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# The Importance of the Parent-Child Relationship in the Protection against Behaviour Problems in Children with ADHD

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UNIVERSITY OF CALGARY

The Importance of the Parent-Child Relationship in the Protection against Behaviour Problems in  
Children with ADHD

by

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A THESIS

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### **Abstract**

This study investigated the parent-child relationship and its connection to comorbid behaviour problems for children with Attention-Deficit/Hyperactivity Disorder (ADHD). Specific relationship factors such as attachment, communication, discipline practices, involvement, parenting confidence, and relational frustration were examined in relationship to parental ratings of behavioural outcomes such as defiance, aggression, and conduct problems. Ratings of the relationship and behavioural outcomes were garnered through self-reports completed by children and their parents. Results indicated that different aspects of the parent-child relationship for both mothers and fathers were related to ratings of behavioural problems. Relational frustration was found to be a consistent predictor of negative ratings of behaviour for both parents while involvement was a predictor of more positive ratings of behaviour for fathers only. Results suggest that the parent-child relationship is important in relation to behavioural outcomes for children with ADHD and parents of these children may benefit from training in positive parenting practices.

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## List of Abbreviations

ADHD	Attention-Deficit/Hyperactivity Disorder
ADHD-C	Attention-Deficit/Hyperactivity Disorder – Combined Presentation
ADHD-HI	Attention-Deficit/Hyperactivity Disorder – Predominantly Hyperactive/Impulsive Presentation
ADHD-I	Attention-Deficit/Hyperactivity Disorder – Predominantly Inattentive Presentation
ASC	Attachment Scale for Children
BASC-2	Behavior Assessment System for Children – 2 <sup>nd</sup> Edition
CD	Conduct Disorder
CHADD	Children and Adults with Attention-Deficit/Hyperactivity Disorder
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders – 4 <sup>th</sup> Edition, Text Revision
DSM-V	Diagnostic and Statistical Manual of Mental Disorders – 5 <sup>th</sup> Edition
FSIQ	Full-Scale Intelligence Quotient
ODD	Oppositional Defiant Disorder
PIQ	Perceptual Intelligence Quotient
PRQ	Parenting Relationship Questionnaire
VIQ	Verbal Intelligence Quotient
WASI	Wechsler Abbreviated Scale of Intelligence



## Importance of the Parent-Child Relationship in the Protection against Behaviour Problems in Children with ADHD

The relationship between a child and their parents is one of great importance. Parents are who children spend the majority of their time with and are the individuals who help to shape and mold their minds. However, most parent-child relationships experience conflict at some point. While parenting can be extremely rewarding, it can also be frustrating at times, especially when raising a child with exceptional needs, such as those with Attention-Deficit/Hyperactivity Disorder (ADHD). Children with ADHD can have issues with tasks such as sitting still, completing tasks, or paying attention for long periods of time. These children may have challenges that other children may not have and these can result in increased stress within the parent-child relationship. Furthermore, these children are at greater risk than the general population to develop more serious behaviour problems, such as conduct disorder (CD) or oppositional defiant disorder (ODD).

The purpose of the current study was to explore the parent-child relationship as it relates to children with ADHD and the development of behaviour problems. The study examined the constructs that contribute to specific aspects of the relationship in regards to behavioural outcomes for children with ADHD. Because of the lack of literature comparing children's perceptions of the parent-child relationship to parents' perceptions, another focus was to provide insight into the similarities and differences of how children and parents rate their relationship with each other. Understanding the connection between the parent-child relationship and behaviour problems in children with ADHD will help to better inform parenting practices.

In order to best understand ADHD and how it affects children, an overview will be provided that outlines the diagnostic criteria as well as potential outcomes. Following this, the

behavioural problems that are often comorbid with ADHD will be reviewed to provide some context regarding these disorders. Finally, the parent-child relationship in general, and in relation to ADHD and behaviour problems, will be reviewed in order to provide background information for the present study.

### **Attention-Deficit/Hyperactivity Disorder**

Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder that is currently listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM-V; American Psychiatric Association [APA], 2013) as a disorder that typically develops in childhood. Recent statistics indicate that ADHD occurs in approximately 5% of children and occurs twice as frequently in boys as in girls (APA, 2013). When looking at Canada in particular, ADHD is estimated to exist in approximately 5-10% of school-aged children (Scahill & Schwab-Stone, 2000), suggesting that a significant number of Canadian children and their families are being affected by this disorder. Studies on worldwide prevalence have indicated that there are no significant differences between the rate of ADHD in the United States and most other countries (Faraone, Sergeant, Gillberg, & Biederman, 2003).

The DSM-V organizes and classifies ADHD into three subtypes based on the primary symptoms that present in the child: ADHD Predominantly inattentive presentation (ADHD-I), ADHD Predominantly hyperactive/impulsive presentation (ADHD-HI), and ADHD Combined presentation (ADHD-C). In order for any one of the three subtypes to be diagnosed, there are set criteria that must be met: 1) at least some symptoms must have been present prior to age 12; 2) several symptoms must be present across at least two different settings (e.g., at home and at school); 3) the symptoms must interfere with the child's academic or social functioning; and 4) the symptoms must not be better explained by another mental disorder (APA, 2013). The initial

age of onset for ADHD ranges from preschool to elementary school years as it is largely dependent on the subtype. Although ADHD is most frequently diagnosed in childhood, approximately 80% of children with the disorder will continue to have symptoms into adolescence and adulthood (Faraone et al., 2003). However, the types of symptoms that persist into adulthood can be different from those that exist in childhood; specifically, hyperactivity and the constant need to be moving are often less obvious in adulthood as these symptoms often present more as restlessness (APA, 2013).

### **ADHD-I**

ADHD-I first presents in children between the ages of 8 and 12 (Applegate et al., 1997). Children who present as predominantly inattentive have symptoms such as difficulty maintaining focus and difficulty organizing tasks. These children will often appear to not be listening when spoken to directly and will often neglect to follow through on instructions (APA, 2013). Moreover, they often have school-related problems and are often neglected by peers (APA, 2000). Children with this subtype have been found to have less impairment and fewer comorbid psychiatric conditions than children with either of the other two subtypes (Biederman, Faraone, & Lapey, 1992). As opposed to the other two types of ADHD, ADHD-I is more likely to occur in females than males (Spencer, Biederman, & Mick, 2007).

### **ADHD-HI**

In contrast to the later onset of symptoms seen in ADHD-I, the symptoms of ADHD-HI are often first noted in the early preschool years (Applegate et al., 1997). Children with the hyperactive/impulsive subtype often cannot sit still or stay in one place for too long; they are often constantly moving and on the go (APA, 2000). These children also tend to exhibit difficulties with impulse control which may lead to blurting out answers or interrupting others

(APA, 2013). Furthermore, this subtype is associated with the occurrence of more accidental injuries and more frequent rejection rather than neglect by peers (APA, 2000). Children with hyperactive and/or impulsive behaviour typically have worse outcomes than children with the inattentive subtype as their behaviour is associated with early adolescent delinquency which includes school suspensions and expulsions as well as early substance use/abuse (Barkley, 1990; Biederman et al., 1996; Loeber, 1990; Weiss & Hechtman, 1993).

### **ADHD-C**

ADHD-C is a combination of ADHD-I and ADHD-HI wherein the child has clinical levels of both inattention and hyperactivity/impulsivity (APA, 2013). Children with this subtype are often at the most risk for impairment as they typically have more co-occurring mental health problems, including substance abuse or significant behavioural challenges, than children with other subtypes (Spencer et al., 2007).

Children with all three subtypes of ADHD often have problems in the area of executive functions. In order to best understand ADHD, it is important to understand executive functions at a basic level as they relate to ADHD.

### **Executive Function and ADHD**

ADHD is often conceptualized as a deficit in executive functions. Executive functions are higher order cognitive processes which regulate and maintain other cognitive processes and help individuals to modify their thoughts and actions based on their environment (Pnevmatikos & Trikkaliotis, 2013). Barkley (1997) describes a model in which individuals with ADHD have deficits within four main areas due to their limited capacity for behavioural inhibition: nonverbal working memory, internalization of speech (verbal working memory), self-regulation of affect, motivation, and arousal, and reconstitution. According to Barkley, behavioural inhibition, when

working correctly, should help to guide the performance of the four executive functions listed by protecting the performance of them from interference. When behavioural inhibition is not working to its full potential, these functions may be impaired. Consequently, secondary deficits may occur. Secondary deficits are those that result from primary deficits that occur as a result of limited executive functions; they include issues with vicarious learning, forethought, self-awareness, and emotional self-control. If children are limited in their ability to learn from others, to think ahead, or to control their emotions, then there may be negative behavioural outcomes that occur as a result.

### **ADHD Outcomes**

ADHD is associated with a range of negative outcomes such as problems with peer relations and problems at school (Lollar, 2008), as well as a greater likelihood of having comorbid mental health problems, including substance abuse (Spencer et al., 2007). Children with ADHD also tend to score significantly lower compared to children without ADHD on measures of mathematics, reading, and full-scale Intelligence Quotient (IQ; Biederman, Faraone, Milberger, & Guite, 1996) and also tend to persist less on school-related tasks (Hoza, Waschbusch, Owens, Pelham, & Kipp, 2001). ADHD commonly co-occurs with other mental health disorders such as anxiety disorders, depressive disorders, oppositional defiant disorder (ODD), conduct disorder (CD), and specific learning disorders (APA, 2013). Of particular interest for the current project is the increased presence of behavioural problems.

### **Behaviour Problems**

Within the DSM-V, there are two disorders that have a behavioural focus: ODD and CD (APA, 2013). Although ADHD is associated with negative behaviours such as interrupting or intruding on others, running around inappropriately, or using other people's belongings without

asking permission (APA, 2013), these behaviours are primarily the results of the impulsive symptomology of ADHD and do not necessarily precede a diagnosis of ODD or CD. However, in many cases these behaviours may progress into more serious concerns that are representative of ODD or CD.

### **Oppositional Defiant Disorder**

ODD is a disorder that is classified by a frequent and persistent pattern of an angry and/or irritable mood, argumentative and/or defiant behaviour, and/or vindictiveness (APA, 2013). Individuals may only show this behavioural pattern in one setting; however, in severe cases of the disorder, it will be present across multiple settings (APA, 2013). In order to be diagnosed with ODD, a child, or other individuals in that child's immediate social context, must be negatively impacted and the symptoms of the disorder must not be better explained by another disorder (APA, 2013). ODD is thought to occur in approximately 3% of the population, although estimates of its prevalence vary from under 1% to over 20% (Lahey, Miller, Gordon, & Riley, 1999). ODD is somewhat more prevalent in boys at a ratio of 1.4:1 (APA, 2013); however, there have been no consistent findings proving that this difference continues to exist into adolescence. The typical age of onset of ODD has not been definitively determined (Todd, Huang, & Henderson, 2008); however, symptoms often begin in the early preschool years (Keenan & Wakschlag, 2000). In fact, it has been found that 5-7% of the population begins to show fairly stable antisocial behaviours in the preschool years (Campbell, Shaw, & Gilliom, 2000). If a child has not shown symptoms of ODD in childhood, it is very rare that they will develop those symptoms any later than early adolescence (APA, 2013). ODD is believed to develop as a result of difficult characteristics of the child early in life combined with dysfunction within the family

setting (Campbell et al, 2000). In comparison to CD, whose symptoms tend to be covert and destructive, the symptoms of ODD are largely overt and non-destructive (Frick et al., 1993).

**ODD Outcomes.** ODD is frequently comorbid with ADHD (at a rate as high as 60%; Barkley, 2006; Burns & Walsh, 2002; Waschbusch, 2002), internalizing disorders such as anxiety and depression (Copeland, Shanahan, Costello, & Angold, 2009), and substance use disorders (APA, 2013). Some children with ODD are likely to experience anxiety throughout adolescence and depression and neurotic personality characteristics throughout young adulthood (Burke, 2012). The presence of ODD in children is also related to negative family functioning and is significantly related to mother-child conflict as well as parenting stress in general (Stormshak, Bierman, McMahon, & Lengua, 2000). A small portion of children with ODD (approximately 25%) will progress to meet criteria for CD in later years (Hinshaw, Lahey, & Hart, 1993).

