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Parentification, Coping, and Distress in Siblings of Individuals with and without Attention-Deficit/Hyperactivity Disorder (ADHD)

Aranda Christine Wingsiong
University of Windsor

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Parentification, Coping and Distress in Siblings of Individuals
with and without Attention-Deficit/Hyperactivity Disorder (ADHD)

By

Aranda Christine Wingsiong

A Thesis
Submitted to the Faculty of Graduate Studies
through the Department of Psychology
in Partial Fulfillment of the Requirements for
the Degree of Master of Arts
at the University of Windsor

Windsor, Ontario, Canada

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by

Aranda Christine Wingsiong

APPROVED BY:

D. Hernandez-Jozefowicz
School of Social Work

M. Gragg
Department of Psychology

K. Babb, Advisor
Department of Psychology

September 18, 2015

DECLARATION OF ORIGINALITY

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ABSTRACT

Parentification refers to the intergenerational role-reversal within a family wherein a child is assigned the adult caregiving role. Typically-developing siblings of individuals with developmental disabilities often experience increased caregiving responsibilities compared to their peers (Cuskelly & Gunn, 2003) and face unique challenges within their sibling relationship (Petalas et al., 2009), which may place them at a greater risk for parentification. The purpose of the current study was to compare parentification experiences, coping strategies, and social and behavioural adjustment between 30 siblings (age 17 to 25 years) of individuals with Attention-Deficit/Hyperactivity Disorder (ADHD) and 179 siblings of individuals without disabilities. Contrary to predictions, no significant differences in parentification were found between the ADHD and control groups. Higher scores on the parentification variables were associated with distress for the control group, whereas only perceived unfairness was associated with higher levels of distress in the ADHD group. Socially supported coping moderated the relationship between parentification and distress, but only for the control group.

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CHAPTER 1

INTRODUCTION

Sibling relationships play an important role in an individual's social and emotional development. They may serve as a child's first intimate peer relationship and longest family relationship. Siblings also share a common cultural background, early family life, and often, the same genetic pool. Some individuals may serve as models for their siblings, while others may define themselves as different from their siblings to reduce rivalry and establish their own identity within the family (Whiteman, McHale, & Crouter, 2007). Family stress and caregiving needs may also impact sibling roles and responsibilities.

In families of children with ADHD, the family dynamic can be quite different. According to the Bowen family systems theory, typically developing siblings of individuals with developmental disabilities are profoundly affected by both the functioning of their sibling with a disability and their parents who may be under considerable stress (Kerr & Bowen, 1988). Because parents are under stress, the distribution of caregiving responsibilities within the family may be different from a family with only typically developing children. Some children may play a greater role in the lives of their siblings with developmental disabilities and face unique challenges within their sibling relationships. As a result, they may be at a greater risk for parentification (parent-child role reversal), and increased psychological distress compared to siblings of typically developing individuals. On the other hand, adaptive coping behaviours may serve as a psychological buffer, allowing siblings to adjust to

increased caregiving responsibilities and the demands of daily living. The purpose of this study was to investigate the relationship between parentification, coping style, and adjustment as it pertains to siblings of individuals with Attention-Deficit/Hyperactivity Disorder (ADHD).

To examine this, young adults who have siblings with or without ADHD completed questionnaires assessing perceived level of parentification, coping style, and symptoms of anxiety, stress, and depression. The study emphasized the subjective, self-reported experiences of these young adults. To the author's knowledge, no published research exists on parentification of siblings of individuals with ADHD. The following chapters include a review of the literature on parentification, coping, and adjustment in siblings of individuals with ADHD. The aims, hypotheses, methodology, and statistical analyses will then be discussed.

CHAPTER 2

LITERATURE REVIEW

Parentification as a construct

The term “parental child” was originally coined by (Minuchin et al., 1967) to describe a subgroup of youths who, in place of their parents, attempt to provide guidance and control over their siblings. Their study of family dynamics in impoverished areas led them to discover mothers who were so overwhelmed by the caregiving demands of their children that they “relinquished authority” (p.18) to one of their children. The authors argue that due to the instrumental role of these parental children within the family, it is important to understand their influence on the personality and adaptive development of their siblings. They also found that although parental children did have a significant impact on the socialization of their siblings, the demands of their caregiving role might also lead them to neglect their own childhood needs.

Boszormenyi-Nagy and Spark (1973) later defined parentification as, “the subjective distortion of a relationship as if one’s partner or even children was his parent. Such a distortion can be done in a wishful fantasy or, more dramatically, through dependent behavior” (p. 151). They distinguished between *temporary parentification* and *excessive parentification*. *Temporary parentification* occurs when unexpected events that place the family at disequilibrium may require a short-term role reversal between the parent and the child. For example, a single mother might become ill and depend on her eldest child to complete household tasks and oversee the family’s well being until she has recovered. For other families, this caregiving dynamic is a rule rather than an exception. *Excessive parentification* involves the child taking on the role of primary caregiver on a

long-term basis. Exposure to parentification can develop into an exploitative parent-child relationship, emphasizing both the children's obedience to their parent and the obligation to rise to meet his or her mature caregiving role. Boszormenyi-Nagy and Spark suggest that in some cases the role reversal may be a result of a parent's attempt to compensate for his or her own childhood losses. They also caution that though these parentified children may be assigned a "scapegoat role", they do not necessarily subscribe to traditional views of helplessness and victimization. At times, these children are willing caregivers that are not inferior to the rest of the family but in fact have a greater capacity for meeting the family's caregiving needs, which makes them the more appropriate candidate for providing care.

A more widely used definition of parentification comes from Chase (1999) who described it as "a functional and/or emotional role reversal in which the child sacrifices his or her own needs for attention, comfort, and guidance in order to accommodate and care for logistical or emotional needs of the parent" (p. 5). This intergenerational role reversal may manifest in two ways: *instrumental* and *emotional parentification* (Earley & Cushway, 2002). *Instrumental parentification* involves taking on physical responsibilities in the home (such as cooking and cleaning) and acting as a surrogate caregiver to their parents and/or siblings. It is different from assigning small chores to children in order to teach them about responsibility as it is marked by a greater degree of dependence on the child. The child performs majority of the household tasks, even those that are developmentally inappropriate for them. For example, a young child may be required to operate dangerous household items or administer medications to his or her parents or siblings. *Emotional parentification* involves meeting emotional needs of the parent or

other siblings or becoming the parent's confidante. Parents may share personal information that is inappropriate for the child, especially considering their level of maturity. A child may be exposed to hearing about his or her parents' adult problems and worries (e.g., infidelity) and feel responsible for parents' emotional and mental health. Both instrumental and emotional parentification may restrict the child from engaging in childhood activities and experiences. However, emotional parentification is thought to be the more destructive of the two because serving as an attachment figure for a distressed parent may be emotionally distressing for a child and may predispose them to dysfunctions during adulthood (Byng-Hall, 2008).

Theoretical Framework

One model used for the conceptualization of parentification is the family systems theory. According to Kerr and Bowen (1988), the family systems theory views the family as a unit consisting of interlocking relationships, which have a profound impact on the thoughts, feelings, and behaviours of each family member (p. ix). Other members of the family have an influence on the individual, such that a change in one person's functioning elicits a change in the functioning of other members. They are impacted by the needs, expectations, and distress of other members, while also seeking out each other's attention, approval, and support. Families experiencing high levels of stress and juggling greater caregiving demands may require a redistribution of responsibilities and a change in the family dynamic, causing some children to take on more parental roles. Distress in one parent may also impact the other parent and their children. For example, a study by Hastings and Beck (2004) reported that higher levels of distress in a parent affects parent and child well-being, and indirectly affects parenting behaviour and child

outcome. This framework suggests that high levels of distress in a parent may create disequilibrium within the parent-child relationship due to the interlocked relationships within the family unit. Thus, distress in the parent may be reflected by distress in the child.

Parentification can be understood in relation to four of the major concepts of the family systems theory: Triangles, Differentiation of the Self, Nuclear Family Emotional System, and Sibling Position. *Triangles* refer to the relationship between, and the equilibrium of, a three-person system. Increase in anxiety within a two-person system may lead to the inclusion of a third person, either as a mediator or a supporter for one of the individuals (Titelman, 2003). In the case of parentification, a parent experiencing high levels of stress while caring for his or her children may seek support from one of the siblings.

Self-differentiation, defined as family members' ability to separate their emotions from intellect and personal goals and values from others, predicts an individual's level of reactivity towards other members of the family. Children whose self-identity, opinions, and values are dependent on their parents may express a greater need to maintain harmony within a family relationship, whereas children who perceive themselves as being more autonomous may intentionally act against the needs of the relationship in an effort to exert their independence.

The literature on parentification suggests that self-differentiation may mediate the relationship between various predictors and psychological and psychological health, such the relation between chronic anxiety and the development of negative physical, emotional, and social outcomes (Knauth & Skowron, 2004). A study by Jankowski,

Hooper, Sandage, and Hannah (2013) examined the relation between parentification and mental health symptoms as mediated by perceived unfairness and differentiation of self. A sample of 783 college students was surveyed on their childhood roles and responsibilities, and adult psychological functioning. Analyses suggested that increased parentification was associated with increased perceived unfairness of their responsibilities and circumstances. Moreover, perceived unfairness was associated with decreased differentiation of self, which was associated with increase in mental health symptoms. These findings supported their hypothesized model and provided support for the differentiation of self component of the family systems.

Nuclear Family Emotional System refers to the different mechanisms used by families to respond to anxiety in order to maintain equilibrium (Catherall, 2004). Parentification may serve as a coping strategy for families experiencing distress. In caring for their siblings, parentified children support their parents by redistributing caregiving responsibilities and allowing parents to focus more on pressing family demands. For example, immigration to another country may pose acculturation challenges for parents, which may require children to assume greater responsibilities in order to support their family during this transition. Titzmann (2012) investigated instrumental and emotional parentification in 197 native German adolescents and 185 ethnic German immigrant adolescents, and found that language brokering (adolescents serving as a translator for parents in their daily errands and interactions, including banking) was associated with both types of parentification. Adolescents who reported a greater acculturation gap between them and their mothers also reported greater emotional parentification. These findings suggest that adolescents of newly immigrated families

may take on a greater caregiving role in order to support their parents during their transition. Because adolescents tend to demonstrate greater acculturation than their parents, they may provide comfort and care for their parents, thus serving as attachment figures for their parents who are experiencing difficulties adjusting. Instrumental parentification in this study was also predictive of child self-efficacy (defined as the perceived ability to cope with daily hassles and adapting to stressful life events). The study demonstrates how parentification may aid the family in responding to the challenges of adapting to a new country and culture.

Parentification may also provide support to a family transitioning from a difficult situation or dealing with other stressful events. For example, much of the literature on parentification has specifically examined children with parents who are alcoholic or divorced. Because alcohol dependence impacts cognitive functioning and behaviour, alcoholic parents face difficulties in meeting their family's caregiving needs. These responsibilities may then fall on their spouse, and even their children. Research suggests that parents who misuse alcohol exhibit impairment as a result of alcohol abuse, placing a great degree of stress on their families, which may lead to changes in familial roles (Jurkovic, 1997).

A similar change in family dynamics is observed in families of divorced parents, in which children sometimes assume the role of the absent parent. For some children, this may be a temporary period of stress as they support the family's transition post-divorce, whereas others may assume a parental role well into adulthood. Jurkovic, Thirkield, and Morrell (2001) examined parentification in 382 children of divorced and nondivorced families of European and African American descent. Their findings suggested that

children from divorced families exhibited greater emotional and instrumental caregiving and reported experiencing greater unfairness in their families compared to children from nondivorced families. The term unfairness is defined as perceived inequitable relating within the family in terms of the distribution of responsibilities, the degree to which the individual can rely on others, and the acknowledgement they receive (Hooper & Wallace, 2010). It was found that these forms of parentification in divorced families might persist in late adolescence and young adulthood, with some participants providing even more emotional support to their families as an adult. The authors suggested that this may be due to parentified children assuming a “junior partner role” and providing additional emotional support to their newly single parent. The parent-child relationship also increasingly becomes symmetrical over time as the child moves into adulthood, which can lead to an increase in emotional support. By assuming greater responsibilities and a caregiving role, children are able to support their families during stressful events. However, high levels of parentification may also have a long-lasting, negative impact on the familial experiences and adjustment of these children.

The family systems theory also takes *Sibling Position* into consideration, recognizing that birth order may be reflected in the role individuals usually adopt in their relationships. Age has been correlated with parentification, with the eldest child usually assuming greater caregiving duties. McMahon and Luthar (2007) examined the characteristics and consequences of caretaking burden in a sample of 356 children living in inner-city poverty. Greater caregiving burden for children was associated with being the oldest child, greater maternal employment, greater maternal anxiety, and less maternal education. Greater caregiving responsibility was also associated with older

children. The number of children in a family may also impact the distribution of responsibilities within a family. Larger families with multiple children may require greater support from older children in order to fulfill its caregiving needs. By enlisting the help of their children, parents have the opportunity to focus more of their energy towards more pressing demands, such as working to financially provide for their family. The eldest child may then take on greater responsibility for their younger siblings. On the other hand, caregiving responsibility may be more equally shared among siblings of larger families. The degree of responsibility placed on the individual may play an important role in sibling coping and adjustment, and positive affect associated with the sibling relationship.

Orsmond, Kuo, and Seltzer (2009) examined sibling relationships and wellbeing in 406 adolescents and adults with a sibling with Autism Spectrum Disorder (ASD). They found that adolescents and adults belonging to a larger family and who had siblings with fewer behaviour problems were more likely to report a positive relationship with their siblings. Participants whose sibling had fewer behaviour problems reported greater sibling engagement in shared activities, regardless of the participant's coping style. However, when the sibling with ASD had high levels of behaviour problems, participants who used more problem-focused coping strategies also reported that behaviour problems had a greater negative impact on sibling engagement. Adults who had a brother or sister with ASD who was younger than them or who had fewer behaviour problems also reported greater engagement in shared activities. Hence, coping style, sibling position and family size may interact with the degree of caregiving demands in a family, to impact sibling caregiving responsibilities. Taken together, factors such as anxiety or stress in the

family, self-differentiation, family dynamic, and sibling position -- all of which impact the family system -- may also have an effect on parentification in the family.

Impact of Parentification

Negative Effects of Parentification

The literature on parentification has grown in the past decade to include studies examining parenting styles, parent-child relations, family dynamics, child and adolescent development, attachment behaviour, and family therapy. Previous work on parent-child relationships suggests that heightened levels of parentification are primarily associated with poorer child outcomes. Peris, Goeke-Morey, Cummings, and Emery (2008) conducted a longitudinal examination of adolescent self-reported parentification in relation to youth and adult behaviours in a community sample of 83 families.

Parentification was associated with increased marital conflict, youth involvement in marital conflict, decreased warmth within a parent-child relationship, increased youth-perceived threat from parental discord, poorer child social competence in close friendships, and youth internalizing and externalizing behaviour. Peris and colleagues also reported that maternal parentification was positively correlated with youth self-reported negative behaviour (internalizing, externalizing, and total behaviour problems) but not with parent reports of this behaviour. The study highlights that parent experience of distress may inhibit their ability to recognize problematic behaviours in their parentified children.

