Journal of Intellectual & Developmental Disability, 34*, 173-186. doi:10.1080/13668250902845210

Trottier, N., Kamp, L., & Mirenda, P. (2011). Effects of peer-mediated instruction to teach use of speech-generating devices to students with autism in social game

routines. *Augmentative and Alternative Communication, 27*, 26-39. doi:10.3109/07434618.2010.546810

Tsao, L., & Odom, S. L. (2006). Sibling-mediated social interaction intervention for young children with autism. *Topics in Early Childhood Special Education, 26*, 106-123. doi:10.1177/02711214060260020101

Vandermeulen, T. M. (1997). *Sibling relationships of children with attention-deficit/hyperactivity disorder* (Unpublished master's thesis). Trinity Western University, Langley, BC.

Volling, B. L., & Belsky, J. (1992). The contribution of mother-child and father-child relationships to the quality of sibling interaction: A longitudinal study. *Child Development, 63*, 1209-1222. doi:10.1111/j.1467-8624.1992.tb01690.x

Volkmar, F. R. (1987). Diagnostic issues in the pervasive developmental disorders. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 28*, 365-369. doi:10.1111/j.1469-7610.1987.tb01758.x

Volkmar, F. R., & Klin, A. (1995). Social development in autism: Historical and clinical perspectives. In S. Baron-Cohen, H. Tager-Flusberg, & D. J. Cohen (Eds.), *Understanding other minds: Perspectives from autism* (pp. 40-55). New York: Oxford University Press.

Whiteside-Mansell, L., Ayoub, C., McKelvey, L., Faldowski, R. A., Hart, A., & Shears, J. (2007). Parenting stress of low-income parents of toddlers and preschoolers: Psychometric properties of a short form of the Parenting Stress Index. *Parenting: Science and Practice, 7*, 27-56. doi:10.1080/15295190709336775

Williams, L. R., Degnan, K. A., Perez-Edgar, K. E., Henderson, H. A., Rubin, K. H., Pine, D. S.,…Fox, N. A. (2009). Impact of behavioral inhibition and parenting

style on internalizing and externalizing problems from early childhood through adolescence. *Journal of Abnormal Child Psychology, 37,* 1063-1075. doi:10.1007/s10802-009-9331-3

Yu, J. J., & Gamble, W. C. (2008). Pathways of influence: Marital relationships and their association with parenting styles and sibling relationship quality. *Journal of Child and Family Studies, 17*, 757-778. doi:10.1007/s10826-008-9188-z

Appendix A: Letter of Initial Contact

Kristy Dykshoorn, Master of Arts in Counselling Psychology student from Trinity Western University in Langley, British Columbia is conducting a study called Friends or Rivals: Navigating Autism Spectrum Disorder Sibling Relationships. If you are a primary caregiver of at least one child that has been formally diagnosed as having Autism Spectrum Disorder who is currently involved in some form of Autism Spectrum Disorder intervention and you have at least one other typically developing child, we would like to give you an opportunity to participate in this study. The study consists of an online questionnaire (approximately 1hour in length), which you, as the primary caregiver, will fill out. If you are interested in participating, or would like more information, please click on the following link to access the questionnaire and the researchers contact information.

https://www.surveymonkey.com/s/asdsibrelationships

Thank you for considering and contribution to the research in this much-needed area!

Warmest Regards,

Kristy Dykshoorn

Trinity Western University

Appendix B: Informed Consent

Tensions and Connections among Siblings in the Presence of Autism Spectrum Disorder: This project explores family stress, sibling relationships, and parenting style in families with a child who is on the Autism Spectrum.

Kristy Dykshoorn, a Master of Arts in Counselling Psychology student at Trinity Western University, is conducting this study. You, as a participant, will be asked to complete an online questionnaire taking about one hour of your time. At the end of the questionnaires you will be invited to leave an email address to be entered into a draw for one of five $20.00 gift cards. This draw is completely optional and your email address will be kept completely separate from your responses to the questionnaires. All responses will be kept confidential, without any identifying information.

At times, some people can feel a bit uncomfortable with questions about family life or distressed if questions remind them of negative life experiences. Many people experience satisfaction from contributing to research that can be helpful to families and especially family caregivers. And some people find it interesting and helpful to think about their family when answering these kinds of questions.

All information collected through this project will be stored on servers located in the United States and will be accessible through the US Patriot Act during the survey. Then the information will be downloaded and deleted from the online system. All responses will be separated from identifying information and will be password protected on the researcher's personal computer and kept in locked storage. You have a right to refuse to participate or withdraw at anytime without jeopardy. Incomplete surveys will be considered withdrawal from the study and that data will be deleted.