### **Conduct Disorder**

CD is classified within the DSM-V (APA, 2013) as a frequent and ongoing behavioural pattern wherein societal rules and norms are violated. Problem behaviours are classified into four categories: aggression to people and animals, destruction of property, deceitfulness or theft, and serious violations of rules (APA, 2013). A child must have at least three out of a possible 15 symptoms in order to be given a diagnosis of CD as well as be significantly impaired in at least one area of functioning (e.g., at home or at school; APA, 2013). CD is typically classified into one of two categories: childhood-onset type, wherein at least one symptom is present before the age of 10, or adolescent-onset type, wherein no symptoms are present before the age of 10 (APA, 2013).

The prevalence rates of CD are widely varied in the literature, ranging from estimates of less than 1% to more than 10% (Lahey et al., 1999); however, the DSM-V cites a median prevalence of 4% (APA, 2013). Gender differences are also seen within CD, as the prevalence within males is estimated to be anywhere from 1.8-16% and the prevalence within females is thought to be between 0.8% and 9.2% (see Loeber, Burke, Lahey, Winters, & Zera, 2000 for a review). The age of onset of CD is typically later than the age of onset of ODD, as behaviours generally emerge anywhere from mid-childhood to mid-adolescence (APA, 2013). While many children with ODD do not continue on to meet criteria for CD, approximately 90% of children and youths who have CD have either previously met criteria for ODD or currently meet criteria (Hinshaw & Lee, 2003).

**CD Outcomes.** Childhood-onset CD in particular is linked to a higher likelihood of physically aggressive behaviours and comorbid ADHD (e.g., Hinshaw et al., 1993; Moffitt, 1993). This subgroup is often referred to as having a “life-course persistent path,” (p. 170) indicating that impairment will likely persist for a substantial amount of time whereas those in the adolescent-onset group are typically less impaired (Hinshaw & Lee, 2003). Aggressive behaviour in children is thought to be highly predictive of both adolescent and adult antisocial behaviours (Odgers et al., 2008). Approximately one-third of children with childhood CD will go on to develop adult Antisocial Personality Disorder and the majority of children with CD are likely to exhibit both social and occupational dysfunction as adults (Zoccolillo, Pickles, Quinton, & Rutter, 1992). For females in particular, having CD as a child and/or youth is associated with a later likelihood of internalizing disorders (Robins, 1986). For males in particular, having CD as a child is associated with a later likelihood of criminal activity (Farrington, 1991).



As has been discussed, ADHD is comorbid with both ODD and CD at moderate to high rates. Problem behaviours certainly exist within ADHD; however, more severe problem behaviours are often seen in children with ADHD and the next section will examine the relationship between the two.

### **ADHD and Behaviour Problems**

There is an increased risk of developing conduct problems in adolescence and adulthood for children who have ADHD (Fischer, Barkley, Smallish, & Fletcher, 2002). Indeed, children with ADHD are up to 11 times more likely to have a diagnosis of ODD or CD than children without ADHD (Robison, Frick, & Sheffield, 2005). Estimates of the prevalence of behaviour disorders in children with ADHD range from 40% to 70% (Newcorn & Halperin, 2000). The presence of ADHD in children can trigger an earlier onset than normal for either ODD or CD (Lee, Lahey, Owens, & Hinshaw, 2008). In fact, ODD emerges at an average age of 5.3 years in children with ADHD in comparison to an average age of 9.9 years in children without ADHD; similar differences are seen within CD wherein children with ADHD show symptoms of CD at an average age of 8.9 years in comparison to an average age of 13.8 years in children without ADHD (Biederman et al., 2008). The persistence of ADHD well into adolescence is related to the presence of conduct problems in childhood (Fischer, Barkley, Fletcher, & Smallish, 1993) and conversely, the likelihood that conduct problems will persist past preschool is exacerbated by the presence of ADHD symptoms (Speltz, McClellan, DeKlyen, & Jones, 1999). ADHD and conduct problems, therefore, often co-occur and it may not always be entirely clear which symptoms came first; however, it has been found that more symptoms of ADHD at a young age (3 years of age) are associated with more symptoms of ODD at 6 years of age (Harvey, Metcalfe, Herbert, & Fanton, 2011).

Having comorbid ADHD and ODD as a child moderately increases the risk of developing CD and antisocial personality disorder in the future (Biederman et al., 2008). However, the majority of children and youth who have comorbid ADHD and ODD will not progress to having CD (e.g., Biederman et al., 1996; Biederman et al., 2008). As well, ODD symptoms and behaviours often decrease in children as they get older (Biederman et al., 2008).

Sibley and colleagues (2011) found that adolescents diagnosed with comorbid ADHD/CD had significantly worse outcomes in terms of delinquency compared to typically-developing adolescents, adolescents with ADHD, and those with ADHD/ODD. Children with comorbid ADHD/CD typically present with an even greater degree of academic underachievement and peer rejection than do those children with just ADHD (Hinshaw, 1992). Those children with comorbid ADHD and ODD have also been found to be at a high risk for offending later in life (Sibley et al., 2011), although at a lower rate than those with ADHD/CD. Early antisocial and aggressive behaviour among those with ADHD tend to be stable and result in both further mental health and physical health problems (Falk & Lee, 2012). Without the presence of conduct problems, children with ADHD are very unlikely to have criminal outcomes; however, a single type of conduct problem (e.g., stealing) is enough to increase a child's risk for later criminal outcomes (Satterfield & Schell, 1997). ADHD in and of itself is not enough to predict later conduct problems; it is only with the presence of aggressiveness that later antisocial problems can be predicted (Magnusson & Bergman, 1990).

The risk of developing conduct problems in children with ADHD can be mitigated by a positive relationship with their parents (e.g., Falk & Lee, 2012) while negative parent-child relationships are predictive of comorbid conduct problems (Patterson, Degarmo, & Knutson, 2000).

### **Parent-Child Relationships**

In general, having a positive relationship with at least one parent (or caregiver) increases the chances that a child will be resilient when faced with adversity (Masten & Coatsworth, 1998). Resilience is the ability of a child to overcome adversity (e.g., illness) in life to obtain positive developmental outcomes (Masten & Coatsworth, 1998). For children living with adversity, their relationship with their parents, family cohesion, and parental discipline practices are all related to mental health and behavioural outcomes (McCubbin et al., 1998; Mitchell & Finkelhor, 2001).

Secure attachment, specifically, has been implicated in a number of positive outcomes for children, such as contributing to better outcomes like better emotional adjustment (Carlson & Sroufe, 1995), higher self-esteem (Suess, Grossman, & Sroufe, 1992), and better social functioning (Bohlin, Hagekull, Rydell, 2000). A secure attachment is characterized by strong emotional bonds between parent and child (Ainsworth & Bowlby, 1991). Secure attachments can serve as protective factors and contribute to more positive outcomes in numerous areas. For example, Ayers, Williams, Harkins, Peterson, and Abbott (1999) found that within a group of young offenders, those that eventually stopped offending had a more positive attachment to their parents. In another study that examined children with proneness to anger, having a more secure attachment was related to better compliance, more self-assertiveness, and more help-seeking behaviours (McElwain, Holland, Engle, & Wong, 2012). Finally, a recent study by Jakobsen, Horwood, and Fergusson (2012) found that children with early signs of anxiety and depression who had a positive attachment with their parents had a decreased risk of anxiety and depression later in life.

Conversely, insecure attachment is characterized by anxious and/or avoidant relations between the child and their caregiver (Bowlby, 1980). Insecure attachment has been implicated in a number of negative outcomes for children including both psychological and physical health problems in adulthood (Maunder & Hunter, 2008; Murphy & Bates, 1997), anxiety and depression in children and adolescents (Abela et al., 2005; Irons & Gilbert, 2005; Muris & Meesters, 2002), and low self-esteem in adolescents (Gamble & Roberts, 2005). Taken together, it is obvious that attachment style plays a crucial role in the mental health outcomes of children and shows the importance of the parent-child relationship for children.

Along with attachment, parenting style has also been shown to have important implications. Baumrind (1966, 1971) outlined three main styles of parenting: authoritative, authoritarian, and permissive. According to Baumrind, authoritative parenting is the most ideal style, as parents who implement this style are able to exert control over their children (unlike parents using the permissive style) but do not do so by implementing fear within their children (unlike parents using the authoritarian style). Essentially, authoritative parenting occurs when parents provide appropriate discipline, monitoring, and support to their children (Steinberg, 2001). This type of parenting is associated with having children and adolescents who are less likely to engage in antisocial types of behaviour and are more likely to have higher self-esteem and lower levels of depression and anxiety (Steinberg, 2001). Authoritative parenting is important as it encompasses many areas of parenting which are thought to be important to a positive parent-child relationship such as consistent and appropriate discipline and support (Kamphaus & Reynolds, 2006).

When considering parents' interaction with their children, the strength of the relationship between parent and child is very important. However, given the potential differences in mother-

child and father-child relationships, it is also critical to consider these relationships separately and independently, rather than simply examining parent-child relationships as a whole.

### **Mother-Child Relationship**

Adolescents generally report feeling more secure in their attachment with their mothers than with their fathers (Williams & Kelly, 2005). Although children and youth may benefit from strong attachment to their mothers, in general youth deal with their mothers in a more hostile way during conflict than they do with their fathers (Edwards, Barkley, Laneri, Fletcher, & Metevia, 2001). When dealing with conflicts, mothers in general report more anger and hostility with their children than do fathers (Edwards et al., 2001). This may be partially related to the evidence suggesting that mothers typically spend more time with their children than do fathers and therefore have more of an opportunity to engage in conflict (Lamb, 2000; Williams & Kelly, 2005). Children who do not form a secure attachment to their mothers when they are very young have been found to have greater risk of both internalizing and externalizing problems (Pierrehumbert, Miljkovitch, Plancherel, Halfon, & Ansermet, 2000).

Mothers' involvement with their children has been shown to be important in the development of positive outcomes such as pro-social behaviours; however, it has not necessarily been found to be related to internalizing and externalizing behaviours (Day & Padilla-Walker, 2009). The extent of a mother's involvement in their child's education has also been shown to be important, but only when the relationship between mother and child is classified as 'warm' in nature (Simpkins, Weiss, McCartney, Kreider, & Dearing, 2006). Mothers' involvement has been shown to be a significant predictor of fathers' involvement with their children; that is, as a mother is more involved in their child's life, a father's involvement will also increase, but a father's involvement does not have any bearing on a mother's involvement (Pleck & Hofferth,

2008). The extent that a mother is involved in their child's life is clearly important; however, the extent that a father is involved in their child's life may be even more important (e.g., Day & Padilla-Walker, 2009; Lamb, 2004).

### **Father-Child Relationship**

The father-child relationship is still relatively unexplored but it represents an area that may be able to explain differences in many different child outcomes (Carlson, 2006). The relationship that a father has with his child is extremely important as evidenced by the limited findings thus far. For example, when a father lives apart from his child, there is a stronger association with many negative outcomes such as suspension and/or expulsion (Dawson, 1991), greater likelihood of internalizing disorders such as anxiety and depression (Dunn, Cheng, O'Connor, & Bridges, 2004; Thomson, Hanson, & McLanahan, 1994), and greater likelihood of behavioural problems (Amato, 2005; Carlson & Corcoran, 2001). A child's negative relationship with his or her father is predictive of child drug abuse while a positive relationship appears to generally protect against drug abuse (Farrell & White, 1998). There does not appear to be any gender differences in the importance of the father-child relationship as fathers' relationships with their sons have been found to be just as important as their relationships with their daughters (King, Harris, & Heard, 2004).

Fathers spend approximately a quarter of the amount of time directly interacting with their children as mothers do (Lamb, 2000) but that time spent together appears to be extremely significant. Involvement in their children's lives has been found to be a very important aspect of the father-child relationship; certain aspects of involvement such as time spent together and shared activities are related to positive social and behavioural outcomes for children (e.g., Amato & Rivera, 1999; Lamb, 2004; Marsiglio, Amato, Day, & Lamb, 2000). For fathers in particular,

having high quality involvement with their children has been found to be strongly related to positive outcomes in their children such as well-being and positive development (Lamb, 2004). These positive effects have been shown for fathers who do not reside with their children (Levin & Currie, 2010; Marsiglio et al., 2000). Fathers' involvement in their children's lives is also associated with better intellectual development (Williams & Radin, 1993), higher social competence, and better ability to empathize with others (Amato, 1994).