Parentification may limit children's opportunities for engaging in developmentally appropriate experiences and may have an impact on their social, academic, and psychological functioning. Children of parents with a mental illness spend

a considerable amount of time worrying about their family, which can affect their school performance and social commitments outside of the home (Gray, Robinson, Seddon, & Roberts, 2010). Providing care for their parents and/or siblings can be time consuming, and their responsibilities may interfere with other aspects of their lives. They face additional physical and emotional challenges as they strive to complete household chores while also monitoring the health and well-being of their family. For example, Bauman and colleagues (2006) interviewed 50 mothers diagnosed with HIV and their children age 8-16 years, from Mutare, Zimbabwe and New York, USA. They examined mother and child reports on child caregiving, child engagement in household responsibilities, and parent and child mental health. Results showed that children provided substantial amounts of responsibility for cooking, cleaning, and household tasks, and served as their parents' confidants. Children who reported greater maternal disability also reported greater child caregiving responsibilities. Degree of caregiving responsibility was not related to child age, gender, or presence of other siblings. Although the study did not demonstrate a direct relationship between child caregiving and depression, children from both groups reported high rates of depressive symptoms, with two-thirds of the Mutare child participants presenting clinically significant depression scores.

Parentification has been linked to identity development, relationship roles, and management of rejection and interpersonal stress (Earley & Cushway, 2002). Studies on children of parents who abuse alcohol, have a disability, or have been diagnosed with an illness suggest that parentification may have an effect on children's perceived social competency and self-concept. For example, Godsall, Jurkovic, Emshoff, Anderson, and Stanwyck (2004) examined parentification and global self-concept in high and low

functioning children of alcoholics and non alcoholics. The low functioning children were either hospitalized for psychiatric reasons, under the custody of child services, or living in a children's group home, whereas high functioning children were students identified by their school as being academically skilled, emotionally stable, disciplined, and a positive role model. The children completed a survey on measures of self-concept, parentification, and views on parental drinking. Low functioning children reported greater parentification compared to high functioning children. Children of alcoholic parents also reported greater parentification compared to children of non alcoholic parents. Their findings indicated that parentification partially mediated the relation between parent alcohol misuse and negative self-concept in their child.

Parentification can also impact the multigenerational transmission process described within the family systems theory, which suggests that older generations might pass on particular health, emotional, and physical traits to younger generations. To evaluate this aspect of the family systems theory, Hooper, Doehler, Jankowski, and Tomek (2012) examined the relationship between parentification and parent-adolescent alcohol use, body mass index (BMI), and depressive symptoms. Although parentification did not predict adolescent alcohol use, they found that it served as a moderator between greater parent alcohol use and higher levels of adolescent depression, with parentified adolescents reporting greater depression. It also served as a buffer for the relationship between parent and adolescent alcohol use, such that increased parentification scores were associated with increased adolescent alcohol use only when parent alcohol use was high.

Overall, there is considerable evidence supporting the negative impact of parentification on child and youth outcomes. Heightened levels of parentification have been associated with poorer social competency, negative self-concept, increased internalizing and externalizing behaviours, and poorer parent-child relationship. These difficulties may manifest across various domains within the youth's life, which may then lead to serious implications in adulthood.

Benefits of Parentification

The large number of studies emphasizing the adverse effects of parentification should not deter us from recognizing some of its advantages. The literature on resilience suggests that some children who are exposed to adverse conditions (e.g., poverty, war, and natural disaster) may experience growth, or enduring changes related to positive adaptation, which can serve as a buffer to their adverse circumstances (Bonanno & Diminich, 2013). Temporary parentification can contribute to children's growth and responsibility. Long-term parentification has also been observed to promote similar traits. Hooper, Marotta, and Lanthier (2007) conducted a survey of 156 adult students to examine the relationship between parentification and posttraumatic growth (positive changes in an individual as a result of encountering adversity and life challenges), and distress. Other standard predictors of growth and distress were included, such as resilience attitude, attachment, and self-differentiation. The findings suggest that emotional parentification was predictive of distress. However, both instrumental and emotional parentification also predicted a mild level of posttraumatic growth. The study highlights the potential benefits of parentification and the limits of the relationship between parentification and psychopathology.

Parentified children also experience benefits pertaining to interpersonal and adaptive skills. In order to meet the caregiving demands of their family, it is necessary for parentified children to become more independent while also being sensitive to the needs of others. This sensitivity may contribute to their development of specific interpersonal skills and behaviours. For example, immigrant adolescents who report experiencing parentification were also more likely to report perceiving their family as cohesive and supportive of their independence (Walsh, Shulman, Bar-On, & Tsur, 2006). Despite their parent-child role reversal, these adolescents maintained a positive relationship with their parents through empathy and caregiving.

Moreover, emotional parentification creates a stronger emotional bond between parent and child, which may result in excessive emotional dependence on the child but also promote maturity. Children who are exposed to their parent's emotional difficulties may be better prepared to manage their own emotional hardships. Early introduction to adult issues may prompt these children to sharpen specific adaptive skills at an earlier stage compared to their peers. For example, a study by Tompkins (2006) examined the relationship between parentification, child adjustment, and parenting in 9 to 16 year old children of HIV-positive and HIV-negative mothers. The study investigated different types of child parenting roles: non-specific adult role taking (e.g., doing dishes), parental role to the parent (e.g., parent seeking advice from child), parental role to siblings (e.g., child disciplining siblings instead of parents), and spousal role to the parent (e.g., parent sharing adult secrets with a child). Their findings suggested maternal report of child taking on parental role was associated with lower child self-reported depressive symptoms and greater child self-reported social competence. Children who reported

engaging in greater non-specific adult role taking also reported greater social competence. Furthermore, a comparison of HIV-negative and HIV-positive groups on the four parentification styles demonstrated different results. Children of HIV-negative mothers who reported greater parenting of their siblings, and non-specific adult role taking also reported fewer externalizing problems. On the other hand, children of HIV-infected mothers who reported greater parenting of their siblings also reported greater externalizing difficulties. Whereas child parenting of siblings may promote competence in children of HIV-negative mothers, it may have different implications for children of chronically ill parents. Although previous research on parentification has linked it to maladaptive parenting and child outcomes, this study provides some evidence for the contrary and highlights the potential benefits of parentification.

Overall, the impact of parentification on child growth and development make it an important area of study. Knowledge of its effects on interpersonal relations, self-concept and identity formation, and internalizing and externalizing behaviours may help us to better predict child outcomes and understand the mechanisms that contribute to adjustment problems in individuals and families.

Coping Behaviour

Lazarus and Folkman (1984) defined coping as “the constantly changing cognitive and behavioural efforts to manage the specific external or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). It emphasizes the subjective experience of the individual and their effort to manage life’s demands. Coping has been framed within Lazarus and Folkman’ Transactional Model of Stress and Coping, which describes cognitive appraisal as resulting from an interaction between the

individual and his or her environment. Within this framework, stress is understood as the disequilibrium between the demands we face, and the resources available to us.

The model describes two stages of coping that occur simultaneously rather than consecutively: primary appraisal and secondary appraisal. Primary appraisal involves evaluation of the meaning of the event and its relevance to the self. Events may be classified into one of three categories: a threat (concern about a potential harm), challenge (a positive response emphasizing learning experience), or harm-loss (damage that has already occurred). Secondary appraisal refers to the individual's feelings towards the stressor and involves a reassessment of the situation. Individuals may turn to internal options (e.g., inner strength) and/or external sources (e.g., peers) when dealing with a stressful event. Lazarus and Folkman distinguish between problem-based coping (defining the problem, generating solutions, developing skills to meet stressor, and reappraising) and emotional-based coping (avoiding, distancing, accepting, seeking emotional support, selective attention, alcohol, and venting anger). Problem-based strategies involve having control of the situation whereas emotional-based strategies exercise little control and emphasize development of strategies for emotion regulation.

Dealing with stressful demands can have a great impact on the well-being of individuals, especially if they lack the ability and the resources to manage the stress. Coping has been reliably linked to psychological distress. Adaptive coping strategies focused on acceptance and defining the problem have been associated with more positive emotional adjustment compared to maladaptive coping strategies focused on avoiding or wishing the problem away (Kneebone & Martin, 2003). A study by Crowe and Lyness (2013) surveyed 165 family members of individuals with a mental illness on areas of

family functioning, coping, and distress. Their findings provided evidence in support for the relationship between the three variables. Passive appraisal coping, defined as the family's ability to accept problematic events and minimize reactivity, positively predicted greater levels of family communication and satisfaction. Greater use of social support coping predicted family cohesion, whereas greater use of reframing coping was related to greater family communication and satisfaction. The findings also suggested that individuals reporting greater caregiving also reported greater total distress and less family communication and satisfaction. Those who reported being closer to the individual with mental illness were more likely to use positive coping measures (reframing coping and family support coping) that were associated with greater family satisfaction and flexibility.

The literature on coping and parentification provides strong evidence for each variable's distinct relationship with psychological distress. However, virtually no study has examined parentification as it relates to coping. One study by Thastum and colleagues (2008) did examine parentification as a coping strategy for children of parents with cancer. They analyzed children's interview responses on questions pertaining to how they were informed of their parent's illness, their perception of their parent's emotional state, and their coping experience as it relates to their parent's coping and concerns. The study identified five coping strategies in children: helping others, parentification, distraction, keeping it in the head, and wishful thinking. In terms of parentification, some children reported subduing their own needs in order to support their parents and manage the family. Parentification was related to greater self-worth for children who reported receiving emotional support, but not in children who did not identify as receiving

emotional support. Contrary to the literature on parentification, parents did not require or expect their child to engage in parental role taking. Moreover, whether parentification is an adaptive or maladaptive strategy was influenced by the child's emotional coping behaviours, and specifically, whether they received emotional support from others. The study highlights the need to further explore the relationship between parentification and coping, especially in populations of children at risk for developing psychological distress. Considering that children in families of individuals with disabilities may be at risk for more parentification and perhaps greater distress, it is important to examine coping as it relates to both parentification and distress. The stresses of meeting caregiving demands may also be particularly high in cases where the disability impacts the family member's social and adaptive functioning.

ADHD as a Developmental Disability

The Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (American Psychiatric Association, 2013) describes neurodevelopmental disorders as early onset disorders “characterized by developmental deficits that produce impairments of personal, social, academic or occupational functioning” (p. 31). This includes ADHD, autism spectrum disorders (ASD), Down syndrome, Cerebral palsy, Intellectual disability Learning disability Language disorder, Blindness, and Moderate to Profound hearing loss. Individuals diagnosed with a developmental disability are characterized as having “significantly greater difficulty than most people with intellectual and adaptive functioning and have had such difficulties from a very early age (or the developmental period prior to age 18)” (National Coalition on Dual Diagnosis, 2009). For example, ADHD is characterized by a persistent pattern of inattention (e.g., wandering off task,

difficulty sustaining focus, and disorganization) and/or hyperactivity-impulsivity (e.g., excessive motor activity, fidgeting, or talkativeness) that interferes with functioning or development (American Psychiatric Association, 2013). Although the symptoms associated with neurodevelopmental disorders differ from one individual to another, they can produce lifelong impairments in the areas of social, academic, and occupational functioning. Recent studies estimate that ADHD occurs in 1 in every 11 children (Centres for Disease Control and Prevention, 2014).

Parenting Children with ADHD

Parent caregiving experience is impacted by the needs, expectations, and distress of a child with Attention-Deficit/Hyperactivity Disorder (ADHD). As primary caregivers, parents of children with ADHD face two major challenges: (1) caring for their child with disabilities, which includes management of problematic behaviour, and (2) balancing their own stress while overseeing the well-being of the rest of the family (Seltzer, Shattuck, Abbeduto, & Greenberg, 2004b). The majority of the literature defines problematic behaviour as negative or maladaptive behaviours signifying difficulties within the domains of emotional functioning, conduct, hyperactivity, and peer relationships (Mikami & Pfiffner, 2008; Orsmond & Seltzer, 2007a; Totsika et al., 2011). These may include frequent temper tantrums, increased worrying, being easily distracted, and have a limited number of meaningful relationships. Problems with juggling caregiving responsibilities and problematic behaviours of the child with ADHD may contribute to parent psychological distress.

There is ample evidence to suggest that families of children with ADHD experience significant caregiver burden in providing for, and supporting their child.

Theule, Wiener, Tannock, and Jenkins (2012) conducted a meta-analysis on parenting stress in families of children with ADHD using 38 publications released between 1983-2007. The studies involved children ranging from age 3 to 12 years old and diagnosed with ADHD. The studies compared children with ADHD to children without ADHD, as well as children with other disorders, including autism spectrum disorders (ASD), learning disabilities (LD), developmental delays, internalizing disorders, and unspecific clinical disorders (i.e., non-ADHD clinical referrals to a health centre). The analyses suggested that parents of children with ADHD experience more stress than parents of children without ADHD, with the severity of ADHD symptoms significantly associated with parenting stress. Child gender moderated the relationship between ADHD symptoms and total stress, in that lower levels of stress were reported in studies consisting of mostly girls with ADHD. Additionally, greater levels of parent-reported child conduct problems and parent depressive symptoms were also correlated with higher levels of parenting stress. A comparison between the ADHD, ASD, LD, DD, internalizing disorders, and unspecific clinical disorders showed that parents of children with ADHD did not experience any more stress than parents of other clinically referred children. These studies suggest that the degree of caregiving demands within a family may contribute to parent quality of life and may vary depending on child individual factors. Children with ADHD who demonstrate greater conduct problems, oppositional behaviours, and/or externalizing behaviours may require more caregiving demands from their parents, compared to other children with disabilities who do not demonstrate these negative externalizing behaviours. These children may need more supervision and support with daily tasks, which can create additional stress for their parents.

Individuals with ADHD and their families face challenges directly related to ADHD symptomatology, as well as secondary demands that stem from these symptoms. ADHD is characterized by deficits in attention, planning and organization, working memory, self-control, and behavioural skills, which interfere with functioning and development (American Psychiatric Association, 2013). Individuals with ADHD have problems with sustained attention in tasks, and exhibit hyperactivity and impulsivity. They exhibit cognitive problems on tests of attention, executive functioning, and memory. Individuals with ADHD often fail to give close attention to details and tend to make careless mistakes when completing tasks. As a result, they require additional supervision and support across multiple settings (e.g., home and school). Parents may need to break down and repeat instructions multiple times in order to account for deficits in attention and memory and to improve comprehension. Due to their attention deficits, individuals with ADHD have difficulty following through tasks, which can lead to problems with organization. Individuals with ADHD often have difficulty keeping belongings in order and often lose things necessary for tasks. The onus is then on their parents to provide additional support in developing and practicing strategies for addressing deficits in day-to-day planning and organization. The hyperactive and impulsive behaviours that characterize ADHD may require parents to manage and appropriately respond to frequent fidgeting and squirming, restlessness, and inability to wait for one's turn. A study by Joyner, Silver, and Stavinoha (2009) examined stress in parents of children (age 8 to 12 years old) with ADHD, and found that parents who reported greater problems with their child's executive functioning, particularly their child's challenging behaviours, also reported greater caregiving stress. Although the

implementation of routines and structured schedules allow parents to aptly meet the caregiving needs of the child with ADHD, this can be taxing on the family as parents juggle additional caregiving demands.

Neurodevelopmental disorders can produce lifelong impairments in the areas of social, academic, and occupational functioning, which can place greater caregiving demands in the family and result in parentification in non-ADHD siblings. Parents of children with a history of ADHD report that their child experiences nearly 3 times as many problems (21.1%) with peer relationships and are 10 times more likely (20.6%) to experience difficulties that interfere with forming friendships compared to children without ADHD (7.3% and 2.0%, respectively; Centres for Disease Control, 2015). Despite the motivation for social interaction, problems with executive functioning and self-regulation may hinder the ability of children with ADHD to develop the skills necessary for positive relationships. The combination of attention deficits and hyperactive/impulsive behaviours may present challenges in social relationships for individuals with ADHD. Peer relationships are often disrupted by peer rejection, neglect, or teasing (American Psychiatric Association, 2013). Attention deficits may contribute to difficulties maintaining interest and focusing on social activities or interactions, especially endeavours that are outside the scope of the individual's interests. When spoken to directly, individuals with ADHD seem to be distracted. Lack of sustained effort in individuals with ADHD may then be misinterpreted as laziness, irresponsibility, or failure to cooperate.