If you have any questions or desire further information about this study, please feel free to contact Kristy Dykshoorn at 778-809-4067 and/or kristy.dykshoorn@gmail.com or Dr. Marvin McDonald (project supervisor) at mcdonald@twu.ca. If you have any concerns about your treatment or rights as a participant in research, you may contact Ms. Sue Funk in the Office of Research, Trinity Western University at 604-513-2142 or sue.funk@twu.ca.

By clicking "continue" below you are indicating that you consent to participate in this study and that your response may be put in anonymous form and kept for further use after the completion of this study. Please print a copy of this consent form for your own records.

(April 13, 2012)

Appendix C: Instructions

The survey consists of questionnaires on several topics:

a) Basic background descriptions

b) Parenting style questions

c) Ratings about stress levels

d) Descriptions of sibling relationships

e) Information about sibling involvement in ASD interventions

Please read all of the instructions and answer all of the questions to the best of your knowledge.

I know this survey is lengthy and that your time is very precious, therefore, I have designed the survey so that you can come back and finish the survey at another time if you run out of time now. Hope this assists you in your effort to complete the survey! Thank you so much for your interest in my research endeavour!

Appendix D: Demographic Questionnaire

1) Are you male or female?
    a. Male
    b. Female
2) What is your age?
    a. 18-21
    b. 22-25
    c. 26-30
    d. 31-40
    e. 41-50
    f. 51-60
    g. 61 or over
3) What is the highest level of education you have completed?
    a. Less than high school
    b. High school/GED
    c. Some college
    d. 2-year college diploma
    e. 4-year university degree
    f. Master's degree
    g. Doctoral degree
    h. Professional Degree (MD, JD)
4) What is your yearly total household income?
    a. Less than $10, 000
    b. $10, 000 - $20, 000

c. $20, 000 - $30, 000

d. $30, 000 - $40, 000

e. $40, 000 - $50, 000

f. $50, 000 - $60, 000

g. $60, 000 - $70, 000

h. $70, 000 - $80, 000

i. $80, 000 - $90, 000

j. $90, 000 - $100, 000

k. Over $100, 000

5) What is your current marital status?

a. Single, never married

b. Common-law

c. Married

d. Separated

e. Divorced

f. Widowed

6) What is your religious/cultural affiliation?

a. Protestant Christian

b. Roman Catholic

c. Evangelical Christian

d. Jewish

e. Muslim

f. Hindu

g. Buddhist

h. Aboriginal/First Nations

i. None

j. Other, please specify: _____

7) What heritage or cultural background do you most identify with?

a. Canadian

b. Western European

c. Eastern European

d. Asian

e. Pacific Islander

f. South East Asian

g. African

h. Australian

i. Aboriginal/First Nations

j. Other, please specify: _____

8) What country were you born in? _____

9) If you were born outside of Canada, at what age did you move to Canada?

_____

10) What country was your mother born in?

_____

11) What country was your father born in? _____

12) What is the gender of your typically developing (TD) child? If you have more than one, please choose one to refer to for the remained of the survey

a. Male

b. Female

13) How old is your TD child? _____

14) Is your TD child older than your child with Autism Spectrum Disorder (ASD)?

    a. Yes

    b. No

15) What is the gender of your child with ASD?

    a. Male

    b. Female

16) How old is your child with ASD? _____

17) How many months are between your TD child's age and your child with ASD's age? _____

18) Is there any other background information from you family that you believe is relevant, or would like to share with the research team?

    _____

    _____

    _____

19) Please use this space to clarify any of the background questions that you feel necessary.

    _____

    _____

    _____

Appendix E: Parental Authority Questionnaire – Revised (Parent Version)

Parent Name: _____Child's name:_____Child age: ____Child Sex: male / female

***PAQ-R Instructions*: For each statement below circle the number that best describes <u>your beliefs about parenting your chil</u> There are no right or wrong answers. We are looking for your overall impression regarding each statement. In the right column, please CIRCLE your answer for each item: SA = Strongly Agree; A = Agree ; N = Neither Agree nor Disagree; D Disagree; SD = Strongly Disagree.**