It is clear that parent-child relationships are extremely important for children. Parents play an important role in their children's lives and this role is especially important when in regards to behaviour problems in children.

### **Parent-Child Relationships and Behaviour Problems**

Negative parenting practices such as inconsistency and poor monitoring have been shown to be predictive of antisocial behaviour in children (Barker & Maughan, 2009; Robison et al., 2005). Communication has also been implicated in behavioural outcomes for children, as it has been found that poor parent-child communication is a factor in future aggressive behaviour in some adolescent males (Beyers, Loeber, Wikstrom, & Stouthamer-Loeber, 2001). A recent meta-analysis showed that 11% of the variance of delinquency in youth could be explained by parenting behaviours, with negative parenting practices being overrepresented (Hoeve et al., 2009). On the positive side, observed positive parenting practices are inversely related to the prediction of CD in children (Chronis et al., 2007; Falk & Lee, 2012), meaning that when parents use more positive ways of interacting with their children, the children are less likely to develop CD. Furthermore, positive parenting practices such as warmth and involvement contribute to protecting against certain risk factors that are associated with the later development of antisocial behaviours (Gardner, Hutchings, Bywater, & Whitaker, 2010).

Fathers have been shown to play a very important role in their child's overall development; however, they may also contribute to the development of their child's behaviour problems (Loeber, 1990). The relationship that fathers have with their teenaged children has been found to be a very significant predictor of behavioural problems (Williams & Kelly, 2005), whereas a high level of involvement from fathers has been shown to be directly related to lower levels of behavioural problems in adolescents (Carlson, 2006). Adolescents who have a father who is highly or moderately involved in their lives are less likely to engage in delinquent behaviours than those whose father is less involved; this is similar for mother involvement (Carlson, 2006). Fathers' involvement in their children's lives may be slightly more influential in reducing the externalizing behaviours of boys than of girls whereas mothers' involvement shows no differential outcomes between sexes and is equally beneficial for both (Carlson, 2006). Mother involvement is also very important as high involvement has been indicated in the prevention of delinquent behaviour in children (Carlson, 2006). However, when comparing the impact that the mother-child relationship has with the impact that the father-child relationship has, the father-child relationship has been found to explain more variance in externalizing problems (Williams & Kelly, 2005). Finally, poor quality of attachment between father and son has also been implicated in the development of antisocial behaviours in that child (Marcus & Betzer, 1996). These parent-child relationships may be especially important when considering at-risk children, such as those with ADHD.

### **Parent-Child Relationships in Children with ADHD**

It has been consistently found that children with ADHD have more negative interactions with their parents than those children without ADHD (e.g., Buhrmester, Camparo, Christensen, Gonzalez, & Hinshaw, 1992; Johnston, 1996). For example, it has been found that parents of



boys with ADHD are far more aversive in their parenting techniques and much more demanding of their children; parents also try to assert their power more compared to parents of boys without ADHD (Buhrmester et al., 1992). When considering mothers of children with ADHD in particular, they tend to be more controlling, less interactive, and give more negative feedback to their children than mothers of children without ADHD (Campbell, March, Pierce, Ewing, & Szumowski, 1991). Mothers of children with symptoms of ADHD also tend to reward their children less often, are more disapproving of their children, and are more directing of their children than are mothers of control children (Danforth, Barkley, & Stokes, 1991). It is thought that mother-child interactions may be more negative in nature than father-child interactions within children with ADHD (Buhrmester et al., 1992; Gerdes, Hoza, & Pelham, 2003).

Parents of children with ADHD also typically report more stress than parents of children without ADHD (e.g., Johnson & Reader, 2002; Kadesjo, Stenlund, Wels, Gillberg, & Hagglof, 2002) and this stress can have a negative effect on parenting practices and therefore on the relationship in general (e.g., Belsky, 1984; Morgan, Robinson, & Aldridge, 2002; Rodgers, 1998). There is contradictory evidence as to whether gender plays a role in parent stress in children with ADHD; some reports say there is no difference between genders (Johnston & Mash, 2001; McCleary, 2002) while others state that having a female child is associated with less stress (Theule, Wiener, Tannock, & Jenkins, 2013). Nonetheless, the severity of the child's ADHD is a significant contributor to the amount of parenting stress that parents perceive, with higher severity of symptoms being related to higher levels of parenting stress (McCleary, 2002; Morgan et al., 2002; Theule et al., 2013). Results of one study showed that giving medication to a child with ADHD lessened the conflict reported by the families, indicating that the negativity

in the relationship goes from child to parents, rather than from parents to child; however, this does not exclude the parents from influencing the relationship (Pollard, Ward, & Barkley, 1984).

When interacting with their parents, children with ADHD are often more aversive to their mothers' requests as compared to their fathers' requests (Buhrmester et al., 1992; Johnston, 1996), suggesting that the relationship between mother and child and between father and child may be different within children who have ADHD. When compared to control children, children with ADHD are less likely to comply, less likely to sustain compliance, and are generally more negative when interacting with their mothers (see Danforth et al., 1991 for a review). When examining the perceptions that parents and children have about their relationship, it has been found that mothers and fathers of children with ADHD rate their relationship as being more negative than do parents of those children without ADHD; however, there is no difference in ratings between mothers and fathers (Gerdes et al., 2003). Interestingly, children with ADHD do not tend to rate their relationships with their parents any different from the ratings by children without ADHD (Gerdes et al., 2003). The reason for this discrepancy may be due to what is known as positive illusory bias; a bias that is said to exist within children with ADHD wherein they overestimate their own abilities in comparison to how they actually perform (Hoza et al., 2004). Children with ADHD tend to under-report the problems in their lives despite having many challenges and being at risk for adverse outcomes (Owens, Goldfine, Evangelista, Hoza, & Kaiser, 2007).

Research has shown that parent-child relationships marked by conflict put a child with ADHD at risk of developing conduct problems during adolescence (Fischer et al., 1993); conversely, in both children with and without ADHD, positive parenting is inversely related to the development of conduct problems (Falk & Lee, 2012). Family adversity, and more

specifically negative parenting practices, is thought to be a large risk factor for children with ADHD developing ODD, or CD (Patterson et al., 2000). Family conflict is magnified by the presence of ODD in families with a child with ADHD (Johnston, 1996) and it has been proposed that symptoms of ADHD such as hyperactivity and impulsivity actually contribute to the development of ODD because these symptoms elicit negative family interactions (Barkley, 1990). The presence of comorbid ODD in children with ADHD is thought to be associated with the highest levels of parent-child conflicts as the ODD is thought to magnify the conflict that already exists between parents and their child with ADHD (Edwards et al., 2001; Gomez & Sanson, 1994; Johnston, 1996). Further research has found that young school-aged children with comorbid ADHD and ODD are less likely to show improvements in ODD symptoms when parents engage in negative parenting practices such as over-reactivity (Harvey et al., 2011).

Although positive parenting has been shown to be important as a protective factor for children with ADHD, positive parenting may be difficult, especially when children with ADHD have comorbid conduct problems, as these problems may increase the stress that parents feel in the relationship (Theule et al., 2013). Furthermore, there is sufficient evidence indicating that children with comorbid ADHD and conduct problems are more likely to have an insecure attachment to their parents (e.g., Clarke et al., 2002; Crittenden & Kulbotten, 2006).

When parents are asked to rate their children's delinquency, aggression, and severity of ADHD symptoms, parents of children with solely ADHD rate them the lowest, parents of children with ADHD and comorbid ODD rate them as having moderate problems, while parents of children with ADHD and comorbid CD rate them as having the highest amount of trouble in these areas (Connor & Doerfler, 2008). Furthermore, higher levels of violence (both physical and verbal) may occur in conflicts between teens who have ADHD and ODD and their parents

(Edwards et al., 2001). Both mothers and fathers of youth who have comorbid ADHD and ODD report higher levels of negative interactions with their children than do parents of control youth such as more conflict, more aggression and anger in their conflicts, and poorer communication (Edwards et al., 2001).

### **Current Study**

Children with ADHD are much more likely to develop conduct problems than the normal population (Robison et al., 2005) and therefore this study aims to examine the factors that lead a child with ADHD to be more resilient against the development of these problems. Specifically, the focus is to determine the impact that the parent-child relationship has on the development of conduct problems in these children. There have been studies that have examined the parent-child relationship in children with hyperactivity and how it affects conduct problems (e.g., Patterson et al., 2000), but there are no known previous studies that have examined the relationship from both the mothers' and fathers' views and determined the differences.

This study aimed to examine specific aspects of the parent-child relationship (e.g., attachment, communication, and involvement) and how those aspects relate specifically to different behavioural outcomes (e.g. aggression, conduct problems). Furthermore, the present study examined the parent-child perspective from both the child's and the individual parents' perspectives in order to better understand the relationship between how that perspective relates to the attachment and behavioural outcomes reported by the child's parents.

### **Research Questions**

Previous research has found that negative parenting practices of parents of children with ADHD may put these children at risk for developing more serious behaviour disorders (Patterson et al., 2000). Meanwhile, positive parenting practices may have an inverse effect on children

with ADHD, possibly providing protection against the development of behaviour disorders (Falk & Lee, 2012). Building on this past research, the current study aimed to delve deeper into the area of ADHD, parent-child relationships, and behaviour problems and examine the specific aspects of parenting practices that may affect the emergence of behaviour problems in children with ADHD. As such, four specific research questions are posed:

- 1) What are the parent-reported strengths and challenges in parent-child relationships? Do these strengths and weaknesses differ between mothers and fathers?
- 2) How do children rate their attachment to their parents? Do these ratings differ between mothers and fathers? Do children with ADHD and their parents rate their relationship similarly in terms of attachment?
- 3) Are there specific aspects of the parent-child relationship that are correlated with increased behavioural difficulties?
- 4) Are there specific aspects of the parent-child relationship that predict behaviour problems?

### **Hypotheses**

In regards to research question #1, it is hypothesized that both mothers and fathers will report challenges in their relationship with their child due to the stress of raising a child with ADHD (e.g., Johnson & Reader, 2002; Kadesjo et al., 2002). Because of the high stress levels, it is hypothesized that both parents will report high levels of relational frustration. There is evidence to suggest that mothers and their children with ADHD have more hostile interactions than fathers and their children with ADHD (Buhrmester et al., 1992; Gerdes et al., 2003). Based on this finding, it is hypothesized that fathers will rate their relationship with their child more positively than will mothers and that mothers will be more frustrated in their relationship with

their children than will fathers. Because children with ADHD are more likely to be compliant to their fathers' requests than to their mothers' (see Danforth et al., 1991 for a review), it is hypothesized that fathers will report parenting confidence as a strength in their relationship in comparison to mothers.

In regards to research question #2, it is hypothesized that children with ADHD will differ from their parents in terms of their ratings of attachment. Based on findings related to the positive illusory bias in children with ADHD (e.g., Hoza et al., 2004; Owens et al., 2007), it is hypothesized that children will rate their relationship with their parents more positively than their parents will rate their relationship. Although the relationship between children with ADHD and their mothers is often more negative than their relationship with their fathers (Buhrmester et al., 1992; Gerdes et al., 2003), children in general often report feeling more secure in their attachment to their mothers (Williams & Kelly, 2005). For this reason, it is hypothesized that children will rate their attachment to their mother as higher than their attachment to their father.

In regards to research question #3, it is hypothesized that there will be certain specific aspects of the parent-child relationship as rated by parents that will be related to their ratings of behaviour problems. It is hypothesized that attachment and involvement will be related to ratings of behaviour for both parents. Research has found that parent-child attachment is very important to behavioural outcomes in that it plays a protective role (e.g., Ayers et al., 1999). Involvement, and especially father involvement, has also been shown to be related to positive behavioural outcomes (e.g., Amato & Rivera, 1999; Lamb, 2004; Marsiglio et al., 2000). It is hypothesized that both high attachment and high involvement will be negatively correlated to ratings of behaviour problems.