Hyperactive/impulsive behaviours are also associated with problems with turn-taking and reciprocity, which are central to developing positive social interactions. The

inability to sustain attention when spoken to, accompanied by restlessness and disruptive behaviours may evoke negative responses from others and result in limited and poor social interactions. Graziano, McNamara, Geffken, and Reid (2011) examined ADHD symptomatology and parenting stress in 80 children diagnosed with ADHD, and found that the severity of hyperactivity/impulsivity symptoms was related to parenting stress. This relationship was mediated by children's perceived comorbid aggression levels emotional lability or unstable emotional displays, and deficits in executive functioning. Their findings suggest that child deficits in self-regulation can impact caregiving demands across multiple domains of the child's life, such as their emotional, cognitive, and behavioural domains. Thus, parents of individuals with ADHD may experience greater caregiving stress as they strive to also meet their child's needs within the social domains of their lives.

Although children may be diagnosed with a ADHD at an early age, caregiving needs may extend to adulthood. Parents of children with ADHD help them manage and cope with attention, planning and organization, as well as deal with hyperactive/impulsive behaviours, a task that can be particularly challenging as the individual with ADHD transitions into adulthood. Although there is some debate regarding the accuracy and methodology for persistence rate estimates (ranging from 40-66%; Karam et al., 2015; Mao, 2012; Kessler et al., 2006), there is consensus across the literature regarding persistence of childhood ADHD symptoms into adolescence and adulthood. A 13-year longitudinal study by Barkley, Fischer, Smallish, and Fletcher (2002) examined the persistence of ADHD into young adulthood in 218 participants at ages 19 to 25 years old. Their findings revealed that depending on the diagnostic criteria,

46% (DSM-III-R) and 66% (DRC) of the hyperactive group met the criteria for ADHD in young adulthood. It is also estimated that 4.4% of adults between age 18 to 44 years experience some symptoms and disabilities related to ADHD (Kessler et al., 2006). Thus, the overall responsibility of caring for a child with ADHD may be a lifelong endeavour for some families. ADHD is also characterized by problems with behavioural inhibition and foresight, which are foundational for self-control and self-regulation (Ramsay, 2010). These are necessary for developing skills for independence, as well as occupational planning. As adolescents with ADHD transition into young adulthood, their symptoms may be complicated by changes in their cognitive, emotional, and physical development. The school curriculum becomes more challenging and there are greater expectations for organization, responsibility, and maturity. Difficulties in social interactions may become more pronounced as peer relationships take on a major role in their daily lives. Problems with executive functioning may impact various domains of the young adult's life, including their social and occupational functioning. Individuals with ADHD are more likely to experience unstable interpersonal relationships, as well as report occupation-related difficulties (unemployment, job loss, and academic underachievement) compared to individuals without ADHD (Cadman et al., 2012). Thus, parents are called to adjust to the needs of their child with ADHD as they transition into adulthood, addressing attention and behavioural problems, as well as preparing them for independence. Understanding the caregiving demands and length of caregiving commitment in families of individuals with ADHD is important.

Siblings of Individuals with ADHD

Role and responsibilities. Previous studies on the experience of families of individuals with ADHD have primarily focused on parental experience and few have examined the experiences of typically developing siblings. Siblings play an important role in the lives of individuals with ADHD. As a member of the same family unit, they share a common cultural and genetic background, which can influence their childhood and family experiences. Because siblings are closer in age to each other than to their parents, they often serve as the first intimate peer relationship for the child with ADHD and often end up being their longest family relationship. Typically developing children have to adjust to needs and the behaviours of their sibling with a disability, and are thus impacted by the experience of growing alongside a sibling who exhibits social, academic, and occupational deficits. Family stress and caregiving needs can impact sibling role and responsibilities. Because having a child with ADHD usually elicits greater caregiving demands, siblings may be more involved in caring for the child with a ADHD compared to their peers.

There is a scarcity of research examining the relationship between individuals with ADHD and their unaffected siblings, and fewer exist on the role of siblings in the lives of individuals with ADHD. A study by Mikami and Pfiffner (2008) compared 77 children with ADHD and 14 controls, and found that children with ADHD report greater conflict in sibling relationships. Greater levels of externalizing and internalizing behaviours in the individual with ADHD were also associated with less warmth and closeness. These findings suggest that behaviours in the individual with ADHD may impact their nonaffected sibling and the sibling relationship. Defining sibling roles and responsibilities is important because caring for an individual with a ADHD is a lifelong

commitment for many families. As such, siblings may be expected to take on the role of primary caregiver of the sibling in their parents' old age or in the event of their parents' death.

Families face unique challenges in caring for an individual with ADHD, which may contribute to the parentification of the typically developing children in the family. According to the family systems theory, siblings without ADHD may be expected to be more independent as the family shifts their focus on managing the hyperactive or impulsive behaviours in the individual with ADHD. Parentification may also be used as a coping strategy, allowing the family to cope with daily stresses. Typically developing siblings may be expected to assume greater responsibility in the family in order to help their parents enforce behavioural rules and promote strategies for maintaining focus and organization. Because caring for a child with ADHD may result in higher levels of stress in parents, enlisting the support of the sibling without ADHD may reduce parental stress. Older siblings of individuals with ADHD may also be more vulnerable to parentification as they are expected to be more mature and responsible for their sibling with ADHD, particularly in their parent's absence.

Psychosocial impact and adjustment. For some typically developing children, growing up with a sibling with a ADHD can be an enriching experience, whereas others may face social, emotional, and health problems. Smith, Brown, Bunke, Blount, and Christophersen (2002) examined the relationship between mothers and their sons with ADHD, as well as sibling relationships between the individual with ADHD and their younger siblings. They found that families of children with more severe ADHD symptoms tended to report greater conflict in the relationship between the child with

ADHD and their sibling. Greater symptoms in the child with ADHD was predictive of greater conflict in the sibling relationship, suggesting that managing ADHD symptoms may be taxing on family members of individuals with ADHD. The study also examined the relationship between family conflicts and psychosocial adjustment, and peer competence of siblings of children with ADHD. It was found that non-ADHD siblings with higher levels of peer competence (as reported by their teachers) tend to belong to families where mothers reported greater conflict with their child with ADHD. One of the proposed reasons for these findings is that non-ADHD siblings may develop good social coping from their interaction with, and caregiving responsibilities related to, their sibling with ADHD. The findings of these study suggest that the challenges associated with growing up with a sibling with ADHD may be associated with both positive and negative experiences

Typically developing siblings also face problems with peer reactions pertaining to the condition of their sibling with a developmental disability. For example, Barr and McLeod (2010) conducted a thematic analysis of the qualitative contributions to an online social support website for child and adolescent siblings of individuals with disabilities (including developmental disabilities, physical impairment, and other chronic illnesses). The qualitative analysis yielded three major themes with respect to their subjective experience growing up with brother or sister with a disability. These themes involve strangers staring and expressing negative attitudes towards the child with a disability, as well as peers' lack of understanding about and offensive comments towards the child with a disability. Additionally, siblings reported experiencing increased

disruption of family plans, and receiving less attention from family members while also receiving increased responsibilities.

As parents spend more time attending to the child with a disability, they may also have higher expectations for the typically developing sibling's level of independence and maturity. These siblings may be expected to adjust to a unique family dynamic, which centre on meeting the caretaking needs of the child with ADHD. In less cohesive families, children may have less knowledge about their sibling's disability and perceive their current situation as unfair. These typically developing children may see their siblings as privileged and they may indulge in attention-seeking behaviour.

Typically developing siblings may also be directly affected by the behaviour and well-being of the child with ADHD, and exhibit adjustment problems. Siblings of individuals with severe symptoms tend to experience more problematic behaviours and difficulty adjusting compared to their sibling interactions. For example, Kendall (1999) interviewed and analyzed diary data from 11 families to investigate the personal experiences of individuals living with a sibling with ADHD. The study suggested that disruptive behaviour in the sibling with ADHD impacted the participants in terms of victimization, caretaking, and sorrow and loss. First, children reported being victimized by the aggressive behaviour (e.g., physical and verbal) of their sibling with ADHD. They also expressed that they felt the family prioritized their sibling's behaviours when making family decisions, such as planning for events and trips. Second, the participants reported that their parents expected them to provide care for their sibling with ADHD. Caregiving tasks consisted of providing supervision, giving medication, helping with homework, resolving conflicts with others, and managing aggressive and impulsive behaviours. For

some participants, this caregiver role was a positive experience that allowed them to support their parents, while others reported feeling resentment due to their parent's expectations. Lastly, participants described feelings of anxiety, worry, and sadness about the disruption in the family resulting from their sibling's behaviour. They were also saddened by the expectation to be more independent as their parents shifted their focus on their sibling with ADHD. Overall, the findings suggested that managing behaviours associated with ADHD can create challenges for families, which may lead children to assume a caregiving role towards their sibling with ADHD. The study further highlights the impact of caregiving stress on the family system in families of individuals with ADHD.

By focusing on parenting behaviours, problematic behaviours in the child with disabilities, and peer relationships, the literature on sibling adjustment emphasizes an environmental approach to identifying risk factors associated with anxiety and depression. This has propelled researchers to advocate for increased attention to the genetic components of internalizing disorders. Twin studies on typically developing siblings have investigated genetic risk factors for child anxiety and depression. These studies estimate that 30 to 80% of the variance in children's trait anxiety may be associated with genetic factors, with a portion of the variance associated with siblings' non-shared biological and social environment (Eley et al., 2003; van Beijsterveldt, Verhulst, Molenaar, & Boomsma, 2004). Van Ort and colleagues (2011) investigated preadolescence risk factors for anxiety symptoms in a sample of 2,200 typically developing children age 10 to 12 years across a 5-year interval. They reported parent prevalence rates for depression (27% maternal and 15% paternal) and anxiety (16%

maternal and 6% paternal). Using a twin model for assessing genetic risk factors for psychiatric disorders, genetic risk for lifetime internalizing problems was calculated as 54% for combined parent depression and 43% for combined parent anxiety.

There is growing interest in understanding the prevalence of internalizing disorders in individuals with siblings with ADHD. Although there is strong evidence for the relationship between parental stress and degree of caregiving demands for a child with ADHD, there are mixed findings regarding the nature of this relationship for individuals who have siblings with ADHD. A study by Jones, Welsh, Glassmire, and Tavegia (2006) examined psychological functioning in individuals who have siblings with ADHD. They found higher levels of anger among individuals with siblings with ADHD compared to the control group. They also hypothesized that individuals in the ADHD group would report greater anxiety and depressive symptoms but this was not supported.

On the other hand, Listug-Lunde, Zevenbergen, and Petros (2008) investigated internalizing symptoms in 41 children and adolescents who had siblings with ADHD and found that parents in the ADHD group reported higher levels of internalizing symptoms for the non-ADHD sibling. There was no evidence to support group differences in child self-reported internalizing symptoms. Overall, these studies suggest that there may be more to caregiving and internalizing symptoms in individuals with siblings with ADHD and suggest that there may be differences between child- and parent-reported child anxiety and depression.

The research on the relation between coping and psychological distress would suggest that the coping behaviours of the typically developing sibling might be predictive

of their adjustment. However, there are mixed findings pertaining to coping in siblings. Social support seeking has been associated with an increased in both positive and negative typically developing sibling behaviours. Because of the scarcity of research on the experiences of individuals living with a sibling with ADHD, we turn to literature on autism spectrum disorders (ASD) as a starting point for understanding the relationship between coping styles and distress within this population. For example, Rivers and Stoneman (2003) studied sibling relationships in sibling-parent dyads of 50 families of children with autism. They found that in families with high marital stress whose parents actively seek informal social support (e.g., friends and relatives), siblings report greater satisfaction with the sibling relationship and were more likely to exhibit empathy or concern and be involved with the child with autism. Increased use of formal support (e.g., professional health providers) also served as a buffer for the negative effects of marital stress on positive behaviour and satisfaction with parenting in typically developing siblings. On the other hand, parents who reported actively seeking greater formal support also reported increase in the negative behaviours of their typically developing child as marital stress increased. It is unclear why greater use of formal support coping was related to a more positive sibling relationship, but also related to greater sibling negative behaviour.

One possible explanation for this effect may be that families of children who exhibit greater negative behaviours have exhausted their informal support resources in their effort to manage sibling behaviour and have resorted to professional supports. In contrast, siblings with less negative behaviour may be manageable even without formal help. The relationship between sibling support seeking and sibling negative behaviour

may also be impacted by the age of the sibling. Orsmond, Kuo, and Seltzer (2007) conducted an ongoing longitudinal study of sibling relationship and well being in families of 406 typically developing adolescent and adult siblings of individuals with ASD. They found that adolescents reported engaging in greater emotion-focused coping strategies and fewer problem-focused strategies, as well as greater social support compared to adult siblings. However, when adolescents engaged in more problem-focused coping, it had a buffering effect on the negative effects of behaviour problems on the sibling relationship. Greater perceived parental support was related to positive sibling relationship, but only for adult siblings. This suggests that adolescent use of fewer adaptive, problem focused coping strategies may contribute to negative sibling behaviour, despite their use of more social support.

In summary, siblings play an important role in the development of the child with ADHD, and growing up with a child with ADHD may have behavioural and psychosocial implications on sibling development. Typically developing siblings may have greater caregiving responsibilities compared to their peers and assume a greater caregiving role, as their parents grow older. Some report experiencing social isolation, reduced family leisure time, and negative attitudes from others regarding their sibling. Whereas research on the adjustment of caregiver parents of children with ADHD is considerably established, there are few mixed findings about sibling adjustment.

Study Rationale and Overview

Overall, despite the increase in research on the experiences of individuals growing up with a sibling with disabilities, we know very little about how typically developing individuals adjust to the unique caregiving challenges of their sibling with

ADHD. A review of the literature related to social, emotional, and behavioural adjustment of typically developing siblings of individuals with disabilities presents some of the methodological challenges in the literature (Hodapp et al., 2005), which includes issues of comparison groups, reliance on self-report, and limited knowledge of potential mediators and moderators that may contribute to predicting sibling outcomes. These issues will be further discussed below.

A considerable number of studies on the adjustment of siblings of individuals with neurodevelopmental disabilities have compared across varying disabilities, such as ADHD and ASD, and neglect to include a control group of individuals with typically developing siblings. For example, Heller and Arnold (2010) reviewed twenty-three studies and their findings suggested a generally positive view of the effects of having a sibling with a developmental disability. Eight of the observed quantitative studies have been developed from the same large data set collected by Seltzer, Greenberg, Orsmond, and Lounds (2005), but included different group comparisons. Although some studies included a comparison group, they focused on differentiating between two types of developmental disabilities and very few involved a control group of individuals whose siblings did not have a disability. The inclusion of a sibling control group can allow us to make clearer conclusions about the experiences of these siblings compared to their peers who have siblings with ADHD.

Historically, the literature on the subjective experience of families of children with disabilities has predominantly focused on maternal experiences. Stoneman (2005) suggests that the literature is marked by a scientific inertia, as work in this area has been restricted to the same measurements and questions. There is a focus on the mother-child

relationship, with a limited number of studies directly examining parentification as it pertains to the impact on the child and even fewer studies directly examining the experiences of parentified siblings. Moreover, the literature on sibling experience has largely depended on parent reports rather than directly accessing sibling perspectives (Meadan, Stoner, & Angell, 2010). This poses some concerns, as sibling self-reports may be more predictive of their own adjustment compared to maternal reports of sibling adjustment. Indeed, there is evidence to suggest that children's self-reported scores on parentification were greater than mothers' report of child parentification (Tompkins, 2006). Despite the scarcity of studies on sibling experience, research suggests that siblings may serve as valuable informants. A study by Lobato and Kao (2002) examined the efficacy of an integrated sibling and parent group intervention focused on increasing sibling understanding and adjustment to chronic illness and developmental disability, and reported a significant improvement in sibling knowledge at 3-month follow-up. Interestingly, the majority of the siblings (age 8 to 13 years) were also able to accurately name and explain their brother or sister's disorder even prior to the intervention, which suggests high level of accuracy for sibling-reported developmental disability diagnosis even in younger children.