1. In a well-run home children should have their way as often as parents do.	1. SA A N D SD
2. It is for my childrens' own good to require them to do what I think is right, even if they don't agree.	2. SA A N D SD
3. When I ask my children to do something, I expect it to be done immediately without questions.	3. SA A N D SD
4. Once family rules have been made, I discuss the reasons for the rules with my children.	4. SA A N D SD
5. I always encourage discussion when my children feel family rules and restrictions are unfair.	5. SA A N D SD
6. Children need to be free to make their own decisions about activities, even if this disagrees with what a parent might want to do.	6. SA A N D SD
7. I do not allow my children to question the decisions that I make.	7. SA A N D SD
8. I direct the activities and decisions of my children by talking with them and using rewards and punishments.	8. SA A N D SD
9. Other parents should use more force to get their children to behave.	9. SA A N D SD
10. My children do not need to obey rules simply because people in authority have told them to.	10. SA A N D SD
11. My children know what I expect from them, but feel free to talk with me if they feel my expectations are unfair.	11. SA A N D SD
12. Smart parents should teach their children early exactly who is the boss in the family.	12. SA A N D SD
13. I usually don't set firm guidelines for my childrens' behavior.	13. SA A N D SD
14. Most of the time I do what my children want when making family decisions.	14. SA A N D SD
15. I tell my children what they should do, but I explain why I want them to do it.	15. SA A N D SD
16. I get very upset if my children try to disagree with me.	16. SA A N D SD
17. Most problems in society would be solved if parents would let their children choose their activities, make their own decisions, and follow their own desires when growing up.	17. SA A N D SD
18. I let my children know what behavior is expected and if they don't follow the rules they get punished.	18. SA A N D SD
19. I allow my children to decide most things for themselves without a lot of help from me.	19. SA A N D SD
20. I listen to my children when making decisions, but I do not decide something simply because my children want it.	20. SA A N D SD
21. I do not think of myself as responsible for telling my children what to do.	21. SA A N D SD
22. I have clear standards of behavior for my children, but I am willing to change these standards to meet the needs of the child.	22. SA A N D SD
23 I expect my children to follow my directions, but I am always willing to listen to their concerns and discuss the rules with them.	23. SA A N D SD
24. I allow my children to form their own opinions about family matters and let them make their own decisions about those matters.	24. SA A N D SD
25. Most problems in society could be solved if parents were stricter when their children disobey	25. SA A N D SD
26. I often tell my children exactly what I want them to do and how I expect them to do it.	26. SA A N D SD
27. I set firm guidelines for my children but am understanding when they disagree with me.	27. SA A N D SD
28. I do not direct the behaviors, activities or desires of my children.	28. SA A N D SD
29. My children know what I expect of them and do what is asked simply out of respect for my authority.	29. SA A N D SD
30. If I make a decision that hurts my children, I am willing to admit that I made a mistake.	30. SA A N D SD

31. Please make any relevant comments regarding your parenting style here:

Scoring information for the Parental Authority Questionnaire – Revised (Parent Version):

- No total score calculated.
- 30 5-point Likert scale questions
- Authoritarian Subscale
    - Average items 1-10.
- Authoritative Subscale
    - Average of items 11-20.
- Permissive Subscale
    - Average of items 21-30.

Appendix F: Parenting Stress Index – Short Version

Please indicate how much you agree or disagree with the following statements regarding your relationship with your children.

1	2	3	4	5
Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree

Example: 1 2 3 4 5 I enjoy going lo the movies. (If you sometimes enjoy going to the movies, you would fill in #2.)

1. I often have the feeling that I cannot handle things very well.	1	2	3	4	5
2. I find myself giving up more of my life to meet my children's needs than I ever expected.	1	2	3	4	5
3. I feel trapped by my responsibilities as a parents	1	2	3	4	5
4. Since having my children I have been unable to try new and different things.	1	2	3	4	5
5. Since having my children I feel that I am almost never able to do things that I like to do.	1	2	3	4	5
6. I am unhappy with the last purchase of I clothing made for myself.	1	2	3	4	5
7. There are quite a few things that bother me about my life.	1	2	3	4	5
8. Having children has caused more problems I than expected in my relationship with my spouse (male/female friend).	1	2	3	4	5
9. I feel alone and without friends.	1	2	3	4	5
10. When I go to a party I usually expect not to enjoy myself.	1	2	3	4	5
11. I am not as interested in people as I used to be.	1	2	3	4	5
12. I don't enjoy things as I used to.	1	2	3	4	5

13. My children rarely does things for me that make me feel good.	1	2	3	4	5
14. Most times I feel that my children like me and want to be close to me.	1	2	3	4	5
15. My children smile at me much less than I expected.	1	2	3	4	5
16. When I do things for my children, I get the feeling that my efforts are not appreciated very much.	1	2	3	4	5
17. When playing, my children don't often giggle or laugh.	1	2	3	4	5
18. My children don't seem to learn as much as most children.	1	2	3	4	5
19. My children don't seem to smile as much as most children.	1	2	3	4	5
20. My children are not able to do as much as I expected.	1	2	3	4	5
21. It takes a long time and it is really hard for my children to get used to new things.	1	2	3	4	5
22. I feel that I am: 1. a very good parent. 2. a better than average parent. 3. an average parent. 4. a person who has some trouble being a parent. 5. not very good at being a parent.	1	2	3	4	5
23. I expected to have closer and warmer feeling for my children than I do and this bothers me.	1	2	3	4	5
24. Sometimes my children do things that bother me just to be mean.	1	2	3	4	5
25. My children seems to cry more often than most children.	1	2	3	4	5
26. My children generally wake up in a bad mood.	1	2	3	4	5