Finally, in regards to research question #4, it has been found that both positive and negative parenting practices have been shown to be predictive of behavioural outcomes in children without ADHD (e.g., Chronis et al., 2007; Robison et al., 2005) so it is likely that these parenting practices function the same in children with ADHD. Because of the importance of attachment and involvement in particular, these are hypothesized to be the best predictors of behaviour problems than other aspects of the parent-child relationship.

## **Method**

### **Participants**

Participants were 74 children (and their families) aged 8 years 0 months to 11 years 11 months (8.0 to 11.11;  $M = 9.72$ ,  $SD = 1.13$ ) who were previously diagnosed with ADHD-C. As was discussed earlier, the three separate subtypes of ADHD (ADHD-I, ADHD-HI, and ADHD-C) present differently in children, often resulting in many varied behaviours and outcomes. As such, all participating children were identified as ADHD-C, as this is the most common subtype of ADHD. Approximately 80% of the participants were boys ( $n = 61$ ) which is a slight over representation of what is seen in the distribution in the normal population of children with ADHD.

Participants were recruited from a mid-sized urban center and its surrounding area. Recruitment for the current study was achieved through a number of means, including advertisements distributed to numerous organizations whose clientele may include children with ADHD (e.g., Calgary Learning Centre, the CanLearn Society, Children and Adults with Attention Deficit Disorder - Calgary [CHADD] chapter), pamphlets at local psychology clinics (e.g., the University of Calgary Applied Psychological and Educational Services), distribution to

local schools in Calgary through school newsletters, and social media outlets, such as Twitter and Facebook.

**Inclusionary and exclusionary criteria.** Children included in the study met a number of pre-determined criteria. Before children were scheduled to participate, a pre-screening questionnaire was administered to ensure that children met basic inclusionary criteria. Most importantly, the child must have been given a previous diagnosis of ADHD by a medical doctor or mental health professional (Note: the current study uses criteria set out by the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition – Text Revision [DSM-IV-TR; APA, 2000] wherein children needed to have shown symptoms prior to the age of 7; children would have been diagnosed based on this criteria given that the DSM-V was not published at the time of diagnosis). Furthermore, the child must have resided with his or her parents or guardians for at least the past five years and were currently attending school full-time within an Alberta Education school district. Participants were included if they had comorbid disorders such as depression, anxiety, and CD as these comorbidities are also representative of the larger sample of children with ADHD. Children were excluded from participating if there was any indication of autism spectrum disorder, psychosis, epilepsy, or gross neurological, sensory, or motor impairments. During participation, children were required to obtain a Full Scale Intelligence Quotient (FSIQ) score above 85 based on the administration of the Wechsler Abbreviated Scale of Intelligence (WASI; The Psychological Corporation, 1999), an individualized measure of cognitive ability. The requirement to obtain a score of 85 or higher was based on the necessity to ensure that children understood the questions being asked of them and therefore that specific results could be better attributed to attention difficulties rather than cognitive difficulties. If a child did not meet this criteria ( $n = 1$ ), then parents were thanked for their time and told they did



not need to return for a second day of testing. All participants were given a gift certificate and toy.

To confirm that the participants in the study actually met criteria for ADHD, ratings from the Conner's 3<sup>rd</sup> Edition (Conners 3; Conners, 2009) were used to confirm diagnosis and subtype. Parent(s) were asked to complete the Conners 3 in order to give ratings of their child's behaviour. A t-score greater than 70 on at least one of the inattentive or hyperactive/impulsive scales on the Conners 3 needed to be obtained, while at least a t-score of 65 on the other scale was required. A t-score greater than 70 on both these scales indicates extremely elevated scores on symptoms of ADHD-C based on the DSM-IV-TR criteria (APA, 2000). Three participants did not meet this requirement and therefore their data was excluded from being used in the study.

### **Demographics**

The average age of participants in the current study was 9.72 years ( $SD = 1.13$ ). The participants consisted of 61 males and 13 females. The average FSIQ as measured by the WASI was 109.16 ( $SD = 12.68$ ). FSIQ scores ranged from 85 to 143. The majority of participants were Caucasian ( $n = 62$ ), lived with both parents ( $n = 59$ ), and did not have any comorbid conditions ( $n = 40$ ). Thirty-four participants came from homes whose annual income equalled or exceeded \$101,000, 12 participants' family income was between \$76,000 and \$100,000, 12 participants had family incomes between \$51,000 and \$75,000, 11 participants had family incomes between \$26,000 and \$50,000, while three participants came from families whose yearly income was less than \$25,000. Demographic information is displayed in Table 1.

Table 1. *Demographic information*

Variable	M	SD
Age	9.72 years	1.13 years
FSIQ <sup>1</sup>	109.16	12.68
	n	%
Gender		
Male	61	82.4
Female	13	17.6
Ethnicity		
Aboriginal	1	1.4
Asian	2	2.7
Caucasian	62	83.8
Other	9	12.2
Household Income (\$)		
0-25,000	3	4.1
26,000-50,000	11	14.9
51,000-75,000	12	16.2
76,000-100,000	12	16.2
101,000+	34	45.9
<i>Did not report</i>	2	2.7
Family Structure		
Lives with both parents	59	79.7
Lives with one parent full-time	5	6.8
Lives with one parent but sees other parent	6	8.1
Other	4	5.4
Comorbid Diagnoses <sup>2</sup>		
Learning Disability	14	18.9
Anxiety	3	4.1
ODD	7	9.5
Language Disorder	1	1.4
Developmental Coordination Disorder	3	4.1
OCD	1	1.4
Other	3	4.1
None	40	54.1
<i>Missing</i>	2	2.7

<sup>1</sup> FSIQ is a standard score of cognitive ability.<sup>2</sup> As reported by parents

## Procedure

When a family expressed interest in participating in the study, an initial phone interview was done to ensure initial inclusion criteria were met and that the family understood the purpose of the study before agreeing to partake. Testing for the current study was done in conjunction with a larger study regarding strengths in children with ADHD. Therefore, testing for the current study took approximately six hours over the course of two days to obtain all the data needed for the current study as well as for separate parts of the larger study. These two testing sessions were booked at a mutually convenient time for both the researcher and the family. When the parent(s) arrived with their child, they were provided with a parking pass for the duration of their visit. Families were required to complete a formal consent process in which the researcher went through the consent forms with the family to ensure full understanding. During this process, it was emphasized to the family that no formal diagnoses would be made in the process of the study and that the child's name would not be associated with any individual test results.

After the family agreed to participate in the study, the parent(s) were given a number of measures to complete in a private room. The researcher worked with the child to complete all the child measures in a separate room. The researcher remained with the child in the testing room at all times and provided breaks, snacks, and refreshments to the child when necessary. Testing was done according to standardized testing procedures at all times. All testing was done by a graduate-level student who had formal training in assessment and test administration. The order of the tests was pseudo-randomized across participants and researchers in order to ensure internal validity by minimizing order effects. In order to ensure inclusionary criteria regarding cognitive ability was met, the WASI (The Psychological Corporation, 1999) was always administered on the first day of testing. After the testing with the child was completed, the researcher returned the

child to the parent(s) and collected the measures completed by the parents. The child was invited to select a small toy and the parent(s) were given a gift certificate as a token of appreciation. If the child was residing with both parents but only one parent came with their child, then additional measures were sent home to be completed by the other parent to ensure that information from both parents was collected.

## **Measures**

**Demographic information.** Parents were asked to complete a questionnaire reporting on demographic information such as marital status, income, cultural background, and comorbid conditions (see table 1). Demographic information used for analysis in the current study included date of birth, gender, and comorbid conditions.

**Inclusionary criteria measures.** These measures were used to ensure that inclusionary criteria were met within the study. The measures used to do this were the Conners 3 (Conners, 2009) and the WASI (The Psychological Corporation, 1999).

**Conners 3.** Parents were given the Conners 3 (Conners, 2009) rating scale to complete. The Conners 3 is an assessment tool designed to be instrumental in the evaluation of ADHD and its comorbid disorders. Content scales on this measure include defiance/aggression, learning problems, inattention, hyperactivity/impulsivity, executive functioning, and peer relations, while symptom scales include ADHD inattentive, ADHD hyperactive-impulsive, ADHD combined, conduct disorder, and oppositional defiant disorder. Parents are asked to report on their child's behaviours in the previous month. Answers are given on a four-point scale ranging from 0 (not true at all) to 3 (very much true). The Conners 3 was used to ensure that children met the inclusion criteria of currently having symptoms of ADHD-C. Parents must have endorsed symptoms of both inattention and hyperactivity/impulsivity so that the t-score for one of the

symptom indices met or exceeded a t-score of 65 and the other symptom index met or exceeded a t-score of 70. If the parents' ratings did not initially meet these criteria then they were asked to rate their child again based on his or her behaviour before any medication or other intervention was put into place. Rating their children a second time was done in order to ensure that children were not excluded from the study simply because their symptoms had reduced due to intervention.

Psychometrically, the Conners 3 has very high reliability; the reliability coefficient of the inattentive scale is .93 while the reliability coefficient of the hyperactivity/impulsivity scale is .94. The inter-rater reliability of the Conners 3 is also strong ranging from a coefficient of .84 for the inattentive scale to .81 for the hyperactivity/impulsivity scale. Overall, the Conners 3 has strong internal consistency, indicating that the items on the scale are measuring the same thing, and good inter-rater reliability, indicating that two different individuals give fairly similar ratings.

***Wechsler Abbreviated Scale of Intelligence.*** Children were administered the WASI (The Psychological Corporation, 1999), an abbreviated standardized intelligence test consisting of a series of four subtests designed to measure the intellectual functioning of an individual in comparison to others of the same age. The test is divided into four subtests designed to produce three separate indices: the perceptual intelligence quotient (PIQ), the verbal intelligence quotient (VIQ), and the full-scale intelligence quotient (FSIQ). The VIQ is designed to measure verbal ability and has a reliability coefficient of .93 while the PIQ is designed to measure non-verbal ability and has a reliability coefficient of .94. Finally, the FSIQ is a combined measurement of the PIQ and VIQ designed to provide the administrator with an overall measure of intellectual

functioning. The overall FSIQ has a very high reliability coefficient of .96. For the purposes of the current study, the WASI was used only as a basis for inclusion or exclusion from the study.

**Behaviour measures.** These measures were used to measure different aspects of a child's problematic behaviours. The measures used to provide this information were the Conners 3 (Conners 2009) and the Behavioral Assessment System for Children – 2<sup>nd</sup> Edition (BASC-2; Reynolds & Kamphaus, 2004).

**Conners 3.** The Conners 3 (Conners, 2009), used to ensure ADHD status, was also used to determine ratings of a child's behaviour as rated by the child's parents. Three subscales were used for the purposes of the current study: the Oppositional Defiant Disorder (ODD) scale, the Conduct Disorder (CD) scale, and the Defiance/Aggression scale.

The ODD scale is designed to determine whether a child demonstrates behaviours that are consistent with oppositional defiant disorder. Examples of questions include, "Often argues with adults," and, "Is often spiteful or vindictive." The ODD scale has an overall reliability coefficient of .91 and an inter-rater reliability coefficient of .75.

The CD scale is designed to function the same way as the ODD scale but instead looks at behaviours consistent with conduct disorder. Examples of questions include, "Has been physically cruel to people," and, "Is often truant from school, beginning before age 13 years." The CD scale has an overall reliability coefficient of .83 and an inter-rater reliability coefficient of .94.

Finally, the Defiance/Aggression scale is designed to provide a view into the content area of defiance and aggression without necessarily falling into a specific category such as ODD or CD. Examples of questions include, "Actively refuses to do what adults tell him/her to do," and,

“Bullies, threatens, or scares others.” This scale has an overall reliability coefficient of .91 and an inter-rater reliability coefficient of .74.

***Behavior Assessment System for Children – 2<sup>nd</sup> Edition.*** A second measure of behaviour was given to the parents to gather more data about the children’s behaviour. The BASC-2 (Reynolds & Kamphaus, 2004) is an assessment tool that evaluates the behavior of children from various raters such as parents, teachers, and children themselves. For the purposes of the current project, only the parents’ ratings on the BASC-2 were considered. The specific indices used for the purpose of the current study were Aggression and Conduct Problems. The Aggression scale measures a child’s verbal and physical aggression as perceived by a parent and has an internal reliability coefficient of .87 for children aged 8-11. The Conduct Problems scale measures a child’s behaviours that are characteristic of CD as perceived by a parent and has a reliability coefficient of .88 for children aged 8-11.