Lastly, Hodapp and colleagues (2005) suggest that mixed findings in the literature on individuals who have siblings with disabilities may be due to interactions between variables, and that future research should consider the possibility of mediators and moderators. The established relationship between coping and psychological adjustment, and parentification and psychological adjustment provide a guide for examining the relations between the three constructs.

The present study focuses on the emerging adulthood lifespan period, which is approximately 18 to 25. Emerging adulthood is distinctly characterized by five major features: identity exploration, instability, self-focus, feeling in-between, and possibilities (Arnett, 2000; 2005). This period is marked by instability in career, relationships, and residency resulting from young adults' exploration of their self-identity. Family systems may experience some major changes as a result of the changes in the emerging adult. Parents' expectations for child involvement within the family may shift and adults may assume greater or lesser household responsibilities, which can predispose them to being parentified. Additional stressors resulting from parentification may also impact how young adults respond to the developmental challenges of emerging adulthood and changes in the family system. For example, increased caregiving responsibilities may restrict them from engaging in occupational activities, which can limit opportunities for identity exploration.

The purpose of this study is to compare parentification, coping behaviour, and psychological distress between individuals with siblings who have ADHD and those who have siblings without any clinical disorders. To assess the relation between these variables, participants will complete self-report questionnaires assessing their coping styles, level of psychological distress, and degree of parentification. Understanding parentification and adaptive behaviours as they pertain to siblings of children with ADHD can expand our knowledge of specific mechanisms contributing adjustment problems in these individuals, and allow for the development of prevention and intervention methods for siblings experiencing psychological distress.

Hypotheses

Hypothesis 1: Parentification group differences. Given that caring for an individual with a developmental disability usually involves greater caregiving demands for their families (Gerhardt & Lainer, 2011), typically developing siblings of individuals with ADHD are expected to experience greater levels of parentification and report greater perceived caregiving, compared to typically developing siblings of typically developing individuals.

Hypothesis 2: Association between parentification and psychological distress. The combination of instrumental household chores and emotional responsibilities to the family can lead to stress and worry in the parentified child (Gray, Robinson, Seddon, & Roberts, 2010; Peris, Goeke-Morey, Cummings, and Emery, 2008), which may place them at risk for developing anxiety and depression. Moreover, there is empirical evidence for the relationship between parentification and increased internalizing and externalizing behaviours (Earley & Cushway, 2002; Hooper, Doehler, Jankowski, & Tomek, 2012). As such, higher levels of all types of parentification are expected to be related to greater levels of anxiety, depression, and stress levels in both sibling groups.

Hypothesis 3: Adaptive coping as moderator. There is considerable evidence to suggest that parentification is associated with poorer emotional adjustment. However, studies on parentification and posttraumatic growth suggest that there are limits to the relationship between parentification and distress. Studies on families of individuals with chronic illnesses report that caregivers who engage in adaptive coping behaviours that focus on acceptance and defining the problem are more likely to experience positive emotional adjustment compared to those who engage in maladaptive coping behaviours that focus on avoidance (Kneebone & Martin, 2003). Thastum and colleagues (2008) also

found that receiving emotional support from others was related to the positive emotional adjustment in children who are parentified. Adaptive coping likely serves as a protective buffer in the association between parentification and psychological distress. On this basis, it is hypothesized that coping will moderate the relation between parentification and participant psychological distress for both sibling groups. Specifically, it is expected that higher levels of parentification would be associated with greater psychological distress for participants who report using lower levels of adaptive coping (self-sufficient and socially supported). The relation between parentification and distress is expected to be less pronounced for participants who report using higher levels of adaptive coping, demonstrating a buffering effect.

Hypothesis 4: Adaptive coping as moderator within group. Given that having a family member with ADHD involves greater caregiving demands for families, which places them at greater risk for developing parentification, adaptive coping may play a greater role in predicting psychological distress within this group. Thus, the hypothesized buffering effect of self-sufficient and socially supported coping in the relation between parentification and distress may be more pronounced for participants whose siblings have ADHD, compared to individuals whose siblings are typically developing.

CHAPTER 3

METHODOLOGY

Participants

Participants for a larger study on siblings of individuals with developmental disabilities ($N = 263$) were recruited from both the Department of Psychology participant pool at a mid-size university in Ontario and from community organizations providing services to individuals with developmental disabilities and their families. Participants were asked to identify whether or not their siblings had received a diagnosis of a developmental disability and from whom the diagnosis was given. To help them indicate whether their sibling had a developmental disability, participants were provided with a general definition of developmental disabilities taken from the DSM-5 (American Psychological Association, 2015). Developmental disabilities were defined as severe chronic disabilities that can be cognitive or physical, or both, appearing prior to the age of 22 years old, and persisting across the lifespan. They also indicated their sibling's disability from a checklist of developmental disability names used in the DSM-IV and DSM-5 (e.g., the terms Autism and Asperger's were provided, as well as Autism Spectrum Disorders). All participants who indicated that they had a sibling with a developmental disability reported that the sibling received the diagnosis from a psychiatrist (19%), psychologist (35%), physician (43%), and other (3.2%).

Participants who reported having a sibling with a developmental disability other than ADHD were removed from the analyses, leaving 229 participants identified as either having siblings with ADHD or having siblings without a physical, developmental, intellectual, or learning disability. These participants were screened to assess eligibility

and survey completion. A total of 12 participants were identified as not meeting the participant age criterion (between 18 and 25) for the study (ADHD group: $n = 2$; Control group: $n = 10$). Eight participants (ADHD group: $n=2$; Control group: $n=6$) did not complete the survey and were missing more than half of the data on parentification, coping, and psychological distress dimensions. These participants were excluded from the analyses, leaving a final sample size of 209. All of the participants in the final sample were recruited from the Department of Psychology participant pool. The 209 participants who responded to the measures ranged in age from 18 to 25 years old (82% female, $M = 21.36$, $SD = 1.79$). The siblings that participants referred to in their responses ranged in age from 4 to 36 years old (43% female, $M = 20.39$, $SD = 5.10$). The majority of the participants were living with their target sibling (54%). In terms of the participant's birth order in relation to their target sibling, 57.9 % of the participants were older, 38.3% were younger, and 3.8% were the same age. Participants' average family income ranged from less than \$5,000 to \$ 99,999, but 17.2% preferred not to indicate their family income. All of the participants lived in Ontario, and English was the first language for 88.33% of the sample. Participant characteristics are summarized in Table 1.

Of the 34 participants excluded because they had a sibling with a DD that was not ADHD, participants reported having a sibling with autism spectrum disorder (18.8%), cerebral palsy (6.3%), Down syndrome (9.4%), intellectual disability (6.3%), language disorder (15.6%), learning disability (34.4%), severe vision impairment (3.1%), and severe hearing impairment (6.3%). Participant age ranged from 19 to 34 years old (89% female, $M = 22.20$, $SD = 3.70$). Their target siblings were between 6 to 25 years of age (43% female, $M = 17.70$, $SD = 6.30$). In terms of participant birth order relative to target

sibling, 68.2% of the participants were younger than their target sibling, 22.7% were older, and 9.1% were the same age. Target sibling independence scores ranged from 0 to 34 ($M = 24.19$, $SD = 9.58$). The majority of participants reported a family income of less than \$5,000 (31.3%). Others indicated income between \$10,000 \$19,999 (15.6%), \$20,000 to \$29,999 (6.3%), \$30,000 to \$39,999 (3.1%), \$40,000 to \$49,000 (9.4%), \$50,000 to \$59,000 (3.1%), \$70,000 to \$79,999 (9.4%), and \$100,00 or more (12.5%). 9.4% of participants preferred not to indicate their family income. All of the participants lived in Ontario, and English was the first language for 84.4% of the participants. All of the participants lived in Ontario, and English was the first language for 84.4% of the participants.

Measures

Participants completed six online questionnaires assessing the variables of: coping styles, parentification, psychological distress (stress, anxiety, and depression symptoms), degree of independence of the sibling, significant life events, and a demographic questionnaire. The means and standard deviations for the parentification, coping, and distress variables are reported in Table 2.

Table 1

Participant and Sibling Characteristics of the Sample

Demographic Variables		ADHD (<i>n</i> = 30)		Control (<i>n</i> = 179)	
Age of Participant	<i>M</i>	20.83	<i>M</i>	21.45	
	<i>SD</i>	1.53	<i>SD</i>	1.82	
	Min	19	Min	18	
	Max	25	Max	26	
Age of Target Sibling	<i>M</i>	19.17	<i>M</i>	20.59	
	<i>SD</i>	3.54	<i>SD</i>	5.29	
	Min	11	Min	<1	
	Max	25	Max	36	
Target Sibling Independence	<i>M</i>	26.03	<i>M</i>	28.33	
	<i>SD</i>	7.99	<i>SD</i>	5.84	
	Min	7	Min	1	
	Max	34	Max	34	
Participant Negative Life Change	<i>M</i>	15.23	<i>M</i>	13.21	
	<i>SD</i>	13.64	<i>SD</i>	10.73	
	Min	0	Min	0	
	Max	73	Max	59	
		Frequency	% of total	Frequency	% of total
Gender of Participant	Female	26	87%	146	82%
	Male	4	13%	33	18%
Gender of Target Sibling	Female	8	6.7%	82	45.8%
	Male	22	73.3%	94	52.5%
Participant Marital Status	Single	29	97%	174	97%
	Common-law	0	0%	3	2%
	Married	0	0%	1	1%
	Other	1	3%	1	1%
Participant Ethnicity	Caucasian	25	83%	110	62%
	Arab/West	2	7%	20	11%
	Asian	0	0%	13	7%
	Black	0	0%	13	7%
	East Asian	1	3%	13	7%

Demographic Variables		ADHD (<i>n</i> = 30)		Control (<i>n</i> = 179)	
	Latin American	1	3%	1	1%
	South Asian	0	0%	8	4%
	European	1	3%	6	3%
	Other	0	0%	7	4%
Annual Family Income	Prefer not to answer	3	10%	33	18.4%
	Less than 5000	4	13.3%	22	12.3%
	\$5 000 to \$9 999	2	6.7%	6	3.4%
	\$10 000 to \$19 999	1	3.3%	5	2.8%
	\$40 000 to \$49 999	4	13.3%	2	1.1%
	\$70 000 to \$79 999	4	13.3%	8	4.5%
	\$80 000 to \$89 999	3	10%	3	1.7%
	\$90 000 to \$99 999	1	3.3%	13	7.3%
	\$100 000 or more	8	26.7%	16	8.9%

Table 2

Means and Standard Deviations on Parentification, Coping, and Distress for the Full and Matched Sample Groups.

	ADHD (<i>n</i> = 30)		Full Control (<i>n</i> = 179)		Matched Control (<i>n</i> = 30)		Range of Possible Scores	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Minimum	Maximum
Parentification								
Past Instrumental	23.17	6.64	22.49	7.33	22.67	7.46	10	50
Past Emotional	28.57	6.89	27.01	7.54	28.17	7.57	10	50
Past Unfairness	24.37	8.73	22.95	8.51	23.30	8.61	10	50
Current Instrumental	25.07	7.29	24.07	6.83	25.60	6.65	10	50
Current Emotional	28.40	6.39	28.41	6.59	29.77	6.27	10	50
Current Unfairness	23.70	10.58	22.04	8.28	22.35	8.58	10	50
Coping								
Self-sufficient	28.37	6.68	27.09	8.66	26.93	8.50	12	48
Socially supported	14.07	4.47	13.15	4.82	13.43	4.42	6	24
Avoidant	20.70	7.10	17.79	5.62	17.60	5.90	10	40
Distress								
Depression	5.03	4.67	4.47	4.64	4.17	4.05	0	21
Anxiety	5.73	4.94	4.32	4.77	4.33	5.23	0	21
Stress	8.78	4.88	6.03	4.56	6.11	4.65	0	21

Demographic questionnaire. Participants were asked to complete a demographic survey requesting information about their gender, date of birth, marital status, ethnicity, family income, family size, and psychiatric history. Participants responded to questions about their sibling (e.g., age, gender, diagnosis) and their relationship with the sibling, as well as family dynamics (e.g., amount of time spent with members and roles at home).

Parentification. The Filial Responsibility Scale, Adult (FRS-A; Jurkovic & Thirkield, 1999) is a 60-item self-report measure assessing retrospective and current perceived instrumental and emotional caregiving, as well as perceived unfairness (parent's lack of acknowledgement and reciprocity in caring). These items are categorized into six theoretically-derived scales: *past instrumental caregiving* (e.g., "I worked to help make money for my family"), *past emotional caregiving* (e.g., "It seemed like family members were always bringing me their problems"), *past unfairness* (e.g., "In my family, I often gave more than I received"), *current instrumental caregiving* (e.g., "My parents expect me to help manage my siblings"), *current emotional caregiving* (e.g., "Even when members of my family of origin do not need my help, I feel very responsible for them"), and *current unfairness* (e.g., "My parents often seem so disappointed in me"). Respondents are asked to rate each item on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Scores were calculated for each of the instrumental and emotional caregiving subscales by summing the ratings for each item in the subscale, with higher scores on each subscale indicating greater parentification. Scores were calculated for the unfairness subscales by summing the ratings for each item in the subscale, with higher scores on the subscale indicating greater perceived unfairness. Jurkovic and colleagues (2001) report good reliability, with Cronbach's

alphas in the confirmatory sample for the subscales ranging from .72 to .88. The Cronbach's alpha for the current study ranged from .77 to .92.

Coping Behaviour. The Brief COPE (Carver, 1997) is a 28-item self-report measure that assesses an individual's response to stress. The 14 subscales in this measure assess different types of coping strategies. *Active coping* assesses the degree to which participants take action or exert effort to remove or circumvent the stressor (e.g., "I've been taking action to try to make the situation better"). *Planning* measures the degree to which participants consider strategies to confront the stressor (e.g., "I've been thinking hard about what steps to take"). *Instrumental social support* measures the frequency of seeking assistance, information, or advice (e.g., "I've been getting help and advice from other people"). *Emotional social support* measures the frequency of receiving sympathy or emotional support from others (e.g., "I've been getting comfort and understanding from someone"). *Denial* measures the degree to which participants attempt to reject the reality of the stressful event (e.g., "I've been saying to myself 'this isn't real'"). *Substance use* measures the frequency of alcohol or substance use as a means to disengage from the stressor (e.g., "I've been using alcohol or other drugs to help me get through it"). *Behavioural disengagement* assesses withdrawal of effort to attain the goal impacted by the stressor (e.g., "I've been giving up trying to deal with it"). *Venting* measures the tendency to ventilate or discharge emotional distress (e.g., "I've been expressing my negative feelings"). *Positive reframing* assesses the degree to which participants make the best of the situation or frame it in more favourable light (e.g., "I've been looking for something good in what is happening"). *Humour* measures frequency of making jokes about the stressor (e.g., "I've been making fun of the situation"). *Religion*

measures change in engagement in religious activities (e.g., “I’ve been praying or meditating”). *Acceptance* assesses the degree to which participants accept the stressful event as real (e.g., “I’ve been learning to live with it”). *Self-blame* assesses degree of self-criticism and blame for the stressor (e.g., “I’ve been criticizing myself”). Lastly, *self-distraction* measures engagement in other activities or responsibilities to divert attention away from the stressor (e.g., “I’ve been turning to work and other activities to take my mind off things”). Respondents were asked to rate items on a 4-point Likert-type scale ranging from 1 (*I usually don’t do this at all*) to 4 (*I usually do this a lot*). Total scores were calculated for each of the subscales, with higher scores indicating greater use of that coping style. Because the instructions for Brief COPE are more geared toward surgery experience, the wording of the instructions were slightly modified to be more general for the present study to improve suitability to the observed population, as recommended by the author. Carver (1997) reported Cronbach’s alpha ranging from .50 (venting) to .90 (substance use). The Cronbach’s alpha for the current study range from .63 (vent) to .94 (substance use). Similar reliabilities have been reported for the use of the Brief COPE to assess coping strategies of parents of children with developmental disabilities (Benson, 2010; Hastings et al., 2005). On subscales consisting of two items where one value is missing, the value for the one existing item was substituted for the missing item.