27. I feel that my children are very moody and easily upset.	1	2	3	4	5
28. My children do a few things that bother me a great deal.	1	2	3	4	5
29. My children react very strongly when something happens that my children don't like.	1	2	3	4	5
30. My children get upset easily over the smallest things.	1	2	3	4	5
31. My children's sleeping and eating schedule was much harder to establish than I expected.	1	2	3	4	5
32. I have found that getting my children to do something is: 1. much harder than I expected. 2. somewhat harder than I expected. 3. about as hard as I expected. 4. somewhat harder than I expected. 5. much easier than I expected.	1	2	3	4	5
33. Think carefully and count the number of things which your children do that bothers you. For example: refuses to listen, cries, interrupts, fights, whines, etc. Please fill in the number that includes the number of things you counted: 1. 1 -3 2. 4-5 3. 6-7 4. 8-9 5. 10 +	1	2	3	4	5
34. There are some things my children do that really bother me a lot.	1	2	3	4	5
35. My children turned out to be more of a problem than I expected.	1	2	3	4	5
36. My children make more demands at me than most children.	1	2	3	4	5

37. Please make any comments about your relationship with your children here:

_____

_____

_____

Scoring information for the Parenting Stress Index – Short Form.

- Reverse score items: 13, 21, & 32.
- 36 5-point Likert scale questions.
- Item 5 – typographically missed by the author in the online questionnaire. The following scoring scheme represents the scoring without item 5.
- Defensive responding score
    - Average of items 1, 2, 3, 6, 7, 8, and 10.
- Parental Distress Subscale
    - Average of items 1-11.
- Parent-Child Dysfunctional Interaction Subscale
    - Average of items 12-23.
- Difficult Child Subscale
    - Average of items 24-35.
- Total Parenting Stress Score
    - Average of each subscale score.

Appendix G: Sibling Relationship Questionnaire – Revised (Parent)

This questionnaire was completed by mother/father (circle one)
Answer each question honestly, and to the best of your knowledge.
"TD child" = your typically developing child. "ASD child" = your child with ASD.

1. Some siblings do nice things for each other a lot, while other siblings do nice things for each other a little. How much do both the TD child and the ASD child do nice things for each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
2. Who usually gets treated better by mother, the TD child or the ASD child?	[ ]The ASD child almost always gets treated better [ ]The ASD child often gets treated better [ ]The children get treated about the same [ ] The TD child often gets treated better [ ] The TD child almost always gets treated better
3. How much does the TD child show the ASD child how to do things he or she doesn't know how to do?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
4. How much does the ASD child show the TD child how to do things he or she doesn't know how to do?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
5. How much does the TD child tell the ASD child what to do?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
6. How much does the ASD child tell the TD child what to do?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
7. Who usually gets treated better by father, the TD child or the ASD child?	[ ]The ASD child almost always gets treated better [ ]The ASD child often gets treated better [ ]The children get treated about the same [ ] The TD child often gets treated better [ ] The TD child almost always gets treated better

8. Some siblings care about each other a lot while other siblings don't care about each other that much. How much do the TD child and the ASD child care about each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
9. How much do the TD child and the ASD child go places and do things together?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
10. How much do the TD child and the ASD child insult and call each other names?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
11. How much do the TD child and the ASD child like the same things?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
12. How much do the TD child and the ASD child tell each other everything?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
13. Some siblings try to out-do or beat each other at things a lot, while other siblings try to out-do each other a little. How much do the TD child and the ASD child try to out-do each other at things?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
14. How much does the TD child admire and respect the ASD child?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
15. How much does the ASD child admire and respect the TD child?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
16. How much do the TD child and the ASD child disagree and quarrel with each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH

17. Some siblings cooperate a lot, while other siblings cooperate a little. How much do the TD child and the ASD child cooperate with other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
18. Who gets more attention from mother, the TD child or the ASD child?	[ ]This sibling almost always gets more attention [ ]This sibling often gets more attention [ ]The children get about the same amount of attention [ ]_____ often gets more attention [ ]_____ almost always gets more attention
19. How much does the TD child help the ASD child with things he or she can't do by him or herself?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
20. How much does the ASD child help the TD child with things he or she can't do by him or herself?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
21. How much does the TD child make the ASD child do things?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
22. How much does the ASD child make the TD child do things?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
23. Who gets more attention from father, the TD child or the ASD child?	[ ]This sibling almost always gets more attention [ ]This sibling often gets more attention [ ]The children get about the same amount of attention [ ]_____ often gets more attention [ ]_____ almost always gets more attention
24. How much do the TD child and the ASD child love each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH

25. Some siblings play around and have fun with each other a lot, while other siblings play around and have fun with each other a little. How much do the TD child and the ASD child play around and have fun with each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
26. How much are the TD child and the ASD child mean to each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
27. How much do the TD child and the ASD child have in common?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
28. How much do the TD child and the ASD child share secrets and private feelings?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
29. How much do the TD child and the ASD child compete with each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
30. How much does the TD child look up to and feel proud of the ASD child?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
31. How much does the ASD child look up to and feel proud of the TD child?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
32. How much do the TD child and the ASD child get mad at and get in arguments with each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
33. How much do both the TD child and the ASD child share with each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much

	[ ]EXTREMELY MUCH
34. Who does mother usually favor, the TD child or the ASD child?	[ ]The ASD child almost always is favored [ ]The ASD child often is favored [ ]Neither of the children is favored [ ] The TD child is often favored [ ] The TD child is almost always favored
35. How much does the TD child teach the ASD child things that he or she doesn't know?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
36. How much does the ASD child teach the TD child things that he or she doesn't know?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
37. How much does the TD child order the ASD child around?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
38. How much does the ASD child order the TD child around?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
39. Who does father usually favor, the TD child or the ASD child?	[ ]The ASD child almost always is favored [ ]The ASD child is often favored [ ]Neither of the children is favored [ ] The TD child often is favored [ ] The TD child almost always is favored
40. How much is there a strong feeling of affection (love) between the TD child and the ASD child?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
41. Some kids spend lots of time with their siblings, while others don't spend so much. How much free time do the TD child and the ASD child spend together?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
42. How much do the TD child and the ASD child bug and pick on each other in mean ways?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH

43. How much are the TD child and the ASD child alike?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
44. How much do the TD child and the ASD child tell each other things they don't want other people to know?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
45. How much do the TD child and the ASD child try to do things better than each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
46. How much does the TD child think highly of the ASD child?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
47. How much does the ASD child think highly of the TD child?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH
48. How much do the TD child and the ASD child argue with each other?	[ ]Hardly at all [ ]Not too much [ ]Somewhat [ ]Very much [ ]EXTREMELY MUCH

Scoring information for the Sibling Relationship Questionnaire – Revised (Parent):

- 48 5-point Likert scale questions.
- Pro-Social Subscale
  - Average of items 1, 17, and 33.
- Maternal Partiality Subscale
  - Average of items 2, 18, and 34.
- Non-Directional Maternal Partiality Subscale
  - Average of the deviation from 0 of items 2, 18, and 34.
- Nurturance of Sibling Subscale
  - Average of items 3, 19, and 35.
- Nurturance by Sibling Subscale
  - Average of items 4, 20, and 36.
- Dominance of Sibling Subscale
  - Average of items 5, 21, and 37.

- Dominance by Sibling Subscale
    - Average of items 6, 22, and 38.
- Paternal Partiality Subscale
    - Average of items 7, 23, and 39.
- Non-Directional Paternal Partiality Subscale
    - Average of deviation from 0 for items 7, 23, and 39.
- Affection Subscale
    - Average of items 8, 24, and 40.
- Companionship Subscale
    - Average of items 9, 25, and 41.
- Antagonism Subscale
    - Average of items 10, 26, and 42.
- Similarity Subscale
    - Average of items 11, 27, and 43.
- Intimacy Subscale
    - Average of items 12, 28, and 44.
- Competition Subscale
    - Average of items 13, 29, and 45.
- Admiration of Sibling Subscale
    - Average of items 14, 30, and 46.
- Admiration by Sibling Subscale
    - Average of items 15, 31, and 47.
- Quarrelling Subscale
    - Average of items 16, 32, and 48.
- Warmth and Closeness Factor
    - Averaging the subscale scores for Intimacy, Prosocial Behaviour, Companionship, Similarity, Admiration of Sibling, Admiration by Sibling, and Affection.
- Relative Status and Power Factor
    - Calculated by finding the difference of the subscale scores for Nurturance of Sibling and Dominance of Sibling, minus Nurturance by Sibling and Dominance by Sibling.
- Conflict Factor
    - Averaging the subscale scores for Quarrelling, Antagonism, and Competition.
- Rivalry Factor
    - Averaging the subscale scores for Non-Directional Maternal Partiality and Non-Directional Paternal Partiality.

Appendix H: Sibling Involvement in ASD Intervention Questionnaire

Please rate the strength of your agreement with each of the statements listed below based on activities in your household in an average week. For these questions, ASD is used for "autism spectrum disorder" and "typical" is used for your child who has not been diagnosed with ASD. Again, if there are more than one "typical developing" child in your home, please refer to the one closest in age to your child with ASD (as you have for previous sections of the survey). We are interested in learning about how the formal ASD interventions work in your home.