**Parent-child relationship measures.** These measures were used to gain perspective of the parent-child relationship from both the parents’ and the child’s point of view. The measures used to serve this function were the Parenting Relationship Questionnaire (PRQ; Kamphaus & Reynolds, 2006) and the Attachment Scale for Children (ASC; Stinson & Saklofske, 2011).

***Parenting Relationship Questionnaire.*** The PRQ (Kamphaus & Reynolds, 2006) is a self-report that measures constructs including attachment, parental involvement, parental discipline, parental communication, parenting confidence, and relational frustration. Attachment measures the closeness of the relationship between parent and child while parental involvement is the extent to which the parent and child participate in activities together. Parental discipline measures the amount of consistency that the parent adheres to in administering consequences. Parental communication looks at the quality of information exchanged between parent and child

while parenting confidence is a measure of the parent's belief in their own ability to make good parenting decisions. Finally, relational frustration measures the level of stress that a parent feels in dealing with their child's behaviour. High scores on the constructs indicate more positive ratings, except for the relational frustration construct wherein high scores indicate more negative ratings (i.e., higher relational frustration). The PRQ has a mean of 50 and a standard deviation of 10 indicating that scores within one standard deviation are classified as Average. Scores are classified as At-risk if they are below 40 (or above 60 in regards to relational frustration as higher scores indicate more relational frustration) and Clinical if they are below 30 (or above 70 in regards to relational frustration).

The PRQ (Kamphaus & Reynolds, 2006) was given to both parents to fill out to ensure that data was collected from both mother and father. If only one parent attended the first session, the PRQ was sent home to be completed by the other parent and returned at the second session. Median reliability coefficients for each of the scales are between .82 and .87 and test-retest reliability coefficients range from .72 to .81 (Rubinic & Schwickrath, 2010).

***Attachment Scale for Children.*** The ASC (Stinson & Saklofske, 2011) is a scale that was created as a children's counterpart to the PRQ. The questions regarding attachment on the PRQ were transformed into questions that could be asked of children regarding both their mother and their father. Examples of questions that were transformed from the PRQ include, "I enjoy spending time with my child," which was changed for the ASC to be, "My mother [father] enjoys spending time with me," and "I know what my child is feeling," which was transformed for the ASC to read, "My mother [father] knows what I'm feeling."



## Results

The data was analyzed for both missing values and outliers by examining boxplots. There were not found to be any missing values; however, one extreme outlier was discovered within the dataset, specifically within fathers' ratings of conduct problems on the BASC-2. After examining the mean of fathers' ratings of conduct problems on the BASC-2 with a paired samples t-test, with ( $M = 56.790$ ,  $SD = 9.416$ ) and without this outlier ( $M = 56.794$ ,  $SD = 9.416$ ), it was determined that this outlier was not significantly impacting the data and was therefore not deleted from the dataset.

Before conducting any analyses related to the research questions, the data was examined to ensure that there were no group differences between parents who had filled out the retrospective Conners 3 and those who had not (i.e., those whose children did not currently meet ADHD criteria because of medical or behavioural intervention and those who did meet criteria). An independent samples t-test was conducted and it was determined that there were no differences in the ratings of the parent-child relationship between the two groups. Therefore, data for both groups were analyzed together.

### Research Question #1

The first analyses conducted were done in order to determine what parent-reported strengths and weaknesses of the parent-child relationship were and if differences existed between mothers' and fathers' reports. Paired-sample t-tests were conducted to examine parents reported strengths and weaknesses in the parent-child relationship as rated on the PRQ. Parents' ratings of their relationship with their children are outlined in Table 2.

**Mother ratings.** As was previously outlined in the methods section, scores on the PRQ that are within one standard deviation from the mean t-score ( $50 \pm 10$ ) are classified within the

Average range according to the descriptors provided within the PRQ manual. Mothers' ratings of the relationship (i.e., attachment, communication, discipline practices, involvement, parenting confidence, and relational frustration) fell almost entirely within the Average range except for their ratings of relational frustration, which fell in the At-risk classification ( $M = 61.09$ ,  $SD = 9.75$ ). In this regard, relational frustration can be interpreted as a mother-reported weakness in their relationship with their child. All other ratings were within the Average range of t-scores, including attachment ( $M = 46.00$ ,  $SD = 9.52$ ), involvement ( $M = 50.97$ ,  $SD = 8.91$ ), communication ( $M = 43.63$ ,  $SD = 11.45$ ), discipline practices ( $M = 41.14$ ,  $SD = 8.98$ ), and parenting confidence ( $M = 42.51$ ,  $SD = 8.32$ ).

**Father ratings.** Fathers' ratings of their relationship with their children were also examined. Fathers' ratings all fell within the Average range of t-scores, including attachment ( $M = 44.14$ ,  $SD = 7.81$ ), communication ( $M = 43.41$ ,  $SD = 10.49$ ), discipline practices ( $M = 44.38$ ,  $SD = 10.06$ ), involvement ( $M = 45.76$ ,  $SD = 8.97$ ), parenting confidence ( $M = 44.65$ ,  $SD = 7.95$ ), and relational frustration (wherein higher scores indicate negative ratings;  $M = 58.08$ ,  $SD = 10.66$ ).

Table 2. *Parent Reported Strengths and Weaknesses in the Parent-Child Relationship as rated by the PRQ*

	<b>M</b>	<b>SD</b>
Mothers (N = 65)		
Attachment	46.00	9.52
Communication	43.63	11.45
Discipline Practices	41.14	8.98
Involvement	50.97	8.91
Parenting Confidence	42.51	8.32
Relational Frustration	61.09	9.75
Fathers (N = 37)		
Attachment	44.14	7.81
Communication	43.41	10.49
Discipline Practices	44.38	10.06
Involvement	45.76	8.97
Parenting Confidence	44.65	7.95
Relational Frustration	58.08	10.66

Note. Means and standard deviations are t-scores.

**Comparison of mother and father ratings.** Following, paired-samples t-tests were conducted to determine whether mothers' and fathers' ratings of strengths and weaknesses in their relationship with their children differed. There was found to be a significant difference between mothers' ( $M = 49.22$ ,  $SD = 8.35$ ) and fathers' ( $M = 45.53$ ,  $SD = 9.46$ ) ratings of their involvement in their children's lives,  $t(31) = 2.23$ ,  $p = 0.03$ , with mothers reporting significantly higher levels of involvement than fathers. No other significant differences were found between mothers' and fathers' ratings of their attachment, communication, discipline practices, parenting confidence, or relational frustration.

Overall, parents tend to rate their relationships with their children with ADHD in the Average range; however, mothers rate relational frustration in the At-risk range, indicating that they perceive this aspect of their relationship with their children to be more challenging. Furthermore, mothers and fathers differ on their ratings of involvement to their children wherein mothers rate their involvement as higher than fathers.

## **Research Question #2**

The analyses for the second research question were employed to examine how children's and parents' ratings of their attachment in their relationship were related. As well, the difference in children's ratings of each parent was examined.

Prior to the analysis, reliability for the ASC scale was calculated using Cronbach's Alpha. Results for both the mother ( $\alpha = .86$ ) and father ( $\alpha = .84$ ) were independently calculated and were determined to be within the acceptable range.

**Child ratings of attachment to both parents.** Because the ASC is not a standardized test, raw scores of attachment ratings between children and their mothers and fathers were calculated independently. A paired-samples t-test was conducted in order to determine if children rated their mothers and fathers differently in terms of their attachment. There was a significant difference between children's ratings of attachment to their mothers ( $M = 30.79$ ,  $SD = 7.05$ ) and to their fathers ( $M = 27.87$ ,  $SD = 6.76$ );  $t(61) = 3.20$ ,  $p < .001$ , with children reporting significantly higher ratings of attachment to their mothers as compared to their fathers.

**Child ratings compared to parent ratings.** An independent samples t-test was conducted to determine if differences existed between children's ratings of attachment and parents' ratings of attachment individually. Results indicated that children rated their attachment to their mothers higher ( $M = 30.72$ ,  $SD = 6.82$ ) than mothers rated their attachment to their

children ( $M = 22.87$ ,  $SD = 4.32$ );  $t(129) = -7.80$ ,  $p < .001$ . Results also indicated that children rated their attachment to their fathers as higher ( $M = 27.87$ ,  $SD = 6.76$ ) than fathers rated their attachment to their children ( $M = 20.11$ ,  $SD = 3.83$ );  $t(96) = -6.32$ ,  $p < .001$ .

Overall, children rate their attachment to their parents higher than parents rate attachment to their children. Furthermore, children rate their attachment to their mothers higher than to their fathers.

### **Research Question #3**

The analyses done in regards to research question #3 examined the relationship between specific aspects of the parent-child relationship, as rated by both parents, and ratings of behaviour. Partial correlations were conducted in order to control for the presence of a comorbid condition that might affect parent ratings. Tables 3 and 4 outline the Pearson's product moment correlation coefficients (two-tailed) between mothers' and fathers' ratings, respectively, of different aspects of the parent-child relationship and behaviour ratings as rated on the Conners 3 and the BASC-2. Specifically, ratings of attachment, communication, discipline practices, involvement, parenting confidence, and relational frustration were compared to ratings of defiance/aggression, ODD, and CD on the Conners 3 as well as to aggression and conduct problems on the BASC-2.

**Mother ratings.** Mothers' ratings of their discipline practices were found to be positively correlated to ratings of conduct problems on the BASC-2 ( $r = .30$ ,  $p = .03$ ); they were not correlated significantly to ratings of defiance/aggression ( $r = .12$ ,  $ns$ ), CD ( $r = .16$ ,  $ns$ ), or ODD on the Conners 3 ( $r = .02$ ,  $ns$ ) or ratings of aggression on the BASC-2 ( $r = .23$ ,  $ns$ ). Mothers' ratings of their relational frustration were positively correlated with ratings of defiance/aggression ( $r = .38$ ,  $p = .004$ ), ODD ( $r = .46$ ,  $p < .001$ ), and CD ( $r = .27$ ,  $p = .048$ ) on

the Conners 3 and aggression on the BASC-2 ( $r = .45, p = .001$ ); however, they were not correlated with ratings of conduct problems on the BASC-2 ( $r = .26, ns$ ). Mothers' ratings of attachment, involvement, parenting confidence, and communication were not significantly related to any of the outcome variables (i.e., defiance/aggression, ODD, and CD on the Conners 3 and aggression and conduct problems on the BASC-2).

**Father ratings.** Fathers' ratings of their communication were negatively correlated with ratings of aggression on the BASC-2 ( $r = -.53, p = .003$ ) but were not correlated with ratings of defiance/aggression ( $r = -.34, ns$ ), ODD ( $r = -.25, ns$ ), or CD ( $r = -.28, ns$ ) on the Conners 3 or ratings of conduct problems on the BASC-2 ( $r = -.32, ns$ ). Fathers' ratings of involvement were also inversely correlated with ratings of aggression on the BASC-2 ( $r = -.55, p = .002$ ) but were also not correlated with ratings of defiance/aggression ( $r = -.29, ns$ ), ODD ( $r = -.37, ns$ ), or CD ( $r = -.22, ns$ ) on the Conners 3 or ratings of conduct problems on the BASC-2 ( $r = -.29, ns$ ). Similarly, fathers' ratings of attachment were also negatively correlated with ratings of aggression on the BASC-2 ( $r = -.37, p = .046$ ) but were not correlated with ratings of defiance/aggression ( $r = -.24, ns$ ), ODD ( $r = -.28, ns$ ), or CD ( $r = -.18, ns$ ) on the Conners 3 or ratings of conduct problems on the BASC-2 ( $r = -.30, ns$ ). Furthermore, fathers' ratings of their relational frustration were positively correlated with defiance/aggression ( $r = .56, p = .002$ ), ODD ( $r = .59, p = .001$ ), and CD ( $r = .39, p = .04$ ) ratings on the Conners 3, and ratings of aggression ( $r = .52, p = .004$ ) and conduct problems ( $r = .54, p = .003$ ) on the BASC-2. Fathers' ratings of discipline practices and parenting confidence were not significantly related to any outcome variables BASC-2.