The 14 coping dimensions were then categorized into subscales based on Litman (2006)’s three coping factors: *self sufficient* (planning, acceptance, active coping, humour, religion, positive reframing), *socially supported* (emotional social support, venting, instrumental social support), and *avoidant* (denial, disengagement, substance

use, self-blame, self distraction). Self sufficient and socially supported coping are considered adaptive, whereas avoidant coping is considered maladaptive.

Participant scores on each of the three categories were calculated by summing the total score for each of the coping scales under that category.

Psychological Distress. The Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1996) is a 21-item self-report measure that asks the individual to indicate the extent to which they felt sad, anxious, or stressed in the past week (see Appendix C). Respondents read statements pertaining to three subscales: *depression* (e.g., “I felt I wasn’t worth much as a person”), *anxiety*, (e.g., “I was worried about situations in which I might panic and make a fool of myself”), and *stress* (e.g., “I found it hard to wind down”). Each statement is rated on a Likert-type scale ranging from 0 (*Did not apply to me at all*) to 4 (*Applied to me very much, or most of the time*). Total scores were calculated for the depression, anxiety, and stress subscales, with higher scores on the subscales indicating higher levels of symptoms of that domain. The DASS-21 has been observed to have good reliability, with Cronbach’s alphas ranging from .87 to .94. The Cronbach’s alpha for the current study ranged from .85 to .89. Depression was positively correlated with anxiety ($r = .71$) and stress ($r = .67$), and anxiety was positively correlated with stress ($r = .75$). It has been validated using an ethnically diverse population (Antony et al., 1998). The anxiety subscale has been correlated with the Beck Anxiety Inventory ($r = .55$) and the State-Trait Anxiety Inventory-Trait Version ($r = .85$). The depression scale also was associated with the Beck Depression Inventory ($r = .79$). Similar support for the construct validity of the DASS-21 has been reported for use of the DASS-21 on a non-clinical population (Henry & Crawford, 2005).

Independence of sibling. The Waisman-ADL Index (W-ADL; Maenner et al., 2013) is a 17-item measure assessing functional independence and activity limitations for adolescents and adults with developmental disabilities. Respondents were asked to identify the tasks that their sibling performs independently and rate them on a 3-point Likert-type scale ranging from 0 (*Does not perform the task at all*) to 2 (*Performs the task independently*). The items include domains of *personal care* (e.g., “Washing/bathing.”), *housekeeping* (e.g., “Doing household tasks, including picking up around the house, putting things away, light housecleaning, etc.”), *meal preparation* (e.g., “Preparing simple foods requiring no mixing or cooking, including sandwiches, cold cereal, etc.”), and *mobility and community interaction* (e.g., Doing errands, including shopping in stores). It has been observed to have good reliability across various developmental disability groups, with Cronbach’s alphas ranging from 0.88 to .094 (Maenner et al., 2013). The Cronbach’s alpha for the present study is .93. The W-ADL is also reliable over time, with weighted kappas between 0.92 and 0.93. This measure demonstrates strong, positive correlations with the Vineland Screener (Composite Score and the Daily Living Skills subdomain score), as well as being associated with other relevant factors (i.e., need for respite services, caregiving burden, and competitive employment). It discriminated between mild, moderate, severe, and profound levels of intellectual disability. Item scores are summed to produce an overall independence score, in which higher scores represent greater sibling independence and lower scores indicated less sibling independence (or greater dependence).

Significant Life Events. Life Experiences Survey (LES; Sarason, Johnson, & Siegel, 1978) is a 60-item self-report measure, which asks individuals to evaluate the

impact of stressful life events (Appendix E). Respondents were presented with life events and they indicated which events they had experienced in the past year, as well as providing a desirability rating to indicate whether the event was a positive or negative experience. The measure contained 47 events (e.g., “Death of a close family member”) and 10 additional events specific to academics (e.g., “Beginning a new school experience at a higher academic level”). Each item was rated on a Likert-type scale ranging from -3 (*Extremely negative*) to +3 (*Extremely positive*), with scores of -3 indicating higher levels of negative impact. Positive and negative impact ratings were summed to calculate the total change score, which represented the total amount of life change experienced by the individual in the past year. Lower scores on the LES reflect greater negative impact from the events listed, whereas higher scores reflect positive impact. Test-retest reliability over a 5-6 week interval was reported to range from 0.19 to 0.53 for the positive change score and 0.56 to 0.88 for the negative change score, and 0.63 to 0.64 for the total change score (Sarason et al., 1978). Negative life change scores were also significantly correlated with stress-related and self-rated depression measures.

Procedure

Prior to the creation of the study’s survey and recruitment efforts, a sibling advisor was consulted about the wording of the measures and the study description to ensure that they appropriately and comprehensively addressed the aims of the study. This sibling advisor was a young adult sibling of an individual with ASD and has been closely involved with various organizations for families of individuals with developmental disabilities. The advisor is an upper-year university student majoring in biology and psychology. The sibling advisor served as a consultant regarding recruitment strategies

during the course of the study. They evaluated the measures to ensure they appropriately applied to individuals who had siblings with developmental disabilities. Following the analyses of the results, the sibling advisor was consulted to ensure appropriate and accurate interpretation of the findings.

Participants recruited through the Psychology Department participant pool website selected a timeslot for completing the study. They were then directed to a webpage that contained an online consent form, and once completed, participants were directed to a set of online questionnaires. The demographics questionnaire always was presented first, followed by the remaining measures in a randomized order. Identical questionnaires were used for participants in both ADHD and control sibling groups. The participant pool participants received a bonus mark as compensation for their participation in the study.

Participants who had more than one sibling with ADHD were asked to complete the questionnaire in consideration of the sibling with ADHD with whom they spend the most time. Similarly, control group participants with multiple siblings were asked to complete the questionnaire in consideration of the sibling with whom they spend the most time.

CHAPTER 4

RESULTS

Overview of Results

Analyses were organized into three major sections. The first section includes data screening procedures related to missing data and statistical outliers. Next are the preliminary analyses, including tests for assumptions and identification of potential control variables. The third section consists of the analyses of the four proposed hypotheses. The fourth section consists of additional analyses to supplement the findings from the proposed hypotheses.

Data Screening

Missing data analysis. Prior to conducting the main analyses, the dataset ($N = 209$) was analyzed to identify missing data. Of the total data points for dimensions of coping, parentification, psychological distress, and degree of independence of the sibling, 3% was missing. Missing data analysis for each measure revealed that there was no systematic pattern of missing data, suggesting that they were missing at random. Given that there was a small portion of data missing (less than 5%) and that these points were missing at random, the method of mean substitution was used for the missing values (Tabachnick & Fidell, 2012). For the missing items on the dimensions of the BriefCOPE, for which subscales consisted of two items, the value of the existing item was substituted for the missing item. Subsequent analyses were conducted using these substitutions, as overall assumptions and testing outcomes were not impacted.

Outliers. The values on the dataset were converted to z -scores and were examined for outliers, using a z -score of 3.29 as a cutoff, as recommended by Field

(2009). One outlier ($z = 3.475$) was identified for disengagement coping on the BriefCOPE, and another outlier ($z = 3.430$) was identified for the anxiety subscale on the DASS. The two outliers were from two independent cases. With the outliers in the data set, disengagement coping ($z = 6.93$) and anxiety ($z = 7.53$) did not meet the $|z|$ cutoff for skewness (Tabachnick & Fidell, 2007). Although disengagement coping met the $|z|$ criteria for kurtosis ($z = 1.16$), anxiety did not ($z = 2.96$). When the outliers were removed from the dataset, kurtosis remained elevated on these dimensions ($z = 7.32$ and $z = 6.51$, respectively), while skewness remained within the accepted range. Inspection of the data in relation to the entire dataset also suggested these outliers were sampled from the target population and the cases' other scores did not indicate a pattern of a response set. Thus, the two cases were included in subsequent analyses.

Preliminary Analyses

Statistical analyses were conducted to test the assumptions of univariate and multivariate analyses. The dataset was evaluated for normality, multicollinearity, linearity, and homoscedasticity. Correlation analyses were also conducted to identify potential covariates.

Univariate Analyses. Skewness and kurtosis were converted into z -scores by dividing each skewness and kurtosis value by its standard error (Field, 2009). Using a skewness criteria of $|z|$, it was found that the depression (skewness $z = 6.49$), anxiety (skewness $z = 7.52$), and stress (skewness $z = 3.42$) dimensions of the DASS, and sibling independence (skewness $z = -6.96$) were significantly skewed. Similarly, past instrumental caregiving (skewness $z = 2.78$), past unfairness (skewness $z = 2.29$), and current unfairness (skewness $z = 3.07$) did not meet the $|z|$ criteria. Histograms of these

variables were visually inspected and they supported the findings above. Analyses proceeded using a square root data transformation for these variables. Following the transformation, kurtosis values for past unfairness, current unfairness, depression, and anxiety were still slightly elevated, ranging from -2.2 to -2.7. Although kurtosis can result in an underestimation of the variance, the risk is also reduced with large samples of more than 200 cases (Tabachnick & Fidell, 2007), as is the case in this study. Thus, no further transformations were conducted on the dataset.

Multivariate Analyses. Mahalanobis values were calculated to identify influential outliers on the parentification, coping, and distress variables, and did not exceed the critical chi-square value of 13.82, $p < .001$. Multicollinearity and singularity were addressed through analysis of correlation coefficients and Tolerance/VIF values. The correlation coefficients were all less than .80, which suggested that there were no high correlations among the independent variables. The VIF values were less than 2.0, which is within the cutoff point of 10 recommended by Field (2000). Additionally, in order to avoid potentially problematic high multicollinearity with the interaction term, the variables used in multiple regression analyses were centred and interaction terms were created for each of the regression models (Aiken & West, 1991). Linearity was assessed through evaluation of residual plots in which residuals were plotted against predicted values to identify clustering patterns and outliers, as well as evaluate the homoscedasticity of errors. Visual inspection of the scatter plot matrix, residual plots, normal probability plots, and histograms indicated that multivariate normality, linearity, and homoscedasticity assumptions were met.

Control variables

Zero-order correlation analyses were used to test if hypothesized control variables (sibling age, sibling independence, and negative life changes) were related to scores on the parentification, coping, and psychological distress scales. Findings are discussed for each variable and summarized in Table 3.

Participant and sibling age. Participant age was not significantly correlated with any of the parentification, coping, and distress variables. Sibling age was negatively correlated with past instrumental and emotional caregiving, but not significantly associated with any of the DASS subscales. That is, participants with older siblings tended to report providing less emotional and instrumental caregiving in the past. Sibling age was thus controlled for in the main analyses.

Sibling level of independence. Sibling level of independence was negatively correlated with participants' anxiety. Participants who reported having siblings who were more independent tended to also report lower levels of anxiety, less past and current instrumental caregiving, less past emotional caregiving, and less past perceived unfairness. Therefore, sibling independence was controlled for in all the main analyses.

Significant life changes. Correlations were used to determine the relation between significant life events and the main variables. The number of negative life changes was positively correlated with variables of parentification and all the dimensions of the DASS (stress, depression, and anxiety). Participants who indicated experiencing a higher number of negative life changes also reported higher levels of stress, depression, and anxiety. They also reported more past and current emotional caregiving, and past and current unfairness. The number of positive life changes were not significantly correlated

Table 3

Zero-order correlation analyses (N = 209) for parentification, psychological distress, and potential covariates

	Participant Age	Sibling Age	Sibling independence	Negative Life Event	Positive Life Event	Family Income
Parentification						
Past Instrumental Caregiving	-0.03	-0.29**	-0.28**	0.04	0.02	-0.20*
Past Emotional Caregiving	-0.01	-0.14*	-0.24***	0.21**	0.05	-0.06
Past Unfairness	0.08	-0.08	-0.19**	0.27***	-0.03	-0.07
Current Instrumental Caregiving	-0.09	-0.12	-0.17*	0.10	0.04	-0.12
Current Emotional Caregiving	-0.02	-0.06	-0.08	0.18**	0.09	-0.13
Current Unfairness	0.12	-0.06	-0.12	0.32***	-0.08	-0.1
Coping						
Stress	-0.09	-0.03	-0.10	0.28***	-0.01	-0.03
Depression	0.01	0.01	-0.12	0.21**	-0.07	0.01
Anxiety	-0.09	-0.11	-0.15*	0.19**	0.02	-0.02

Note. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

with any of the main variables. Ratings of significant negative life changes were thus controlled for in the main analyses.

Family income. Family income was reported categorically by income brackets. Participants who reported higher levels of family income also reported having siblings with ADHD that are older and providing less instrumental caregiving in the past. Although there was a positive relation between family income and one of the parentification scales, 17.2% of participants preferred not to indicate their family income. In consideration of these missing data, family income was not controlled for in subsequent analyses as these frequencies may not be representative of the sample's income.

Matching. The literature on ADHD suggest that demographic variables, such as age, gender, family size, and birth order may be related to parentification (McMahon & Luthar, 2007; Theule, Wiener, Tannock, & Jenkins, 2012). Differences in the sibling's level of independence may also contribute to differences in level of caregiving demands and parenting stress (Graziano, McNamara, Geffken, & Reid, 2011), which in turn contributes to parentification. In order to control for these demographic variables and the unbalanced sample sizes, participants in the ADHD group ($n = 30$) were matched with participants in the control group ($n = 30$) based on their age, gender, family size, birth order in relation to their target sibling, and sibling's level independence. Categories were created for gender (male or female) and birth order (older, younger, or same age as their target sibling). Family size was determined by calculating the mean number of individuals currently living in the participants' household. Participants who indicated equal to or less than 1 standard deviation (*SD*) below the mean, were classified as having

a small family, while those equal to or greater than 1 *SD* above the mean were classified as having a large family. Participants within 1 *SD* above and below the mean were in the average range. Using the same method, participants were categorized based on high, average, and low levels of sibling independence. Participants in the average range were within 1 *SD* from the mean, and those who were above or below this range were classified as being in the high or low group, respectively. Categories were not created for participant age and participants were matched based on the age they indicated. Exact matches were available for all except seven participants, which differed in either participant birth order (older or younger than target sibling) or participant gender, but matched in all the other categories. These participants were retained for analyses because they matched on the majority of characteristics. Main analyses were conducted on both the full dataset ($N = 209$) and the matched pairs sample ($n = 60$).

In summary, the dataset was examined to test for assumptions of univariate and multivariate analyses. A square root transformation was applied to past instrumental caregiving, past unfairness, current unfairness, stress, anxiety, depression, and sibling level of independence, in order to address violations of normality. Transformed numbers will be used in analyses where these variables are used, but in tables of means, the nontransformed data will be presented for ease of interpretation. Based on the results of the zero-order correlations and in consideration of the literature, sibling age, sibling level of independence, and negative life changes were controlled for in subsequent analyses. A matched pair sample was created by matching participants in the ADHD group with the control group on demographic variables.