1) My typical child participates regularly in the ASD intervention we use to help my child with ASD.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neither agree nor disagree
    d. Somewhat agree
    e. Strongly agree

2) Most of the time, my typical child helps around the house in many ways.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neither agree nor disagree
    d. Somewhat agree
    e. Strongly agree

3) Compared to other families I know, my typical child spends a lot of time helping my child with ASD in his/her intervention programs.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neither agree nor disagree
    d. Somewhat agree
    e. Strongly agree

4) Compared to other families, my typical child does her/his chores quite willingly.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neither agree nor disagree
    d. Somewhat agree
    e. Strongly agree

5) Compared to other families, my typical child very much wants to help with the ASD intervention.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neither agree nor disagree
    d. Somewhat agree
    e. Strongly agree

6) In my opinion, my typical child should spend more time helping with the ASD intervention.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neither agree nor disagree
    d. Somewhat agree
    e. Strongly agree

7) I encourage my typical child to participate in the ASD interventions along side my child with ASD.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neither agree nor disagree
    d. Somewhat agree
    e. Strongly agree
8) Please provide any addition comments that you believe is relevant to your typical child's involvement in the intervention you ASD child is engaged in:

    _____
    _____
    _____
    _____

Scoring information for the Sibling Involvement in ASD Intervention Questionnaire
- 7 5-point Likert scale questions
- Item 6 was intended to be reverse scores
- Due to reliability concerns, item 6 was dropped from the scoring.
- Total Sibling Involvement in ASD Intervention score
    - Average of items 1, 2, 3, 4, 5, and 7.

Appendix I: Success in ASD Intervention Questionnaire

Please rate the strength of your agreement with each of the statements listed below based on activities in your household in an average week. For these questions, ASD is used for "autism spectrum disorder" and "typical" is used for your child who has not been diagnosed with ASD. If you have more than one "typical developing" child in your home, please refer to the one closest in age to your child with ASD. We are interested in your perspective of how your child with ASD is doing in his/her intervention.

1) My child with ASD has been successful with his/her ASD intervention.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neither agree nor disagree
    d. Somewhat agree
    e. Strongly agree
2) My ASD child's progress is above average for children similar to him/her.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neither agree nor disagree
    d. Somewhat agree
    e. Strongly agree
3) Other people have noticed how much my ASD child has progressed.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neither agree nor disagree
    d. Somewhat agree
    e. Strongly agree
4) My ASD child is not progressing as quickly as I would like.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neither agree nor disagree
    d. Somewhat agree
    e. Strongly agree
5) My child with ASD is gradually becoming more responsive, as he/she progresses through the intervention.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neither agree nor disagree
    d. Somewhat agree
    e. Strongly agree
6) My ASD child is progressing more quickly than I expected.
    a. Strongly disagree
    b. Somewhat disagree
    c. Neither agree nor disagree
    d. Somewhat agree
    e. Strongly agree

7) From your point of view, what is (are) the biggest contributor(s) to the success (or lack of success) your child with ASD has had in intervention? [please check all major factors]:
    a. Has not been in the intervention long enough to tell.
    b. Has moved through a great deal of programs in a short period of time.
    c. Lack of progress through the programs.
    d. Extremely skilled intervention worker.
    e. Lack of skill by the intervention worker.
    f. Dedication by the primary caregiver.
    g. Lack of commitment to the programs available.
    h. Other (please specify):
    _____

8) Different families use a variety of interventions to help their child with ASD. Please indicate all formal and information interventions that your family is using to assist your child with ASD.
    a. Formal:
    _____
    _____
    b. Informal:
    _____
    _____

Scoring information for the Success in ASD Intervention Questionnaire:
- 6 5-point Likert scale questions
- 2 qualitative/contextual questions not included in the scoring of the scale.
- Item 4 is reverse scored.
- Total Success in ASD Intervention score
    - Average of items 1-6.

Appendix J: Debriefing

Now that you have completed the online questionnaire, your responses will be combined with others' and analyzed to look at ways parenting style and stress are connected with the strength of sibling relationships.

If you have any questions about the study or would like a summary of the study results (available after completion of the project), please contact Kristy Dykshoorn at 778-809-4067 or kristy.dykshoorn@gmail.com.

If you experience discomfort or distress when working through the questions in the survey, please feel free to contact the researcher or a local crisis line. For instance, several crisis lines are listed here: Vancouver and area – 1-877-820-7444; Edmonton and area – 780-482-HELP; Calgary and area – 403-266-HELP; Toronto and area – 416-408-HELP.

If for any reason you would like to withdraw your responses from the study, do NOT click 'submit' simply close the window.

For more resources about Autism and Autism Awareness, please check out the following websites:

- http://www.autismcanada.org/
- http://www.autismbc.ca/
- http://www.autismontario.com/
- http://autismsocietyalberta.org/
- http://www.autismspeaks.org/index.php
- http://www.autismawareness.ca/index.htm

If you would like to enter the draw, please type your email in the space provided below. The draw will take place on August 1, 2013, and the winners will be announced by email.