Table 3. *Correlations among Mothers' Ratings of Their Relationship with their Child and Perceived Problem Behaviours*

Variable	<i>n</i>	1	2	3	4	5	6	7	8	9	10
1. PRQ-Mom-Attachment	63	—									
2. PRQ-Mom-Communication	63	.68**	—								
3. PRQ-Mom-Discipline Practices	63	.11	.20	—							
4. PRQ-Mom-Involvement	63	.43**	.49**	.31	—						
5. PRQ-Mom-Parenting Confid.	63	.54**	.60**	.14	.37**	—					
6. PRQ-Mom-Relational Frustrat.	63	-.52**	-.51**	.16	-.06	-.53**	—				
7. Conners – Defiance/Aggress.	63	.02	-.12	.12	-.05	-.09	.38**	—			
8. Conners – ODD	63	-.10	-.25	.02	-.07	-.21	.46**	.84**	—		
9. Conners – CD	63	.09	-.03	.16	-.05	-.03	.27*	.85**	.66**	—	
10. BASC-2 Mom Aggression	57	-.10	-.13	.23	-.11	-.15	.45**	.77**	.69**	.76**	—
11. BASC-2-Mom Conduct Problems	57	-.04	.13	.30*	.00	-.08	.26	.45**	.36**	.53**	.72**

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

Table 4. *Correlations among Fathers' Ratings of Their Relationship with their Child and Perceived Problem Behaviours*

Variable	<i>n</i>	1	2	3	4	5	6	7	8	9	10
1. PRQ-Dad-Attachment	36	—									
2. PRQ-Dad-Communication	36	.65**	—								
3. PRQ-Dad-Discipline Practices	36	-.37	.09	—							
4. PRQ-Dad-Involvement	36	.57**	.48**	-.28	—						
5. PRQ-Dad-Parenting Confid.	36	.43*	.07	-.07	.24	—					
6. PRQ-Dad-Relational Frustrat.	36	-.45*	-.29	.09	-.34	-.49**	—				
7. Conners – Defiance/Aggress.	36	-.24	-.34	-.01	-.29	-.01	.56**	—			
8. Conners – ODD	36	-.28	-.25	.10	-.37	-.03	.59**	.87**	—		
9. Conners – CD	36	-.18	-.28	.00	-.22	-.02	.39*	.91**	.73**	—	
10. BASC-2 Dad Aggression	33	-.37*	-.53**	.05	-.55**	-.19	.52**	.59**	.50**	.54**	—
11. BASC-2-Dad Conduct Problems	33	-.30	-.32	-.07	-.29	-.28	.54**	.47*	.31	.38*	.67**

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



#### Research Question #4

Research question #4 looked into what aspects of the parent-child relationship were predictive of parent-rated behaviours in their children with ADHD. Specifically, both mothers' and fathers' ratings of attachment, communication, discipline practices, involvement, parenting confidence, and relational frustration were examined as to whether they were predictive of ratings of defiance/aggression, ODD, and CD on the Conners 3 and aggression and conduct problems on the BASC-2.

Multiple regression was employed to determine if specific aspects of the relationship were predictive of different behavioural outcomes. Within the regression, comorbid conditions were entered in the first block in order to control for their presence. Within the second block, the six ratings of parent-child relationship as rated by the parent were entered. A stepwise method was utilized for these variables due to the largely exploratory nature of the research question and to attain the most parsimonious models.

**Mother ratings.** Parent-child relationship factors as rated on the PRQ by mothers (i.e., attachment, communication, discipline practices, involvement, parenting confidence, and relational frustration) were entered into a stepwise regression in order to determine if any of the factors were predictive of behavioural outcomes as rated by the mothers (i.e., defiance/aggression, ODD, and CD on the Conners 3 and aggression and conduct problems on the BASC-2).

In the first regression analysis, the PRQ factors were entered as the predictor variables while defiance/aggression as rated by the Conners 3 was entered as the criterion variable. The model was found to be significant ( $F(7,53) = 7.47, p < .001$ ) and found to explain 24.4% of the variance in ratings of defiance/aggression on the Conners 3 (Adjusted  $R^2 = .24$ ). Relational

frustration was found to be the most significant predictor in the model ( $\Delta R^2 = .21$ ) while the addition of attachment accounted for 6.3% more variance in the model ( $\Delta R^2 = .06$ ).

Communication, involvement, discipline practices, and parenting confidence were not predictive of defiance/aggression scores on the Conners 3 (see table 5).

Table 5. *Standardized regression coefficients for model predicting mother-reported defiance/aggression*

Predictor Variable	Beta	$\Delta R^2$	<i>p</i>
Relational Frustration	.617	.208	< .001
Attachment	.298	.063	.029
Involvement	-.177	-	.143
Discipline Practices	.011	-	.930
Communication	-.068	-	.659
Parenting Confidence	.074	-	.621

The second regression analysis used the same PRQ factors as predictor variables but ODD as rated by the Conners 3 was entered as the criterion variable. The model was found to be significant ( $F(2,58) = 9.98, p < .001$ ) and found to explain 23.0% of the variance in ratings of ODD on the Conners 3 (Adjusted  $R^2 = .24$ ). Relational frustration was found to be the only variable predictive of ODD scores on the Conners 3; attachment, communication, involvement, discipline practices, and parenting confidence did not contribute significantly to the regression model (see table 6).

Table 6. *Standardized regression coefficients for model predicting mother-reported ODD*

Predictor Variable	Beta	$\Delta R^2$	$p$
Relational Frustration	.502	.240	< .001
Involvement	-.007	-	.952
Attachment	.200	-	.136
Discipline Practices	-.022	-	.855
Communication	.044	-	.739
Parenting Confidence	.098	-	.482

The third regression analysis used the same PRQ factors as predictor variables but CD as measured by the Conners 3 was entered as the criterion variable. The model was found to be significant ( $F(3,57) = 6.57, p = .001$ ) and found to explain 21.8% of the variance in CD ratings on the Conners 3 (Adjusted  $R^2 = .22$ ). In this model, two predictor variables were significant (relational frustration and attachment). Relational frustration accounted for the most variance within the model ( $\Delta R^2 = .16$ ) while the addition of attachment accounted for another 9.3% of the variance within the model ( $\Delta R^2 = .09$ ). Communication, discipline practices, involvement, and parenting confidence did not contribute to the model (see table 7).

Table 7. *Standardized regression coefficients for model predicting mother-reported CD*

Predictor Variable	Beta	$\Delta R^2$	$p$
Relational Frustration	.589	.158	< .001
Attachment	.361	.093	.010
Involvement	-.246	-	.053
Discipline Practices	.100	-	.417
Communication	-.015	-	.924
Parenting Confidence	.066	-	.667

The fourth regression analysis used the PRQ factors as predictor variables but aggression as rated by the mother on the BASC-2 was entered as the criterion variable. The model was found to be significant ( $F(2,52) = 6.66, p = .003$ ) and found to explain 17.2% of the variance in mothers' ratings of aggression on the BASC-2 (Adjusted  $R^2 = .17$ ); however, only relational frustration was a significant predictor. The other PRQ factors (attachment, communication, discipline practices, involvement, and parenting confidence) were not significant predictors of the outcome variable (see table 8).

Table 8. *Standardized regression coefficients for model predicting mother-reported aggression*

Predictor Variable	Beta	$\Delta R^2$	$p$
Relational Frustration	.426	.200	.001
Involvement	-.076	-	.545
Attachment	.192	-	.199
Discipline Practices	.166	-	.191
Communication	.138	-	.342
Parenting Confidence	.128	-	.401

The fifth regression analysis used the PRQ factors as predictor variables but conduct problems as rated by the mother on the BASC-2 was entered as the criterion variable. The model was found to be significant ( $F(2,52) = 2.51, p = .091$ ) but was only found to explain 8.8% of the variance of mother rated conduct problems on the BASC-2 (Adjusted  $R^2 = .09$ ). In this model, discipline practices was found to be the only variable significantly predictive of conduct problems on the BASC-2, while attachment, communication, involvement, parenting confidence, and relational frustration were not significant (see table 9).

Table 9. *Standardized regression coefficients for model predicting mother-reported conduct problems*

Predictor Variable	Beta	$\Delta R^2$	$p$
Discipline Practices	.351	.088	.029
Involvement	-.101	-	.475
Attachment	-.079	-	.569
Communication	.079	-	.562
Parenting Confidence	-.129	-	.354
Relational Frustration	.217	-	.114

**Father ratings.** Stepwise regression was conducted in order to examine whether parent-child relationship factors as rated on the PRQ by fathers (i.e., attachment, communication, discipline practices, involvement, parenting confidence, and relational frustration) were predictive of behavioural outcomes as rated by the fathers (i.e., defiance/aggression, ODD, and CD on the Conners 3 and aggression and conduct problems on the BASC-2).

The sixth regression analysis used the PRQ factors as the predictor variables and used defiance/aggression as rated on the Conners 3 as the criterion variable. The model was found to be significant ( $F(2,30) = 7.76, p = .002$ ) and found to explain 29.7% of the variance in ratings of defiance/aggression on the Conners 3 (Adjusted  $R^2 = .30$ ). Relational frustration was the only variable found to be predictive within the model, the other variables (attachment, communication, discipline practices, involvement, and parenting confidence) were not significant predictors of the criterion variable (see table 10).

Table 10. *Standardized regression coefficients for model predicting father-reported defiance/aggression*

Predictor Variable	Beta	$\Delta R^2$	$p$
Relational Frustration	.597	.336	< .001
Attachment	-.022	-	.898
Communication	-.159	-	.319
Discipline Practices	-.025	-	.873
Involvement	-.084	-	.609
Parenting Confidence	.346	-	.062

The seventh regression analysis used the PRQ factors as the predictor variables but ODD as rated on the Conners 3 was entered as the criterion variable. The model was found to be significant ( $F(2,30) = 8.74, p = .001$ ) and found to explain 32.6% of the variance in ratings of ODD on the Conners 3 (Adjusted  $R^2 = .33$ ). As seen in other models, relational frustration was found to be the only variable predictive of the criterion variable; attachment, communication, discipline practices, involvement, and parenting confidence were not significant predictors (see table 11).

Table 11. *Standardized regression coefficients for model predicting father-reported ODD*

Predictor Variable	Beta	$\Delta R^2$	$p$
Relational Frustration	.625	.368	< .001
Attachment	-.066	-	.690
Communication	-.050	-	.751
Discipline Practices	.064	-	.669
Involvement	-.153	-	.338
Parenting Confidence	.344	-	.058

The eighth regression analysis used the PRQ factors as the predictor variables but CD as rated on the Conners 3 was entered as the criterion variable. The model was found to be significant ( $F(2,30) = 3.95, p = .030$ ) and found to explain 15.6% of the variance in ratings of CD on the Conners 3 (Adjusted  $R^2 = .16$ ). Within the model, only relational frustration was found to be a significant predictor of CD on the Conners 3. Attachment, communication, discipline practices, involvement, and parenting confidence were not found to be significant predictors (see table 12).



Table 12. *Standardized regression coefficients for model predicting father-reported CD*

Predictor Variable	Beta	$\Delta R^2$	$p$
Relational Frustration	.470	.208	.009
Attachment	-.040	-	.829
Communication	-.109	-	.533
Discipline Practices	.032	-	.852
Involvement	-.051	-	.779
Parenting Confidence	.156	-	.456

The ninth regression analysis used the PRQ factors as the predictor variables but aggression as rated by the fathers on the BASC-2 was entered as the criterion variable. The model was found to be significant ( $F(3,36) = 6.70, p = .002$ ) and found to explain 37.1% of the variance of father ratings of aggression on the BASC-2 (Adjusted  $R^2 = .37$ ). Within the model, involvement predicted 30.1% of the variance in the model ( $\Delta R^2 = .30$ ) while the addition of relational frustration contributed 12.5% more variance ( $\Delta R^2 = .13$ ). Attachment, communication, discipline practices, and parenting confidence were not significant (see table 13).