Main Analyses

To investigate the four specific hypotheses, the following data analytic approaches were incorporated: independent samples *t*-test, Analysis of Variance (ANOVA), Analysis of Covariance (ANCOVA), Pearson correlations, and regression analyses to test for moderation. The first hypothesis examined between group differences (ADHD and control) in parentification. The second hypothesis examined the relationship between parentification and psychological distress. The third hypothesis examined whether coping style (self-sufficient, socially supported, and avoidant) moderated the relationship between parentification (instrumental caregiving, emotional caregiving, and unfairness) and psychological distress (depression, stress, and anxiety). The fourth hypothesis examined between group differences in the moderating effect of coping on the relationship between parentification and psychological distress. The results of the four hypotheses pertaining to the full sample ($N = 209$) and the matched pairs sample ($n = 60$) are described below.

Hypothesis 1: Parentification group differences. Hypothesis 1 examined if there was a difference in parentification between participants who identify as having a sibling with ADHD (ADHD group) and those who do not have a sibling with a developmental disability (control group).

Full sample. Analyses of covariance (ANCOVA) were used to determine if there was a statistically significant difference between the groups' scores on both current and past experiences of instrumental caregiving, emotional caregiving, and unfairness, controlling for sibling age, sibling level of independence, and negative life changes. The results indicated no significant differences on any of the parentification variables between the groups (see Table 4).

Table 4

Differences in Parentification Scores in the ADHD (n = 30) and Control (n = 179) Group.

Parentification	ADHD		Control		<i>F</i> (1, 204)	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Past Instrumental	23.17	6.64	22.49	7.33	0.01	0.91
Past Emotional	28.57	6.89	27.01	7.54	0.17	0.68
Past Unfairness	24.37	8.73	22.95	8.51	0.06	0.81
Current Instrumental	25.07	7.29	24.07	6.83	0.08	0.77
Current Emotional	28.40	6.39	28.41	6.59	0.13	0.72
Current Unfairness	23.70	10.58	22.04	8.28	0.05	0.82

Matched sample. For the matched pair sample ($n = 60$), the ANCOVA analysis also indicated no significant differences on any of the parentification variables between groups (see Table 5). Thus, hypothesis 1 was not supported.

Hypothesis 2: Parentification and psychological distress. Hypothesis 2 examined if there was a relationship between parentification and psychological distress. It was hypothesized that greater levels of parentification would be associated with greater depression, anxiety, and stress.

Full sample. Partial correlations were computed to examine scores on the DASS depression, anxiety, and stress subscales in relation to the parentification subscale scores, while controlling for sibling age, sibling independence, and negative life changes (see Table 6). Statistically significant positive partial correlations were found for the majority of the six subscales of parentification in relation to depression, anxiety, and stress. Participants who retrospectively reported experiencing high levels of instrumental caregiving in the past also tended to report high levels of anxiety, and stress. Those who reported experiencing high levels of emotional caregiving in the past also tended to report high levels of depression, anxiety, and stress. Participants who reported experiencing high levels of perceived unfairness in the past also tended to report high levels of depression, anxiety, and stress.

Similar positive correlation results were found for reports of current instrumental caregiving, emotional caregiving, and unfairness in relation to depression, anxiety, and stress, with the exception of the relationship between current instrumental caregiving and anxiety (see Table 6). Unlike the findings for past instrumental caregiving, the positive

Table 5

Differences in Parentification Scores In the Matched Sample ADHD (n = 30) and Control (n = 30) Group.

Parentification	ADHD		Control		<i>F</i> (1, 204)	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Past Instrumental	23.17	6.64	22.67	7.46	0.00	1.00
Past Emotional	28.57	6.89	28.17	7.57	0.13	0.72
Past Unfairness	24.37	8.73	23.30	8.61	0.00	0.95
Current Instrumental	25.07	7.29	25.60	6.65	0.30	0.59
Current Emotional	28.40	6.39	29.77	6.27	1.69	0.20
Current Unfairness	23.70	10.58	22.35	8.58	0.01	0.93

Table 6

Partial Correlations between Parentification, Stress, Depression, and Anxiety (N = 209), Controlling for Sibling Age, Sibling Independence, and Negative Life Events

	Depression	Anxiety	Stress
Past Instrumental	0.11	0.17**	0.14*
Past Emotional	0.16*	0.18**	0.21***
Past Unfairness	0.33***	0.23***	0.31***
Current Instrumental	0.08	0.12	0.14**
Current Emotional	0.18**	0.22***	0.27***
Current Unfairness	0.34***	0.20***	0.27***

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

relation between current instrumental caregiving and anxiety was found to be only approaching significance ($p = .08$).

For the full sample ($n = 209$), partial correlations for the ADHD group ($n = 30$) and the control group ($n = 179$) indicated some differences (see Table 7). For the control group, statistically significant positive partial correlations were found for the majority of the six subscales of parentification in relation to depression, anxiety, and stress. Participants who reported higher levels of instrumental caregiving, emotional caregiving, and unfairness also tended to report higher levels of depression, anxiety, and stress, with the exception of current instrumental caregiving (see Table 7). On the other hand, fewer statistically significant partial correlations were found for the ADHD group. Participants in the ADHD group who reported higher levels of past unfairness also tended to report higher levels of depression and stress. Similarly, participants in the ADHD group who reported higher current unfairness also tended to report higher levels of depression and stress. No other relations were found between parentification scores and levels of distress in the ADHD group.

Matched sample. For the matched sample ($n = 60$), partial correlations for the ADHD group ($n = 30$) and the control group ($n = 30$) indicated some differences (see Table 7). Participants in the ADHD group who reported higher levels of past unfairness also tended to report higher levels of stress and depression. Similarly, participants in the ADHD group who reported higher current unfairness also tended to report higher levels of stress and depression. No relations were found between parentification scores and levels of distress in the control group.

Table 7

Partial Correlations between Parentification, Stress, Depression, and Anxiety for ADHD (n = 30) and Full Sample Control Group (n = 179), Controlling for Sibling Age, Sibling Independence, and Negative Life Events

	ADHD (n = 30)			Control (n = 179)			Control (n = 30)		
	Depression	Anxiety	Stress	Depression	Anxiety	Stress	Depression	Anxiety	Stress
Past	0.12	0.19	0.32	0.12	0.16*	0.11	-0.03	0.02	0.03
Instrumental									
Past	0.18	0.08	0.14	0.16*	0.19**	0.22***	0.08	0.09	-0.06
Emotional									
Past	0.46*	0.24	0.38*	0.30***	0.22***	0.3***	0.11	0.04	0.07
Unfairness									
Current	-0.02	0.18	0.27	0.1	0.1	0.1	-0.03	0.04	0.06
Instrumental									
Current	0.18	0.31	0.27	0.18*	0.21**	0.29***	0.04	0.07	0.04
Emotional									
Current	0.58***	0.32	0.50**	0.29***	0.18*	0.22**	0.05	0.03	-0.05
Unfairness									

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

These findings provide some support for the hypothesis that there would be positive relations between the participants' reports on parentification and their experience of depression, anxiety, and stress. Generally, participants who reported higher levels of parentification also tended to report higher levels of distress, when controlling for covariates. When investigated within group, higher levels of instrumental caregiving, emotional caregiving, and unfairness were associated with higher levels of depression, anxiety, and distress for the full sample control group. When matched on demographic variables, higher levels of perceived unfairness were associated with higher levels of depression and stress for the ADHD group, but not for the matched control group.

Hypothesis 3: Adaptive coping as moderator. Multiple regression analyses were conducted to test Hypothesis 3, which proposes that adaptive coping style (self-sufficient and socially supported coping) will moderate the relation between parentification and psychological distress. For each hierarchical regression analysis, the regression model included the three control variables at step one, and then as predictor variables at step two, one of the coping styles (self-sufficient, socially supported, and avoidant), one of the parentification dimensions (current instrumental caregiving, current emotional caregiving, current unfairness, past instrumental caregiving, past emotional caregiving, past unfairness), and a coping style x parentification interaction term. The outcome variables were scores on depression, anxiety, and stress. The following analyses were conducted following Hayes's (2013) guidelines for moderation analyses.

The SPSS Process macro (v. 2.13, Hayes, 2012) was used to conduct multiple regression analyses on the full sample. Parentification x coping interaction terms were created for each of the models and the parentification and coping variables were centred to avoid

potentially problematic high multicollinearity with the interaction term (Aiken & West, 1991). Of these analyses, three models were found to have a statistically significant overall regression and interaction term. These findings are discussed below.

The overall regression that included current emotional caregiving, socially supported coping, and depression was statistically significant, $F(6, 202) = 13.39, p < .001$ (Table 8). Two of the covariates, negative life change and sibling independence, contributed significantly to the regression model. Social supportive coping also significantly predicted depression, whereas current emotional caregiving did not significantly contribute to predicting depression. The coefficient of the interaction term was statistically significant, indicating that socially supported coping moderated the relationship between current emotional caregiving and depression.

Simple slopes analyses were conducted to examine the predictive value of current emotional caregiving on depression, at each level of social support coping. Using the SPSS Process macro, participant scores on socially supported coping were centred around the mean to examine the pattern of scoring. Slopes for low, average, and high socially supported coping were created by adjusting all participant scores toward 1 *SD* below the mean for socially supported coping (8.5), around the mean (13.28), and toward 1 *SD* above the mean (18.05), respectively.

For low levels of socially supported coping (a score of 8.5 out of a possible 24), a single point increase on current emotional caregiving is associated with a .20 point increase on overall depression (Table 9). For average levels of socially supported coping (a score of 13.28 out of a possible 24), there was no significant relation between current emotional caregiving and depression. Similarly, high levels of socially supported coping

Table 8

Regression Analyses Predicting Psychological Distress From Current Emotional Caregiving and Socially Supported Coping, Controlling for Sibling Age, Sibling Independence, and Negative Life Events (N = 209)

Predictor	Psychological Distress					
	Depression		Anxiety		Stress	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
Step 1						
Sibling age	.07	1.0	-.06	-.90	-.002	-.03
Negative life change	-.07	-2.05*	-.05	-1.62	-.09	-2.33*
Sibling independence	-.12	-1.98*	-.09	-1.68	-.07	-1.36
Step 2						
Socially supported coping	.22	3.23***	.30	4.57***	.33	5.45***
Current Emotional	.07	1.39	.10	1.82	.12	2.63**
Step 3						
Current Emotional x Socially supported coping	-.03	-2.83**	-.01	-.72	-.017	-2.17*
Overall R^2	.18***		.19***		.28***	

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

Table 9

Socially Supported Coping Moderating Effect on the Relationship between Parentification (Current Emotional Caregiving and Current Unfairness and Psychological Distress (Depression and Stress) in the Full Sample Control Group (N = 209)

	Psychological Distress			
	Depression		Stress	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
Current Emotional x Low Socially supported Coping	.20	3.72**	.21	4.11***
Current Emotional x Average Socially supported Coping	.07	1.39	.12	2.63**
Current Emotional x High Socially supported Coping	-.05	-.65	.04	.61
Current Unfairness x Low Socially supported Coping	2.39	5.18***		
Current Unfairness x Average Socially supported Coping	1.73	.34***		
Current Unfairness x High Socially supported Coping	1.08	2.51**		

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

(a score of 18.05 out of a possible 24), was not significantly related to parentification and depression.

The Johnson-Neyman procedure (Hayes & Matthes, 2009) was used to determine regions of insignificance associated with the regression model. Taken together, when socially supported coping score is no more than 12, current parentification and depression are significantly related $b = .10, t(202) = 1.97, p = .05$. With lower levels of socially supported coping, the relation between current parentification and depression becomes stronger with the lowest socially supported coping score (a score of 6 out of a possible 24) resulting in $b = .26, t(202) = 3.95, p < .001$.

The overall regression that included current emotional caregiving, socially supported coping, and stress was statistically significant, $F(6, 202) = 32.82, p < .001$ (Table 8). Negative life change contributed significantly to the regression model. Social supportive coping and current emotional caregiving also significantly predicted stress. The coefficient of the interaction term was statistically significant, indicating that socially supported coping moderated the relationship between current emotional caregiving and stress.

Simple slopes analyses were conducted to examine the predictive value of current emotional caregiving on stress at each level of the social support coping. For low socially supported coping (a score of 8.5), a single point on parentification is associated with .21 points on overall stress (Table 9). The relationship between stress and average levels of socially supported coping (a score of 13.28), also was statistically significant, a single point on current emotional caregiving is associated with .12 point increase in stress. For

high levels of socially supported coping (a score of 18.05), there was no significant relationship between emotional caregiving and stress.

When socially supported coping score is no more than 14, current emotional caregiving and stress are significantly related $b = .10, t(202) = 1.97, p = .05$. The relationship between current emotional caregiving and stress becomes more positive for lower levels of socially supported coping strategies, with the lowest socially supported coping score (a score of 6 out of a possible 24) resulting in $b = .25, t(202) = 4.04, p < .001$.

The overall regression that included current unfairness, socially supported coping, and depression was statistically significant, $F(6, 202) = 16.02, p < .001$ (Table 10). Current unfairness and socially supported coping significantly predicted depression. The coefficient of the interaction term also was statistically significant, indicating that socially supported coping moderated the relationship between current unfairness and depression.

Simple slopes analyses were conducted to examine the predictive value of current unfairness on depression at each level of the social support coping. For low socially supported coping (a score of 8.5), a single point on current unfairness is associated with 2.39 points on overall depression (Table 9). For average socially supported coping (a score of 13.28) a single point on current unfairness is associated with 1.73 points on overall depression. The relation between depression and high levels of socially supported coping (a score of 18.05), a single point on current unfairness is associated with 1.08 points on overall depression.

When socially supported coping score is no more than 19, current unfairness and depression are significantly related $b = .93, t(202) = 1.97, p = .05$. As socially supported

Table 10

Regression Analyses Predicting Psychological Distress From Current Unfairness and Socially Supported Coping, Controlling for Sibling Age, Sibling Independence, and Negative Life Events (N = 209)

Predictor	Psychological Distress					
	Depression		Anxiety		Stress	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
Step 1						
Sibling age	.06	.93	-.07	-1.08	-.01	-.17
Negative life change	-.03	-.94	-.04	-1.13	-.07	-1.73
Sibling independence	-.09	-1.48	-.08	1.50	-.05	-1.05
Step 2						
Socially supported coping	.21	3.46***	.31	4.91***	.035	5.98***
Current Unfairness	1.73	5.13***	.94	2.8**	1.24	3.62***
Step 3						
Current Unfairness x Socially supported coping	-.14	-2.25*	-.09	-1.52	-.10	-1.82
						†
Overall R^2	.24***		.20***		.29***	

Note. † $0.7 > p > .05$. * $p < .05$. ** $p < .01$. *** $p < .001$.

coping strategies decrease, the relation between current unfairness and depression becomes more positive with the lowest socially supported coping score (a score of 6 out of a possible 24) resulting in $b = 2.73$, $t(202) = 4.75$, $p < .001$.

The overall regression that included current unfairness, socially supported coping, and stress was statistically significant, $F(6, 202) = 16.82$, $p < .001$ (Table 10). Current unfairness and socially supported coping significantly predicted stress. The coefficient of the interaction term was approaching statistical significance ($p = .07$).

The interaction coefficient for the remaining regression models were nonsignificant, ranging from $b = -.088$ to $b = .062$, $p > .05$.

Hypothesis 4: Adaptive coping as moderator within group. It was predicted in hypothesis 4 that the buffering effect of coping in the relation between parentification and distress may produce a stronger interaction for participants whose siblings have ADHD, compared to individuals whose siblings do not have a clinical disorder. Following up with the statistically significant interaction term for socially supported coping and current emotional caregiving, multiple regression analyses were conducted to determine if socially supported coping accounted for a greater percentage of the variance in the relationship between current emotional and two variables of distress -- stress and depression -- for the ADHD group compared to the control group. The interaction term for socially supported coping and current unfairness also was statistically significant, and so multiple regression analyses were conducted to determine if socially supported coping accounted for a greater percentage of the variance in the relationship between current unfairness and two variables of distress—stress depression for the ADHD group compared to the control group.