Email:

_____

Withdrawal from study? _____

Finally, the research team is very interested in hearing the story of your journey with Autism Spectrum Disorder. We understand that each parent's experience is unique. In order to respect that uniqueness and enrich our study, we invite your to email the primary research, Kristy (kristy.dykshoorn@gmail.com), with your personal story and experience.

Once again, thank you for your willingness to participate!

Appendix K: Online Recruiting Venues

The following websites, online support groups, and organizations were used in the recruitment of participants for this study:

- Autismcanada.org
- Childrensautism.ca
- Centreforautism.ab.ca
- Autismbc.ca
- Autismcommunitytraining.bc.ca
- Deltasd.ba.ca
- Autismspeaks.org
- Lead Foundation
- Swingle Clinic, Vancouver, BC
- The F.O.R.C.E Society for Kids' Mental Health, Vancouver, BC
- Kerrysplace.org
- Actcommunity.net
- Surreyplace.on.ca
- Pioneeryouthservices.ca
- Contact Hamilton for Children's and Developmental Services
- Chilliwack Society for Community Living
- Facebook Support Groups:
    - Connecting Autism Parents, Autism
    - Autism
    - Autism Winnipeg – Floortime and RDI

- Autism Speaks
- Autism Winnipeg PACE
- AUTISM
- Autism Society of BC – Vancouver Island Branch
- Autism Awareness
- Autism Speaks Canada
- Walk Now for Autism Speaks
- Autism Discussion Page
- Canucks Autism Network
- Autism Angels
- World Autism Awareness Day
- Autism Support Network
- Autism United
- Autism: Different, Not Less
- AutismTalk
- Autism Sparks

Appendix L: Demographic Information of Sample

Individual and Family Characteristics as a Percentage of the Sample

Characteristic	Percentage	Characteristic	Percentage
Gender		Heritage	
Male	95	Canada	75
Female	5	Western Europe	8
Age		Eastern Europe	1
26-30	7	Asia	2
31-40	56	Pacific Islands	1
41-50	31	South East Asia	1
51-60	7	Aboriginal	1
Education		Other[c]	12
High School/GED	7	Country of Residence	
Some college	24	Canada	79
2-year college diploma	24	Mexico	1
4-year university degree	33	United Kingdom	2
Master's degree	10	USA	19
Professional degree	1	Generational Status	
Income (per year)		First	4
< $9,999-$19,999	7	1.5	5
$20,000-$39,999	10	Second	7
$40,000-$59,999	16	More than second	85
$60,000-$79,999	19	TD Child Gender	
$80,000-$99,999	23	Female	55
$100,000 or <	26	Male	45
Marital Status		Typical Child Older?	
Single, never married	5	Yes	44
Common-law	8	Child w/ ASD Gender	
Married	79	Female	19
Separated	3	Male	81
Divorced	5	TD Child Age	
Other[a]	1	Mean	8.6
Religion/Spirituality		Median	7
Protestant Christian	23	Range	.6-27
Roman Catholic	24	Child w/ ASD Age	
Muslim	1	Mean	8.5
Buddhist	3	Median	7.75
Aboriginal/First Nations	2	Range	2-26
None	32	Years between children	
Other[b]	16	Mean	2.5

Note: $N = 108$

[a]Engaged

[b]Pagan, Christian, Sikh, not relevant, LDS, Celticism, Greek Orthodox, Spiritual beliefs/somewhat Christian, Creationist, Jehovah's Witness, Agnostic, Anglican, Hopeful Agnostic, Born-again Christian, Non-practicing catholic

[c]Latino, American, Mediterranean, Caucasian, Irish, Italian

Appendix M: Global Correlation Matrix

Intercorrelations, Means, and Standard Deviations of TPS, A1, A2, W-C, TSI, TAS, and Background Information

Measure	1	2	3	4	5	6
1. TPS	–					
2. A1	-.12	–				
3. A2	-.02	-.09	–			
4. W-C	-.34**	-.05	-.03	–		
5. TSI	-.20*	-.17	-.16	.26**	–	
6. TAS	-.28**	.02	-.08	.27**	.03	–
7. Gender	.10	-.11	-.12	-.11	-.15	.11
8. Age	.03	.12	.20*	-.05	.08	-.08
9. Ed.	.05	.18	.03	-.15	-.19*	-.04
10. SES	-.04	.10	.10	-.11	.05	.09
11. MS	-.09	-.03	.06	-.02	.09	-.05
12. RSC	.02	.26**	.04	.06	-.15	.02
13. CB	.03	.05	.13	.01	.04	.05
14. TDG	-.21*	.02	.09	.17	.05	.16
15. TDA	.09	-.02	.09	-.15	.16	-.03
16. BO	-.04	.03	.14	.10	-.15	-.08
17. ASDG	-.13	.27**	.09	.03	-.03	-.04
18. ASDA	.04	-.00	.17	-.07	.16	-.04
19. MB	.18	-.10	-.02	-.08	-.11	-.04
M	3.43	.47	1.92	3.07	3.22	3.74
SD	.54	.07	.33	.64	.64	.74