Table 13. *Standardized regression coefficients for model predicting father-reported aggression*

Predictor Variable	Beta	$\Delta R^2$	$p$
Involvement	-.424	.301	.012
Relational Frustration	.379	.125	.024
Attachment	.062	-	.751
Communication	-.287	-	.096
Discipline Practices	-.115	-	.463
Parenting Confidence	.133	-	.445

The final regression analysis used the PRQ factors as the predictor variables but conduct problems as rated by the fathers on the BASC-2 was entered as the criterion variable. The model was found to be significant ( $F(2,27) = 5.82, p = .008$ ) and was found to explain 24.9% of the variance in father ratings of conduct problems on the BASC-2 (Adjusted  $R^2 = .25$ ). Relational frustration was found to be the only significant variable within the model while attachment, communication, discipline practices, involvement, and parenting confidence were not predictive of the criterion variable (see table 14).

Table 14. *Standardized regression coefficients for model predicting father-reported conduct problems*

Predictor Variable	Beta	$\Delta R^2$	<i>p</i>
Relational Frustration	.534	.280	.003
Attachment	-.074	-	.689
Communication	-.180	-	.298
Discipline Practices	-.121	-	.464
Involvement	-.120	-	.496
Parenting Confidence	-.022	-	.907

## Discussion

The current study was conducted as part of a larger study titled “*Strengths in ADHD*” which aimed to examine the strengths, rather than just the weaknesses, in children with ADHD. The purpose of the current study was to further examine the parent-child relationships of children with ADHD and their parents and how these relationships related to behavioural outcomes. Specifically, the aim of the study was to determine if the parent-child relationship held any importance for the protection against behaviour problems in children with ADHD. Four main research questions were posed and the results will be discussed in the content of the existing literature in this area.

### Research Question #1

Research question #1 asked what parent-reported strengths and weaknesses were in the context of their relationships with their children, and if there were differences between mother and father ratings of these strengths and weaknesses. Relational frustration was reported as a significant weakness by mothers and was the only weakness reported by either parent. However,

although it was the only aspect outside of the Average range, it did not differ significantly from fathers' ratings of relational frustration. This finding is somewhat inconsistent with previous research as mothers typically tend to report more hostility and anger in their relationships with their children than do fathers (Edwards et al., 2001). Relationships filled with anger and hostility would be likely to foster more stress than a relationship with less anger and hostility, so it would be reasonable that mothers would likely feel more frustrated in their relationships with their children than would fathers. It has also been found that fathers typically spend less time with their children than mothers do and therefore have less of an opportunity to engage in conflict (Lamb, 2000; Williams & Kelly, 2005), and thus, become frustrated. It may be the case that fathers in the current study spend more time with their children than fathers in past studies have. Given the relatively high socio-economic status of the families in the current study, it is possible that fathers indeed do have more time to spend with their children. If fathers in this study spend an equal amount of time with their children than mothers, then it is possible that they have an equal opportunity to become frustrated in the parent-child relationship.

Although relational frustration as rated by mothers was the only aspect to lie outside of the Average range and thus be classified as a weakness, it is interesting to note that all other ratings of the relationship given by parents were within the Average range. This is important to note as this was a clinical group and both parents reported generally good relationships with their children. Although parents' ratings may not have been stronger than those of typically-developing children on the basis of their overall t-scores, their ratings should be classified as an overall strength for children with ADHD. Parents in the current study largely rated their relationship with their children with ADHD similarly to parents of children without ADHD.

Overall, both mothers and fathers rate their attachment, communication, discipline practices, involvement, and parenting confidence within the Average range.

In examination of mother and father ratings of relationship aspects, it was found that mothers tend to rate their involvement in their children's lives as higher than fathers. This result may seem contradictory to the rationale alluded to earlier that fathers in this study spend an equal amount of time with their children; however, it is important to distinguish between time spent together and involvement. Involvement is the amount that the parent and child participate in activities together (Kamphaus & Reynolds, 2006) whereas time spent with a child could simply consist of watching television next to each other. The finding that mothers view themselves as more involved in their children's lives than fathers is consistent with previous literature that suggests that fathers spend approximately 25% of the time that mothers do interacting with their children (Lamb, 2000).

It was also hypothesized that fathers would report a higher amount of parenting confidence than mothers in regards to the finding that children with ADHD are more likely to comply with their fathers' requests than their mothers (see Danforth et al., 1991 for a review). This finding was not substantiated and there are two possible explanations. First, it could be that the children in the current study are no more likely to comply with their mothers' requests versus their fathers' requests and therefore, there would be no reason for fathers to have more confidence in their parenting abilities. If a child is just as likely to listen to their mother as they are to their father, then both parents likely feel a similar amount of confidence in their ability to influence their child. Second, it is possible that a child's compliance to a parent's request is not related to that parent's confidence in their parenting ability. In the context of the current study, parenting confidence is the confidence that a parent has in their ability to make good parenting

decisions (Kamphaus & Reynolds, 2006) and therefore it is possible that compliance to requests does not contribute to a father's confidence in their decision making ability.

Overall, parents largely rate their relationship with their children as in the Average range, suggesting that parents do not necessarily view the parent-child relationship as a weakness. Parents also tend to rate aspects of their relationship with their children as similar to each other. The only difference is that mothers tend to rate their involvement with their children as higher than fathers which is consistent with previous research.

## **Research Question #2**

The second research question investigated the parent-child relationship from the child's perspective by specifically examining attachment. It was hypothesized that children would rate their attachment to their mothers as higher than their fathers; the results were congruent with this hypothesis. This finding mirrors the literature on children without ADHD wherein they typically feel more secure in their relationship with their mothers than with their fathers (Williams & Kelly, 2005). No other known studies to date have examined the differences in perceived attachment between parents from the perspective of a child with ADHD. Although research has shown that children with ADHD are likely to be less secure in their attachment to their parents than children without ADHD (Clarke et al, 2002), these children with ADHD still view their attachment to their mother as more secure than their attachment to their fathers.

As was hypothesized, children rated their attachment to their parents (both mother and father) as higher than their parents rated their attachment to them. This finding may be attributed the positive illusory bias which has been found to exist within children with ADHD wherein they tend to under-report the issues in their lives and over-estimate their abilities (Owens et al., 2007). Specifically, it has been found that within social domains (e.g., relationships), children with

ADHD tend to under-report their problems (Owens et al., 2007). It is possible that children with ADHD are less aware of any issues they have with their parents than their parents are which leads these children to believe that aspects of the relationship, such as attachment, are better developed than they actually may be. In contrast, it is also possible that parents have an overly negative view of their relationship with their children which may lead children's ratings to appear higher (Owens et al., 2007). As an alternative explanation, children may be viewing their parents in an overly positive light. For example, it has been found that within clinical populations, children tend to idealize their father after a divorce, even when they no longer have contact with him (Seiffge-Krenke & Tauber, 1997). This could also explain why children rate their attachment to their parents as stronger than their parents rate their attachment to them.

### **Research Question #3**

Research question #3 examined whether there were specific aspects of the mother-child and the father-child relationship that were related to behaviour problems. Both parents' ratings of relational frustration were found to be positively correlated with several ratings of behaviour problems, suggesting that as relational frustration ratings increase, so do ratings of behaviour problems, or conversely, as ratings of behaviour problems increase, so does relational frustration. This finding is in line with previous literature that has found that parenting stress increases in parents of children with ADHD when the children also have comorbid behaviour problems (Theule et al., 2013). No claims of causation can be made due to the purely correlational nature of the findings, but three possible pathways of the relationship are proposed.

First, it is possible that a child with more behaviour problems contributes to a parent's feelings of frustration. It has been well documented that the presence of a comorbid behavioural disorder in children with ADHD intensifies the amount of conflict that exists within the parent-

child relationship (Edwards et al, 2001; Gomez & Sanson, 1994; Johnston, 1996). This conflict could possibly contribute to a parent's feelings of frustration within the relationship.

Second, it is possible that when parents feel more frustrated in the relationship, they contribute to an increase in behaviour problems in their children. Research has found that parental anger can have negative effects both on children's emotional development as well as on their behavioural development (Cummings & Davies, 1994; Rutter & Quinton, 1984). Parent frustration in particular has been associated with more negative parenting practices such as spanking and yelling at one's child (Regalado, Sareen, Inkelas, Wissow, & Halfon, 2004). It is possible that in response to aversive parenting techniques, children act out behaviourally.

Third, it is possible that there is another variable contributing to the relationship between parents' frustration and children's behaviour problems. A possible explanation might be the severity of the ADHD symptoms. It has been found that the more severe a child's ADHD symptoms are, the higher a parent's distress will be (Anastopoulos, Guevremont, Shelton, & DuPaul, 1992). Furthermore, high symptoms of hyperactivity and impulsivity have been found to be a risk factor for comorbid behaviour problems (Freitag et al., 2012). Therefore, if a child has very high levels of ADHD symptoms, it is possible that that is having an effect on both parent frustration and the level of child behaviour problems.

It was hypothesized that attachment would be inversely related to ratings of behaviour problems for both parents. This hypothesis was partially supported as fathers' ratings of attachment were inversely related to ratings of aggression, when co-morbid disorders were controlled for. This result is consistent with previous research that found that insecure parent-child attachment may be related to externalizing disorders (DeVito & Hopkins, 2001) while secure parent-child attachment serves as a protective factor against negative behaviour outcomes



in children without ADHD (e.g., Ayers et al., 1999). The fact that mothers' ratings of attachment were not related to behavioural outcomes could be due to a difference in the measurement of attachment or that mothers in this study did not tend to rate their attachment to their children as any different from average.

It was also hypothesized that both mother and father involvement would be inversely related to ratings of behaviour problems. Current findings suggest that while mothers' involvement is not related to behaviour problems, fathers' involvement is, and more specifically, to aggression. As noted, father involvement is especially important in the protection against negative behavioural outcomes (e.g., Amato & Rivera, 1999; Lamb, 2004; Marsiglio et al., 2000) and the current study provides further evidence by indicating that there is indeed a relationship between father involvement and behaviour. So while fathers may rate their involvement as less than mothers do (as evidenced in regards to research question # 2), the involvement that they do have with their children appears to be more important.

Fathers' ratings of communication were also inversely correlated to ratings of aggression, suggesting that father communication also plays a role in behavioural outcomes. This is consistent with previous research that found that father-child communication is a stronger predictor of school-based aggression than is mother-child communication (Lambert & Cashwell, 2004). It is possible that because mothers interact with their children more often than fathers do (Lamb, 2000), children take interaction for granted and do not hold it in as high regard as they would when their fathers interact with them. For a child, something like hearing repetitive warnings to behave from their mother might be less important than hearing it only once from their father.

An interesting and unexpected finding in the current study was that mothers' ratings of their discipline practices were positively correlated to their ratings of their child's conduct problems. This is inconsistent with previous literature that has found that high levels of behaviour problems are related to inconsistent discipline practices used by mothers (Feehan, McGee, Stanton, & Silva, 1991). Given this, it is unusual that mothers' ratings of consistent discipline were related to higher levels of behaviour problems. It is possible that as mothers in this study perceived conduct problems to increase, they also needed to apply consequences at a higher rate. In turn, this may have given the mothers more opportunity to perceive themselves as applying discipline to their children, making it more likely that they would see themselves as applying discipline consistently.

#### **Research Question #4**

The fourth research question explored the aspects of the parent-child relationship that were predictive of behaviour problems in children with ADHD. The question was examined in regards to both mothers and fathers across several aspects of their perceived relationship with their children.

Relational frustration was found to be a significant predictor of behavioural outcomes for both parents. For mothers, relational frustration on its own predicted ratings of ODD on the Conners 3 and aggression on the BASC-2. For fathers, relational frustration on its own predicted ratings of defiance/aggression, ODD, and CD on the Conners 3, as well as conduct problems on the BASC-2. In all of these findings, relational frustration had a positive relationship with the outcome variable; that is, as relational frustration increased, so did ratings of behaviour problems. This is consistent with recent literature that has found that parents of children with ADHD report more stress in their parent-child relationship than do parents of children without

ADHD and further, that co-occurring conduct problems predicted this stress (see Theule, Wiener, Tannock, & Jenkins, 2013 for a review). Furthermore, as was noted previously, parental frustration is associated with negative parenting practices (Regalado et al., 2004) and negative parenting practices are a large risk factor in children with ADHD towards the development of a comorbid behavioural disorder (Patterson et al., 2000). Therefore, it is reasonable that relational frustration predicts many negative behavioural outcomes.