The Process macro (v. 2.13, Hayes, 2013) was used to conduct multiple regression analyses on the ADHD ($n = 30$) and control ($n = 179$) groups to test the regression model, while controlling for the effects of sibling age, sibling level of independence, and negative life changes. For the ADHD group, The results indicated no significant moderating effect for coping on all levels of parentification and all levels of distress (ps ranged from .20 to .86).

For the full sample control group ($n = 179$), the overall regression for current emotional caregiving, social support coping, and depression was statistically significant. Current emotional caregiving was not a significant predictor of depression (Table 11). Socially supported coping was a statistically significant predictor of depression. The coefficient of the interaction term also was statistically significant, indicating that socially supported coping moderated the relationship between current emotional caregiving and depression.

Simple slopes analyses were conducted on the full sample control group to examine the predictive value of current emotional caregiving on depression at each level of social supportive coping (Table 12). For low socially supported coping (a score of 8.5), a single point on current emotional caregiving is associated with .19 points on overall depression. The relationship between depression and average (a score of 13.28, $p = .18$), and high (a score of 18.05, $p = .73$), levels of socially supported coping were not statistically significant. When socially supported coping score is no more than 12, current parentification and depression are significantly related $b = .11$, $t(172) = 1.97$, $p = .05$. For the control group, as socially supported coping strategies decrease, the relationship between current emotional caregiving and depression becomes more positive with the

Table 11

Regression Analyses Predicting Psychological Distress From Current Emotional Caregiving and Socially Supported Coping, Controlling for Sibling Age, Sibling Independence, and Negative Life Events in Control Group (N = 179)

Predictor	Psychological Distress					
	Depression		Anxiety		Stress	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
Step 1						
Sibling age	.06	.84	-.03	-.51	.03	.46
Negative life change	-.08	-2.02*	-.06	-1.55	-.10	-2.51**
Sibling independence	-.12	-1.66	-.12	-1.92†	-.08	-1.35
Step 2						
Socially supported coping	.20	2.67*	.27	3.84***	.28	4.31***
Current Emotional	.08	1.34	.10	1.51	.13	2.55**
Step 3						
Current Emotional x Socially supported coping	-.02	-2.21*	-.01	-.68	-.02	-2.10*
Overall R^2	.17***		.19***		.27***	

Note. † $0.7 > p > .05$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 12

Socially Supported Coping Moderating Effect on the Relationship between Parentification (Current Emotional Caregiving and Current Unfairness) and Psychological Distress (Depression and Stress) in the Full Sample Control Group (N = 179)

	Psychological Distress			
	Depression		Stress	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
Current Emotional x Low Socially supported Coping	.19	3.11**	.22	3.92***
Current Emotional x Average Socially supported Coping	.08	1.34	.13	2.55**
Current Emotional x High Socially supported Coping	-.03	-.35	.04	.59
Current Unfairness x Low Socially supported Coping	2.39	4.50***	1.86	3.56***
Current Unfairness x Average Socially supported Coping	1.60	4.23***	1.14	2.96**
Current Unfairness x High Socially supported Coping	.82	1.85†	.43	.90

Note. † $0.7 > p > .05$. * $p < .05$. ** $p < .01$. *** $p < .001$.

highest socially supported coping score (a score of 24 out of a possible 24) resulting in $b = .24, t(172) = 3.24, p < .001$.

Similarly, the overall regression for current emotional caregiving, socially supported coping, and stress was statistically significant (Table 11). Current emotional caregiving and socially supported coping significantly predicted stress. The coefficient of the interaction term also was statistically significant, indicating that socially supported coping moderated the relationship between current emotional caregiving and stress.

Simple slopes analyses were also conducted on the control group to examine the predictive value of current emotional caregiving on stress at each level of the social support coping (Table 12). For low socially supported coping (a score of 8.5), a single point on parentification is associated with .22 points on overall stress. For average socially supported coping (a score of 13.28), a single point on parentification is associated with .13 points on overall stress. The relationship between stress and parentification at high levels of socially supported coping (a score of 18.05) was not statistically significant ($p = .55$). When socially supported coping score is no more than 14, current parentification and stress are significantly related $b = .11, t(172) = 1.97, p = .05$. For the control group, as socially supported coping strategies decrease, the relationship between current parentification and stress becomes more positive with the highest socially supported coping score (a score of 24 out of a possible 24) resulting in $b = .26, t(172) = 3.86, p < .001$.

The overall regression for current unfairness, socially supported coping, and depression was statistically significant (Table 13). Current unfairness and socially supported coping significantly predicted stress. The coefficient of the interaction term also was statistically significant, indicating that socially supported coping moderated the relationship between current unfairness and depression.

Simple slopes analyses were also conducted on the control group to examine the predictive value of current unfairness on depression at each level of the social support coping (Table 12). For low socially supported coping (a score of 8.5), a single point on current unfairness is associated with 2.39 points on overall depression. For average socially supported coping (a score of 13.28), a single point on current unfairness is associated with 1.60 points on overall depression. The relationship between depression and current unfairness at high levels of socially supported coping (a score of 18.05) was not statistically significant, although it was approaching statistical significance ($p < .07$). When socially supported coping score is no more than 9, current unfairness and depression are significantly related $b = .86, t(172) = 1.97, p = .05$. For the control group, as socially supported coping strategies decrease, the relationship between current unfairness and depression becomes more positive with the highest socially supported coping score resulting in $b = 2.76, t(172) = 4.29, p < .001$. The overall regression for current unfairness, socially supported coping, and stress was statistically significant. Current unfairness and socially supported coping significantly predicted stress. The coefficient of the interaction term also was statistically significant, indicating that socially supported coping moderated the relationship between current unfairness and stress.

Table 13

Regression Analyses Predicting Psychological Distress From Current Unfairness and Socially Supported Coping, Controlling for Sibling Age, Sibling Independence, and Negative Life Events in Control Group (N = 179)

Predictor	Psychological Distress					
	Depression		Anxiety		Stress	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
Step 1						
Sibling age	.05	.72	-.04	-.65	.01	.23
Negative life change	-.04	-1.1	-.04	-1.06	-.08	-1.96*
Sibling independence	-.10	-1.33	-.11	-1.74	-.07	-1.08
Step 2						
Socially supported coping	.20	3.11**	.29	4.27***	0.31	5.08***
Current Unfairness	1.6	4.23***	.93	2.50**	1.14	2.96**
Step 3						
Current Unfairness x Socially supported coping	-.16	-2.54**	-.08	-1.2	-.15	-2.78*
	.22***		.19***		.27***	
Overall R^2						

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

Simple slopes analyses were also conducted on the control group to examine the predictive value of current unfairness on stress at each level of the social support coping (Table 12). For low socially supported coping, a single point on current unfairness is associated with 1.86 points on overall stress. For average socially supported coping, a single point on current unfairness is associated with 1.14 points on overall stress. The relationship between depression and current unfairness at high levels of socially supported coping was not statistically significant ($p = .37$). When socially supported coping score is no more than 15, current unfairness and stress are significantly related $b = .79, t(172) = 1.97, p = .05$. For the control group, as socially supported coping strategies decrease, the relationship between current unfairness and depression becomes more positive with the highest socially supported coping score (a score of 24 out of a possible 24) resulting in $b = 2.20, t(172) = 3.47, p < .001$.

Regression analyses using the Process macro were also conducted for the matched control group ($n = 30$). The results indicated no significant moderating effect for coping on all levels of parentification and all levels of distress (ps ranged from .14 to .75).

A comparison of the findings for ADHD ($n = 30$) and the control group ($n = 179$) on the regression for current emotional caregiving, social supported coping, and distress suggests that the regression model accounts for a greater amount of statistically significant variance in stress and depression for the control group compared to the ADHD group. Similarly, the regression for current unfairness, socially supported coping, and distress suggests that the regression model accounts for a greater amount of statistically significant variance in stress and depression for the control group compared to the ADHD group. These findings provide some support for group differences on the moderating

effect of coping style on parentification and distress; however, these findings run contrary to my prediction. Socially supported coping had a significant moderating effect on the relationship between parentification and distress (depression and stress) for the control group, whereas it was not a moderator for the ADHD group.

Summary of results. In summary, the results of the study provided partial support for the four hypotheses. The first hypothesis examined group differences in parentification. The results suggest that, there were no statistically significant differences between these groups on any of the measures of parentification, even when using a matched sample. The second hypothesis examined the relationship between parentification and psychological distress. As predicted, the findings suggested that participants who reported experiencing higher levels of parentification also tended to report experiencing higher levels of distress. Participants in the full sample control group who reported higher levels of past and current instrumental caregiving, emotional caregiving, and unfairness tended to report higher levels of distress. Analysis of the matched sample suggested that participants who reported higher levels of past and current unfairness also tended to report higher levels of distress, but only for the ADHD group. The third hypothesis examined whether coping style moderated the relation between parentification and psychological distress. There was support for the moderating effect of socially supported coping, but not for self-sufficient and avoidant coping styles. Socially supported coping moderated the relationship between current emotional caregiving and levels of stress, but only for participants reporting low to average levels of socially supported coping. Socially supported coping also moderated the relationship between current emotional caregiving and levels of distress, but only for participants reporting low

levels of socially supported coping. Socially supported coping style also had moderating effect on the relationship between current unfairness and levels of depression for all levels of socially supported coping. The fourth hypothesis examined between group differences in the moderating effect of coping on the relationship between parentification and psychological distress. The findings did not support the hypothesis that the moderating effect of coping would be stronger for participants in the ADHD group compared to the control group; in fact, the opposite effect was observed. Socially supported coping moderated the relation between current emotional caregiving and two variables of distress -- depression and stress -- but only for the control group. Socially supported coping also moderated the relation between current unfairness and depression for the control group.

Additional Analyses

Follow-up analyses were conducted to further investigate ADHD and control group differences on measures of parentification, as well as the relationship between unfairness and distress in the ADHD group. The first analysis involved examining participant age relative to target sibling age (older vs. younger). The second analysis involved examining the relation between perceived unfairness, coping, and distress in participants in the ADHD group.

Participant birth order relative to target sibling. It was unexpected that participants of siblings with ADHD did not differ from the control group on measures of parentification. To further explore whether relative age differences might be associated with parentification experiences, participants' ages were compared to their target sibling's age and two age groups were created: participants who were older relative to

their target sibling *and* those who were younger than their sibling. Participants who were the same age as their sibling were excluded from subsequent analyses ($n = 8$).

ANCOVAs were conducted for the older ($n = 121$) and younger sibling ($n = 80$) groups to test if group differences were present on any of the parentification dimensions, controlling for sibling age, sibling independence, and negative life changes. Older siblings ($M = 4.86$, $SD = .07$) reported greater past instrumental caregiving compared to participants who were younger than their target sibling, $M = 4.47$, $SD = .09$, $t(199) = 3.59$, $p < .001$.

Factorial ANCOVAs (2×3) were conducted to test if participant birth order relative to their sibling (older, younger, and same age) and group (ADHD and control) had an effect on scores on the parentification dimensions, controlling for sibling age, sibling independence, and negative life changes. No significant differences were found for birth order, group, or the birth order \times group interaction term. Analysis on the matched pair sample ($n = 60$) revealed similar nonsignificant results.

Similar ANCOVA analyses were conducted to see if there were differences in parentification variables based on family income (high and low) and group (ADHD and control) or the interaction between the two. Analysis on both the full sample ($N = 209$) and matched pairs sample ($n = 60$) yielded nonsignificant results for the main effects of family income and group, as well as the interaction term. The results suggest that participant birth order and family income did not have an effect on scores on parentification dimensions.

Unfairness, Coping, and Distress. The results of the moderation multiple regression analyses indicated no statistically significant moderating effects of coping on

the relationship between parentification and distress for participants in the ADHD group. Following Aguinis and Gottfredson's (2010) post data collection recommendations for estimating and interpreting interaction effects, further analyses were conducted to examine the relationship between parentification, coping, and distress. In consideration of the results of the correlation analyses (described in Hypothesis 2), which indicated a relationship between distress and past and current unfairness, partial correlations were conducted to investigate the nature of the relationship between coping and these parentification and distress variables, controlling for sibling age, sibling independence, and negative life changes.

The results of the analyses indicated a strong positive relationship between coping and distress (Table 14). Participants who reported using higher levels of avoidant coping also tended to report higher levels of depression, anxiety, and stress. Those who reported higher levels of socially supported coping also tended to report higher levels of depression, anxiety, and stress. A moderate positive relation was also observed between coping style and perceived unfairness. Participants who reported higher levels of current unfairness also tended to report using more socially supported and avoidant coping strategies. There was no relation between perceived unfairness and coping, and perceived unfairness and distress in the control group. However, socially supported and avoidant coping were associated with dimensions of distress.

Table 14

Partial Correlations between Perceived Unfairness, Coping, and Psychological Distress in Matched Sample (n = 60) Controlling for Sibling Age, Sibling Independence, and Negative Life Events

	ADHD (n = 30)						Control (n = 30)					
	3	4	5	6	7	8	3	4	5	6	7	8
1. Past Unfairness	-.15	.34	.36	.46*	.24	.38*	-.05	.06	<.01	.11	.04	.08
2. Current Unfairness	-.01	.44*	.44*	0.58***	0.32	0.50**	-.05	.04	.11	.03	.02	-.07
3. Self-sufficient coping		.44*	.44*	.22	.18	.32		.79***	.57**	.20	.06	.27
4. Socially-supported coping			.76***	.42*	.44*	.63***			.72***	.37*	.30	.43*
5. Avoidant coping				.67***	.64***	.77***				.68***	.46*	.61***
6. Depression					.68***	.69***					.68***	.81***
7. Anxiety						.75***						.70***
8. Stress												

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

CHAPTER 5

DISCUSSION

The aim of the present study was to evaluate the relations between parentification, coping behaviour, and psychological distress and compare these relations between individuals who have siblings with Attention-Deficit/ Hyperactivity Disorder (ADHD) and those who have siblings without any clinical disorders. Contrary to predictions, no significant differences in parentification were found between the ADHD and control groups. Partially supporting the hypotheses, it was found that greater levels of instrumental caregiving, emotional caregiving, and unfairness were associated with greater depression, anxiety, and stress for the full sample control group, whereas only unfairness was associated with higher levels of distress for the ADHD group. Socially supported coping was a statistically significant moderator on the relationship between parentification (current emotional caregiving and current unfairness) and distress (depression and stress). Contrary to predictions, socially supported coping moderated the relation between parentification and distress for the control group, but not the ADHD group.

Parentification across the groups

It was expected that typically developing siblings of individuals with ADHD would experience greater levels of parentification, compared to those whose siblings did not have ADHD or any other clinical disorder. No significant group differences were found on the measures of parentification, when controlling for the effects of sibling age, sibling independence, and negative life events. Additional analyses were conducted to examine whether there were differences between the ADHD and control group on

whether the participant was older or younger relative to the target sibling and on family income. These two factors were examined because birth order and income have been found in the literature to be associated with the need for greater caregiving responsibility by siblings and could contribute to greater parentification. Although caregiving responsibility has been associated with sibling birth order (McMahon & Luthar, 2007; Cuskelly & Gunn, 2003), The results suggest that the participant's birth order relative to their sibling or their social economic status did not contribute to group differences in parentification.