Note. $N = 108$. TPS = Total Parenting Stress; A1 = Authoritarian Parenting Style; A2 = Authoritative Parenting Style; W-C = Warmth and Closeness Factor of Sibling Relationships; TSI = Total Sibling Involvement; TAS = Total Autism Spectrum Disorder Success; Gender = Gender of participant; Age = Age of participant; Ed. = Education level of participant; SES = Current yearly income; MS = Marital status; RSC = Religious/Spiritual/Cultural Affiliation; CB = Cultural background/heritage; TDG = Typically developing sibling's gender; TDA = Typically developing sibling's age; BO = TD sibling being older; ASDG = ASD sibling's gender; ASDA = ASD sibling's age; MB = number of months between siblings.

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

Intercorrelations, Means, and Standard Deviations of TPS, A1, A2, W-C, TSI, TAS, and Background Information Continued

Measure	7	8	9	10	11	12
1. TPS						
2. A1						
3. A2						
4. W-C						
5. TSI						
6. TAS						
7. Gender	–					
8. Age	-.25**	–				
9. Ed.	-.08	.16	–			
10. SES	.03	.24*	.40**	–		
11. MS	.05	.14	-.03	.03	–	
12. RSC	.05	-.10	-.07	-.18	-.15	–
13. CB	-.16	.02	.11	-.07	.17	.01
14. TDG	-.11	.21*	-.02	.06	.17	-.16
15. TDA	-.11	.61**	-.03	.09	.17	-.02
16. BO	.16	-.11	-.07	.08	-.04	-.01
17. ASDG	-.11	-.01	.06	-.07	-.05	-.07
18. ASDA	-.08	.63**	-.13	.12	.21*	.03
19. MB	.08	.02	-.02	.03	-.10	.03
M	1.95	4.39	4.19	7.75	2.98	4.98
SD	.21	.72	1.19	2.91	.80	3.38

Note. $N = 108$. TPS = Total Parenting Stress; A1 = Authoritarian Parenting Style; A2 = Authoritative Parenting Style; W-C = Warmth and Closeness Factor of Sibling Relationships; TSI = Total Sibling Involvement; TAS = Total Autism Spectrum Disorder Success; Gender = Gender of participant; Age = Age of participant; Ed. = Education level of participant; SES = Current yearly income; MS = Marital status; RSC = Religious/Spiritual/Cultural Affiliation; CB = Cultural background/heritage; TDG = Typically developing sibling's gender; TDA = Typically developing sibling's age; BO = TD sibling being older; ASDG = ASD sibling's gender; ASDA = ASD sibling's age; MB = number of months between siblings.
*$p < .05$. **$p < .01$.

Intercorrelations, Means, and Standard Deviations of TPS, A1, A2, W-C, TSI, TAS, and Background Information Continued

Measure	13	14	15	16	17	18	19
1. TPS							
2. A1							
3. A2							
4. W-C							
5. TSI							
6. TAS							
7. Gender							
8. Age							
9. Ed.							
10. SES							
11. MS							
12. RSC							
13. CB	–						
14. TDG	-.01	–					
15. TDA	.13	.08	–				
16. BO	-.13	-.03	-.52**	–			
17. ASDG	.02	.17	-.02	.02	–		
18. ASDA	.06	.15	.80**	-.03	-.00	–	
19. MB	-.03	-.24*	.23*	-.19*	-.01	.04	–
M	2.40	1.55	8.64	1.56	1.19	8.54	30.45
SD	3.04	.50	5.54	.50	.40	4.37	20.49

Note. $N = 108$. TPS = Total Parenting Stress; A1 = Authoritarian Parenting Style; A2 = Authoritative Parenting Style; W-C = Warmth and Closeness Factor of Sibling Relationships; TSI = Total Sibling Involvement; TAS = Total Autism Spectrum Disorder Success; Gender = Gender of participant; Age = Age of participant; Ed. = Education level of participant; SES = Current yearly income; MS = Marital status; RSC = Religious/Spiritual/Cultural Affiliation; CB = Cultural background/heritage; TDG = Typically developing sibling's gender; TDA = Typically developing sibling's age; BO = TD sibling being older; ASDG = ASD sibling's gender; ASDA = ASD sibling's age; MB = number of months between siblings.
*$p < .05$. **$p < .01$.