For fathers in particular, relational frustration in combination with involvement was found to predict ratings of aggression on the BASC-2. While relational frustration predicted aggression in the positive direction (as ratings of relational frustration increased, so did ratings of aggression), involvement predicted ratings of aggression in the negative direction (as ratings of involvement increased, ratings of aggression decreased). This finding is consistent with past research that has found that father involvement is predictive against negative behavioural outcomes in children without ADHD (e.g., Amato & Rivera, 1999; Lamb, 2004; Marsiglio et al., 2000). In previous studies, father involvement has also been found to be important in the prediction of school-based problem behaviours as rated by the teacher (Williams & Kelly, 2005). The current finding is important as it provides a view into how father involvement is important for father-rated behaviours. Therefore, father involvement can be said to play a factor in the protection against aggression in children with ADHD as it appears that the higher a father's involvement is in his child's life, the lower that child's levels of aggression will be.

When looking at mothers in particular, there were some unusual findings. First, it was found that relational frustration in combination with attachment predicted ratings of defiance/aggression and CD on the Conners 3. However, instead of attachment negatively predicting defiance/aggression and CD, it also positively predicted the variables along with

relational frustration. This finding is in contrast to what would be expected given findings that suggest that a lack of secure attachment is related to the development of both internalizing and externalizing disorders in children (Day & Padilla-Walker, 2009). The presence of secure attachment has also been implicated in a number of positive outcomes for children (e.g., Carlson & Sroufe, 1995; Jakobsen et al., 2012) so the current result was unanticipated. There are a couple possible explanations for this unexpected finding. First, it is possible that mothers in this study were over-reporting the conduct problems of their children. It has been documented that mothers of children with ADHD rate their relationship as being more negative than mothers of children without ADHD (Gerdes et al., 2003). Therefore, if ratings of CD and defiance/aggression were being over-reported, then it may have contributed to significant results being obtained. Second, attachment on the PRQ (Kamphaus & Reynolds, 2006) measures the closeness between parent and child as well as the understanding the parent has for their child. It is possible that as this rating increases, and mothers rate themselves as being more understanding of their child, they are also able to rate their child more openly and honestly in terms of their behavior. Because this finding is unexpected, future studies should be conducted in order to help better understand and clarify this result.

Finally, for mothers in particular, discipline practices were found to positively predict the ratings of conduct problems on the BASC-2. Again, this finding would be contradictory to what would be expected given that discipline practices are related to consistency in consequences, which is a positive construct. However, earlier in the study, discipline practices was found to be positively correlated with ratings of conduct problems on the BASC-2, so in the context of earlier findings, the result is understandable. Again, it is possible that the more that mothers need

to give consequences due to conduct problems, the more opportunity there is for them to view themselves as giving consequences consistently.

### **Implications**

The current study examined the parent-child relationship in children with ADHD from both the parents' and the children's point of view. The study examined how the parent-child relationship was related to parental ratings of behaviour in their children. Many implications come as a result of the findings of this study. It was found that parents largely rate their relationship with their children with ADHD as Average. This rating is positive given that the PRQ (Kamphaus & Reynolds, 2006) was standardized on children without ADHD. Essentially, parents in this study do not view their relationship as any different from the way parents view their relationship with their child without ADHD. Considering a strengths-based perspective, this finding indicates that ADHD may be seen as less debilitating to the parent-child relationship as might have been thought. Parents of children with ADHD should be informed that although there may be some challenges with their children, they have a similar relationship with them as parents of typically developing children do with their children. Being aware of this can help parents to see that strengths do exist within their child. While ignoring possible deficits in their children should not be encouraged, parents should be encouraged to explore the strengths that exist within their relationships with their children.

It was also found that mothers rate their involvement in their children's lives as higher than fathers do; however, when examining correlations between parent ratings of the relationship and parent ratings of their children's behaviour, only fathers' ratings of involvement were found to be related to children's behaviour. So while mothers view themselves as being more involved, it appears that father involvement may play a more important role in behaviour outcomes.

Knowing that father rated involvement is inversely correlated to ratings of aggression has important implications. If fathers are aware of this relationship, they can become more actively involved in their child's life. As was found that when father involvement increases, ratings of aggression decrease (and vice-versa), so any increase in involvement in their child's life would be positive. Parent training for parents of ADHD may provide some focus and training on father-child involvement, including ways to improve it and build upon what currently exists. A previous study found that as mother involvement increased, so did fathers (Pleck & Hofferth, 2008). This finding is important because while it will be important to encourage fathers to increase their involvement, an increase of involvement by mothers may encourage a natural increase by fathers. In addition to father involvement being important, father communication was also found to be inversely correlated to ratings of aggression. There were no differences found between mothers' and fathers' ratings of communication with their children, therefore this suggests that father communication potentially plays a more important role than mother communication and should also be emphasized in parent training. Fathers should be encouraged to learn ways of better communicating with their children and building upon already positive occurrences. Fathers should make note of when the best communication occurs between them and their children and use that as a starting point. For example, if the best communication occurs while driving in the car, then fathers can attempt to create more time driving in their car with their child by inviting them to go places with them (such as the grocery store) or volunteering to drive them to activities or friends' houses.

Results also indicated that as ratings of frustration increased for parents, so did ratings of behaviour problems. It is possible that as parents become more frustrated with their children, their children act out behaviourally. It is also possible that as children show negative behaviours,

parents become more frustrated. This finding has implications for family treatment of ADHD, as parents of children with ADHD should be taught strategies to reduce their frustration in the relationship. If parents are able to better manage and tolerate their own frustration, they may be more likely to be more patient with their children and perhaps encourage better behaviours. It was also found that relational frustration is predictive of different negative behavioural outcomes. Because of this, parents should be taught to monitor their frustration within the relationship and find ways to alleviate it, such as positive parenting programs or going to family counselling. Support groups for parents of children with ADHD exist (e.g., local chapters of Children and Adults with Attention-Deficit/Hyperactivity Disorder [CHADD]) and attendance should be encouraged. Support groups can help parents to see that they are not alone in their frustrations with their children and that they should not feel ashamed to admit that they are frustrated. Being able to discuss one's child with a more objective third party can likely help parents to deescalate and see situations from a different point of view. While support groups may be difficult to attend in person due to distance or lack of time, the Internet can also be a great tool whereby parents can access many different resources related to managing frustration. For example, CHADD offers "Parent to Parent" online training courses which address issues such as dealing with impact on the family of having a child with ADHD (CHADD, 2013). Furthermore, online message boards and forums provide an outlet for individuals in similar situations to discuss issues; CHADD Exchange is an online community that allows parents to share experiences, get advice, and learn better parenting strategies (CHADD, 2013).

Finally, involvement was found to be predictive of behavioural outcomes for both mothers and fathers. Encouraging both parents to do activities with their children and interact with their children will likely benefit both parties. Parents can be encouraged to set aside more

time to spend quality time with their children doing activities and/or supporting their children in their own activities. For example, parents and their children could have a weekly game night or parents could attend their child's extracurricular activities as a spectator.

## **Limitations**

There are several limitations apparent in the current study that will be discussed. First, the sample garnered for the purposes of the study was not completely random. Participants volunteered their time after hearing about the study from different sources. Participants who volunteer to take part in research studies wherein six hours of time is required could potentially be different from the general population of families with children with ADHD and therefore, generalizability may be limited. This should be taken into account when interpreting the results.

Another limitation was the reliance on self-report measures for data rather than objective sources of information. For the purposes of this study, self-reports were the most feasible, and unfortunately more objective measures could not be used, such as observation of parent-child interaction. The results of self-reports should be interpreted with caution. The reliability scales of self-reports were examined in order to help mitigate the potential of false reports. If an individual's report was not reliable, it was deleted from the data set.

A final limitation was the small sample size used for fathers, especially in comparison to the sample size used for mothers. Unfortunately due to the context of the current study, fathers were not always willing to complete necessary forms. This small sample size likely affected the results of some of the analyses.

## **Future Directions**

Future research examining parent-child relationships in children with ADHD may expand on the current research in a number of ways. First, it would be desirable to obtain a sample of



typically-developing children to compare to children with ADHD. Comparing typically-developing children to children with ADHD could help to better inform parents by providing an in-depth look at parent-child relationships and behaviour problems in children with ADHD. A comparison group would provide a view into whether or not the findings obtained in the current study are typical of all children or are specific to children with ADHD.

Second, due to the small sample size, comparison between genders was not possible. Future studies would benefit from a larger sample size wherein there are more females that can be studied in comparison to males. This would help to better inform strategies employed in families with a child with ADHD based on that child's gender. More informed prevention and/or intervention techniques specifically for male and females may be beneficial for families.

Finally, because this study was conducted only with children with ADHD-C, future studies may expand on the current results by examining children with all three subtypes of ADHD (i.e., ADHD-I, ADHD-HI, and ADHD-C). It could be important to view the effect of the parent-child relationship on behavioural outcomes in all three subtypes combined, as well as separately. This would add to the literature by providing an overall look into ADHD as a whole as well as its specific subtypes. This would help to better educate parents of children with all subtypes about the potential protective effects of their relationship with their children.

## **Conclusions**

This study was conducted in part of a larger study that examined the strengths in children with ADHD. The aim of the current study was to provide a view into the importance of the parent-child relationship on behavioural outcomes for children with ADHD. Parents rated their relationships with their children largely as average which was seen to be a relative strength given that children with ADHD have been found to be more difficult to parent (e.g., Johnson & Reader,

2002; Kadesjo et al., 2002). Overall, many aspects of the parent-child relationship, such as involvement and relational frustration, were found to be related to behaviour outcomes in children with ADHD. The current findings provide important implications and directions for the parent-child relationship. Future research should expand on current results by making comparisons among the different subtypes of ADHD as well as comparisons between genders.

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## Appendix A: Attachment Scale for Children

### Attachment Scale for Children

Based on the Parent Child Relationship Questionnaire: Attachment Scale

Circle **N** if the sentence **never** describes the way you feel about your mother

Circle **S** if the sentence **sometimes** describes the way you feel about your mother

Circle **O** if the sentence **often** describes the way you feel about your mother

Circle **A** if the sentence **always** describes the way you feel about your mother

- |  |   |   |   |   |
|--|---|---|---|---|
| 1. My mother knows when I will become upset.             | N | S | O | A |
| 2. My mother enjoys spending time with me.               | N | S | O | A |
| 3. My mother knows what I'm thinking.                    | N | S | O | A |
| 4. My mother can sense my moods.                         | N | S | O | A |
| 5. My mother knows when I want to be left alone.         | N | S | O | A |
| 6. When I am upset, my mother calms me.                  | N | S | O | A |
| 7. I enjoy spending time with my mother.                 | N | S | O | A |
| 8. My mother knows what I am feeling.                    | N | S | O | A |
| 9. My mother knows what to say to calm me down.          | N | S | O | A |
| 10. My mother knows how I will react in most situations. | N | S | O | A |
| 11. When I'm upset, I go to my mother for comfort.       | N | S | O | A |

### Attachment Scale for Children

Based on the Parent Child Relationship Questionnaire: Attachment Scale

Circle **N** if the sentence **never** describes the way you feel about your father

Circle **S** if the sentence **sometimes** describes the way you feel about your father

Circle **O** if the sentence **often** describes the way you feel about your father

Circle **A** if the sentence **always** describes the way you feel about your father

- |  |   |   |   |   |
|--|---|---|---|---|
| 1. My father knows when I will become upset.             | N | S | O | A |
| 2. My father enjoys spending time with me.               | N | S | O | A |
| 3. My father knows what I'm thinking.                    | N | S | O | A |
| 4. My father can sense my moods.                         | N | S | O | A |
| 5. My father knows when I want to be left alone.         | N | S | O | A |
| 6. When I am upset, my father calms me.                  | N | S | O | A |
| 7. I enjoy spending time with my father.                 | N | S | O | A |
| 8. My father knows what I am feeling.                    | N | S | O | A |
| 9. My father knows what to say to calm me down.          | N | S | O | A |
| 10. My father knows how I will react in most situations. | N | S | O | A |
| 11. When I'm upset, I go to my father for comfort.       | N | S | O | A |