One possible explanation for the lack of group differences is that unique experiences that are typical of emerging adults may be interacting with the parentification experience of the participants in the study. The growing emphasis on identity exploration and self-focus that characterize emerging adulthood (Arnett, 2000; 2005) may impact actual and/or perceived involvement and connection with their siblings and their family. Because the participants in the study consists of university students, this period of transition may be marked by a change in family dynamic and expectations. Parents may take on more responsibility at home and no longer expect the student to be as available to provide caregiving support, which may be more pronounced if the student lives away from home. Specifically, participants, regardless of whether or not they have a sibling with ADHD, may report similar levels of parentification as they differentiate themselves from their family during this period of self-exploration and increased independence. This is in line with the family systems theory (Kerr & Bowen, 1988), which suggests that family members are impacted by the needs and expectations of other members. Literature on parentification suggests that it may be affected by self-differentiation, one of the major

concepts of the family systems theory. For example, lower scores on self-differentiation have been associated with higher scores on perceived unfairness (Jankowski, Hooper, Sandage, & Hannah, 2013). Increased self-differentiation due to external factors (e.g. living away from home and attending university) during emerging adulthood may attenuate perceived and actual experience of parentification. Including self-differentiation and family dynamic measures in future research may help to understand the different factors that contribute to parentification.

Having a sibling with ADHD may present with challenges that are qualitatively different from other developmental disability groups. For example, research suggests that there are greater parent-reported caregiving demands for children with ADHD compared to children without ADHD and these demands can be predicted by the severity of symptoms (Theule, Wiener, Tannock, & Jenkins, 2012). The social deficit component is also less emphasized in ADHD compared to other developmental disabilities, such as ASD. Increased social deficits may place greater stress on the sibling relationship and the family system, which can impact the degree of parentification in the typically developing individuals who have siblings with developmental disabilities. Moreover, homogeneity of level of independence across the ADHD and control group may be contributing to the findings. Target siblings who exhibit fewer symptoms may require lower levels of parentification for typically developing siblings. As a result, similar levels of caregiving demands may be associated with a similarity between groups in the degree to which the participants experience parentification.

Parentification and Psychological Distress

Although there were no differences between the ADHD and control group on parentification, observed variability in parentification warrants further investigation of whether parentification is related to psychological distress. Higher levels of parentification were expected to be related to greater levels of psychological distress (as measured by levels of anxiety, depression, and stress). The majority of the results supported this hypothesis. Analysis of parentification and distress in the full sample suggested that young adults who reported high levels of current instrumental caregiving, emotional caregiving and perceived unfairness tended to also report high levels of psychological distress, when controlling for sibling age, sibling independence, and negative life events. Increased involvement in household tasks, providing emotional support to family members, and feelings of inequitable relating and distribution of responsibility within the family may contribute to experiencing stress, anxiety, and depression. Interestingly, retrospective reports of past instrumental caregiving, emotional caregiving, and perceived unfairness also were associated with most of the types of current psychological distress. This suggests that experience of parentification in childhood may have lasting effects in young adulthood.

One exception to these findings was the parentification dimension of instrumental caregiving, which was not significantly associated with all forms of psychological distress. The lack of evidence for the relations between instrumental caregiving and distress may be a reflection of the positive impact of parentification. Previous research has found that mothers who reported that their child assumes a parental role in the family also tended to have children who reported lower depressive symptoms and greater social

competence compared to the children of mothers who did not report child parentification (Tompkins, 2006). Although emotional caregiving and unfairness may be associated with distress, involvement in chores and other household tasks may not necessarily contribute to negative outcomes.

Interestingly, although hypothesis 1 found no significant group differences for parentification, in hypothesis 2, a comparison of the correlations within the ADHD and the control groups revealed different patterns of association between parentification and psychological distress. In the ADHD group, the only significant relations were between greater perceived unfairness (both past and current) and greater levels of depression and stress. Significant relations were found for the majority of the six subscales of parentification in relation to depression, anxiety, and stress in the full sample control group. However, parentification was not significantly related to distress in the matched sample control group. Given the discrepancy between the full and matched control group findings, it is possible that some of the nonsignificant associations in the matched sample control group may be due to decreased power resulting from the small sample size.

Despite the limits of power, unfairness was still associated with depression and stress for individuals who had sibling with ADHD. It is possible that the type of unfairness experienced by individuals with siblings with ADHD may be unique and more related to parentification. Individuals with siblings with ADHD may experience unfairness in a way that is conducive to developing higher levels of stress and depression. This is consistent with previous research in which increased instrumental and emotional caregiving was associated with increased perceived unfairness, which in turn was associated with increased depressive symptoms (Jankowski, Hooper, Sandage, &

Hannah, 2013). Moreover, increased instrumental and emotional caregiving also corresponded with increased perceived unfairness, which corresponds to decreased capacity for emotion regulation, which then corresponded to increased depressive symptoms. Siblings without ADHD may be expected to be more independent as the family shifts their focus on managing the hyperactive/impulsive behaviours in the individual with ADHD. Parents may spend a lot of time providing care for the individual with ADHD, which can contribute to non-ADHD siblings feeling as if their needs are not prioritized in the family. Non-ADHD siblings who may not share the same priorities as their parents may perceive their living situation to be unfair. This is also consistent with the finding that high levels of perceived unfairness may be associated with decreased self-differentiation (Jankowski, Hooper, Sandage, & Hannah, 2013).

Future studies should examine self-differentiation as it relates to parentification and psychological distress to better understand distress in parentified individuals with and without a sibling with disabilities. Research should also include a qualitative investigation of how individuals living with siblings with ADHD perceived unfairness in their families compared to a control group.

Coping as a Moderator

Another goal of the present study was to examine whether certain types of coping moderates the relationship between parentification and psychological distress. The results provided partial support for the two hypotheses (3 and 4). Higher levels of current emotional caregiving were associated with higher levels of depression, but only for participants reporting lower levels of socially supported coping. The relationship between current emotional caregiving and depression was not significant for participants who

reported average to high levels of socially supported coping. Higher levels of current emotional caregiving were also associated with higher levels of stress, but only for participants reporting low to average levels of social supported coping. The relationship between current emotional caregiving and of depression was not significant for participants who reported high levels of socially supported coping. Socially supported coping also moderated the relationship between current perceived unfairness and depression. Participants who reported higher levels of current perceived unfairness also tended to report higher levels of depression, with the relationship becoming less positive with higher levels of socially supported coping.

Taken together, the findings suggest a vulnerability to stress and depression for young adults who use less socially supported coping strategies, while also highlighting the importance of socially supported coping for parentified individuals. Young adults who experience high levels of emotional caregiving and are less likely to turn to others for instrumental and emotional support may experience greater distress compared to parentified young adults who use more social support. This is consistent with previous research, which found that whether or not children received emotional support from others was related to the adaptive and maladaptive effects of parentification (Thastum et al., 2008). The findings of the current study provide further support for the relationship between high levels of parentification and high levels of distress, and suggests that socially supported coping style may serve as a protective buffer in this relationship.

Although the moderation model was supported for socially supported coping, it was found that self-sufficient and avoidant coping strategies did not moderate the relationship between parentification and distress. This may be explained by the

underlying social mechanisms that characterize parentification and socially supported coping. Following a family systems framework, parentification can be understood as a family's coping response to increased demands on the family. The observed relationship between parentification and socially supported coping may then stem from their role within the family system. Crowe and Lyness (2013) reported similar findings in their study of families of individuals with a mental illness. They found that greater use of social support was associated with family cohesion, while greater caregiving is associated with less family communication and satisfaction, and greater distress. Investigation of other family factors such as cohesion and communication in future studies may shed light on the role of family dynamic in the relationship between the parentification and socially supported coping.

When examining this moderated relation within group, different patterns emerged. It was expected that the ADHD and control group would differ in terms of the strength of the moderating effect of coping, with coping accounting for greater variance in distress for participants in the ADHD group. Findings did not support this hypothesis. Socially supported coping had moderating effect on the relation between parentification and depression and stress, but only for the control group. Higher levels of current emotional caregiving were associated with higher levels of depression, but only for control group participants reporting lower levels of socially supported coping. Higher levels of current emotional caregiving were also associated with higher levels of stress, but only for control group participants reporting low to average levels of current emotional caregiving. Socially supported coping also moderated the relationship between current unfairness and distress. Participants who reported higher levels of current

perceived unfairness also tended to report higher levels of depression and stress, but only for control group participants reporting low to average levels of socially supported coping. In contrast, socially supported coping did not moderate the relationship between parentification and distress for the ADHD group. The findings suggest that socially supported coping may play a larger role for individuals who do not have a sibling with ADHD. Other factors may be more predictive of distress than coping style for individuals with siblings with ADHD.

It is important to note that the nonsignificant finding may also be attributed to problems with sample size. When narrowing the moderation analyses for the Control group to the matched pairs sample ($n = 60$), the moderating effect for socially supported coping on parentification and distress was no longer statistically significant ($n = 30$), demonstrating the possible limitation of a small sample size.

In consideration of the positive relation observed between distress and past and current unfairness, additional analyses were conducted to investigate the relation between unfairness, coping, and distress. In the ADHD group, higher levels of socially supported and higher levels of avoidant coping were associated with depression, anxiety, and stress. A moderate positive relationship was also observed between current perceived unfairness and socially supported and avoidant coping styles. In the control group, higher levels of socially supported coping was related to higher levels of depression and stress. Higher levels of avoidant coping was related to higher levels of depression, anxiety, and stress. However, perceived unfairness was not related to coping style. Individuals with siblings with ADHD who experience feelings of inequitable relating in their families may use similar coping strategies as the control group, but these strategies may be motivated by

mechanisms that are different from the control group. This is consistent with previous research which report unfairness as a moderating the relationship between caregiving and distress. These findings in the current suggest that there is more to the relationship between caregiving, unfairness, and distress; and coping may contribute to this relationship.

Limitations and Directions for Future Research

One of the limitations of the study was the small sample size for the ADHD group ($n = 30$). This presents issues for conducting and interpreting analyses, particularly those related to tests of multiple moderation regression. In the present study, there was a smaller sample size for ADHD ($n = 30$) compared to the control group ($n = 179$). Small sample sizes can decrease statistical power, a common problem for moderation analyses. Aguinis, Beaty, Boik, and Pierce (2005) have shown that the average effect size in moderation analyses (f^2) is 0.009, which is far from Cohen's (1988) suggested small (0.02), medium (0.15), and large (0.35) effect size values. Moreover, power in moderation tests may even be lower for models that have continuous independent and moderator variables, an issue that is aggravated by small sample sizes (McClelland & Judd, 1993). Aguinis and colleagues (2001) caution against the low power problem leading researchers to conclude no interaction effect, although it may actually be quite strong in the population.

Homogeneity of sample in terms of gender and level of education was also an issue. The participants in the study were recruited from the Department of Psychology participant pool at a mid-size university in Ontario, with 82.3% of the entire sample identifying as female. Gender differences in sibling relationship reports may have an

impact on the findings. Sisters of individuals with intellectual disabilities have been observed to score higher than brothers in caregiving, companionship, and positive aspects of the sibling relationship (Orsmond & Seltzer, 2000). Because the majority of participants in the the study were female, it is possible that they reported greater levels of caregiving. Thus, the results of the study may not necessarily reflect the relations between parentification, coping, and psychological distress in males. Further, all the participants were enrolled in university and the interaction between other external factors such as social economic status, family values, and geographic location may have had an impact on the study's key variables. Future studies should incorporate a more diverse sample, with equal distributions of brothers and sisters of individuals with and without ADHD.

Another limitation is the self-report, retrospective nature of the measures. Past parentification measures (past instrumental caregiving, emotional caregiving, and unfairness) were based on retrospective reports, which are more prone to confounding error and report bias compared to prospective studies. Retrospective reports on parentification may be biased by the participant's current experience of distress. One way of addressing these limitations is to conduct a longitudinal study. This may increase the likelihood of capturing the effects of changes in the family dynamic at appropriate developmental periods.

Group assignment was determined based on participants' self-report of whether or not they have a sibling with ADHD, which restricts the accuracy of the assignment to the degree of accuracy in the self-reports. Participants in the ADHD group may inaccurately report their sibling's diagnosis, which will be difficult to evaluate because no

professional diagnosis was used to confirm the sibling report. Moreover, there is some debate regarding the overdiagnosis of ADHD and this may impact the severity of symptoms, level of independence, and caregiving demands in the ADHD siblings involved in the study. It is also possible that some of the participants in the control group may identify siblings who meet the criteria for ADHD but have not been diagnosed. As a result, the ADHD and control groupings may be contaminated by inappropriately assigned participants.

Although there is a scarcity of studies on sibling experience, there is evidence to suggest that siblings may be valuable informants. A study by Lobato and Kao (2002) examined the efficacy of an integrated sibling and parent group intervention focused on increasing sibling understanding and adjustment to chronic illness and developmental disability, and reported a significant improvement in sibling knowledge at 3-month followup. Interestingly, the majority of the siblings (age 8 to 13 years) were also able to accurately name and explain their brother or sister's disorder even prior to the intervention, which suggests high level of accuracy for sibling-reported developmental disability diagnosis even in younger children.

Participants in the ADHD group identified as having a sibling with ADHD, but it is unclear whether they have multiple siblings with ADHD. The number of individuals with ADHD within the family may impact parentification and distress. The family may need to provide additional caregiving and manage additional problematic behaviours exhibited by the children in the family with ADHD. These responsibilities may lead to greater distress for individuals with siblings with ADHD.

The current study also involves completion of several questionnaires, which may lead to fatigue and inconsistencies in responding. The entire survey consisted of 239 questions altogether, and survey completion time ranged from 30 minutes to 1 hour. Strategies were put in place in order to minimize the effects of respondent fatigue. First, the questionnaires for parentification, coping, distress, and sibling independence were counterbalanced to control for bias. Second, participants were presented with only items that were relevant to them. For example, once participants identify as not having a sibling with ADHD, they will not be presented with any items related to having a sibling with ADHD. Lastly, the survey allows participants to save their progress and continue the survey at a later time that day.

The three DASS-21 subscales (depression, stress, and anxiety) were moderately correlated, and may explain why there were similar patterns of findings for depression and stress across the main analyses. Depression and stress were positively correlated with each other ($r = .67$) in the study. However, it is worth noting that anxiety was also positively correlated with depression ($r = .71$) and stress ($r = .75$), but did not share the same pattern of findings for the main analyses.

The limitations and the findings of the study also point to the necessity of investigating other internal (e.g., self-differentiation) and external factors (e.g., family cohesion) together with parentification, coping, and psychological distress. Such a study will allow researchers to examine interactions between individuals' level of distress, their beliefs surrounding their familial role, and the expectations of their family members, as well as better predict outcomes in young adults who have experienced parentification.

Conclusion

The present study examined the relation between parentification, coping, and psychological distress as it pertains to individuals who have siblings with Attention-Deficit/ Hyperactivity Disorder (ADHD) and those who have siblings without any clinical diagnoses. One major contribution of the study is the insight into the parentification experience in siblings of individuals with ADHD. Findings indicate that perceived unfairness in young adults with siblings who have ADHD may be strongly associated with certain types of distress, suggesting increased vulnerability to depression and stress for this population. The findings provided partial support for the effects of parentification and socially supported coping style on distress, and suggests a moderating effect for socially supported coping strategies on the relationship between parentification on distress. These findings highlight the importance of social support in the well-being of emerging adults, particularly for emerging adults who experience parentification in their families. The observed relation between parentification and certain types of psychological distress also lend some support to the family systems theory, such that increased caregiving demands may require some children in the family to take on greater responsibilities, which can impact their mental health. Improving our understanding of parentification may help us better identify individuals at risk for developing psychological distress and address problematic internalizing behaviours, particularly in families of individuals with ADHD. This knowledge may be used to inform parents and health professionals working with young adults and families of individuals with ADHD.

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VITA AUCTORIS

NAME: Aranda Christine Wingsiong

PLACE OF BIRTH: Manila, Philippines

YEAR OF BIRTH: 1990

EDUCATION: St Martin Secondary School, Mississauga, ON,
2008

University of York, B.A., Toronto, ON, 2012