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Raising an ADHD Child: Relations between parental stress, child functional
impairment, and subtypes of the disorder

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A dissertation submitted in fulfillment of the requirements for the award of the degree
of Master of Social Science Psychology

Faculty of the Humanities

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2011

COMPULSORY DECLARATION This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

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ACKNOWLEDGEMENTS

Dr. Kevin Thomas, University of Cape Town: The supervisor of my work. Thank you for your advice and valued insight on this project.

Mareli Fischer, Clauda Coetzee and Lesia Smith: Fellow researchers. Thank you for all your help with interviewing the children and parents.

Anneli Hardy, University of Cape Town: Lecturer. Thank you for your guidance and support in setting up and analyzing the data.

Thank you to the parents who took part in this study, this research could not have been possible without your openness and willingness to participate.

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ABSTRACT

Families with children that have developmental, neurological, or other special care needs typically experience high levels of stress related to raising those children. Parental stress can affect not only the parent, but also the child's functioning and the family environment. The broad aim of this study was to gain a clear picture of how mothers of children with ADHD experience stress, how their stress levels compare to those of mothers of children without ADHD, and which factors predict the extent to which they are stressed. To achieve this aim, I gathered self-report questionnaire-based data from mothers of children with ADHD, mothers with children on the autism spectrum, and mothers of typically developing children. Results suggested that mothers of children with ADHD experienced more stress than mothers of children without ADHD, particularly in relation to raising their child. The data analyses also identified a cycle of negative interactions between the severity of ADHD symptomatology, maternal depression, quality of life, and increased stress levels. An examination into the factors that best predicted parental stress in ADHD mothers showed that low resources, low quality of life, high depression and a child that had severe ADHD symptoms were particularly important contributors. Importantly, the sources of parental stress were child-related as well as parent-related characteristics. The current data will contribute to the development of intervention plans aimed at reducing stress and helping families that have children with ADHD with more effective advice, guidance, and support.

INTRODUCTION

Parents of children with learning disorders, developmental disorders, or psychiatric disorders often experience high levels of stress related to caring for their child and dealing with the implications of their child's disorder for family relationships, finances, and general wellbeing. Relatively little research has been conducted, however, on parental stress levels in families where a child has been diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD). Furthermore, no published studies have investigated whether parents' stressful experiences and stress levels are influenced by the level of functional impairment¹ in the ADHD child, and/or by which subtype of ADHD the child is diagnosed.

Examining the relationship between the functional impairment of a child with ADHD, on the one hand, and parental stress, on the other, is important because identifying how parental stress may vary with the severity of functional impairment of the child will aid in the identification of potential predictors of parental stress, and contribute to future preventive plans aimed at reducing stress and helping families that have children with ADHD. Similarly, examining the relationship between the subtype of ADHD and parental stress is important because symptoms associated with different subtypes may result in different areas of functional impairment, and may thus lead to unique sources of increased stress for parents. This identification of unique sources of stress might allow mental health professionals an opportunity to offer more effective advice, guidance, and support for parents of children with ADHD, and might also allow the development of more effective intervention programmes dealing with reduction of stress in parents of ADHD children.

Both the parents and the family context play an important role in the development and growth of a child during the early years of his/her life (Barry & Kochanska, 2010). It has long been established that a child's cognitive, emotional, and social capacities can be shaped and formed from an extremely early age (Case, Hayward, Lewis & Hurst, 1988). However, in families of children with ADHD or other behavioural problems, the family system and interactions between family members are likely to be placed under greater levels of stress than in families without such challenges; the critical development of a young child may be disrupted as a consequence of this stress.

Furthermore, it is difficult to avoid these developmental disruptions in families of children with special care needs because broader-context parent and family factors contribute

¹Functional impairment is defined here as "specific deficits in multiple domains of functioning developing subsequent to a disorder" (Winters et al., 2005, p. 309).

to and exacerbate the child's dysfunction (Kazdin & Whitley, 2003). Broader-context parent stressors can be identified as originating from: (1) characteristics relating to their child's disorder (e.g., aggression, oppositional defiance, high functional impairment), (2) characteristics relating to their mental health, wellbeing and ability to function as a parent, and (3) environmental/situational factors that negatively affect their daily life (Abidin, 1995). For example, a mother who has few resources may become angry or frustrated at her inability to help the child by providing specialised therapies and medications; as a result, parental stress levels increase and the child's needs are not met sufficiently. Therefore, these stressors are complex and involve many dimensions that noticeably affect the child's development, the parent's wellbeing, and the family environment negatively.

Additionally, these stressors influence and exacerbate the cycle of negative parent-child interactions where the child's needs are not met and the parent's stress is intensified. For example, a parent who has inadequate knowledge and understanding of his/her child's disorder and associated problems may become easily frustrated or angry with that child; as a result, the parent might feel guilty, which in turn might lead to increased stress and resulting tension in the parent-child relationship. In other words, if the caregivers are unable to provide for all of their child's needs (emotional, cognitive, social and material), that child's behavioural problems are at risk of intensifying, and other emotional disturbances may arise.

Parental stress can therefore be defined as a combination of child and parent characteristics, the family context, and other life stressors (Abidin, 1995). It is important to recognise that caring for a child who has some form of behavioural problem is difficult for most parents, and that if support and resources are inadequate, parents are at risk of increased health problems, depression, or feelings of inadequacy. Therefore, in order to reduce negative consequences, early identification of potential at-risk families is necessary so that interventions aimed at reducing stress in child-parent systems can be implemented, and can possibly reduce (or even prevent) future behavioural and emotional problems for both parent and child.

This study had six aims: First, I sought to measure parental stress levels in mothers of children who have been diagnosed with ADHD, and to compare those stress levels with those of mothers of children with autism and with mothers of typically developing children. Second, I sought to determine whether parental stress levels varied with the particular subtype of ADHD with which the child was diagnosed. Third, I sought to examine whether these mothers of ADHD children experienced clinically significant levels of parenting stress. Fourth, I sought to determine the relationship between parental stress and the level of

functional impairment of the child. Fifth, I sought to examine the relationship between depressive symptomatology and perceived quality of life with the stress levels of mothers of children with ADHD. Sixth, I sought to establish the factors that best predict the levels of parental stress associated with having a child with ADHD.

In the rest of this section, I present a review of literature describing past research on the association between ADHD and parental stress. This review serves not only as a summary of the extant literature, but also highlights gaps in the knowledge on the topic.

Attention-Deficit/Hyperactivity Disorder (ADHD)

ADHD is a syndrome of inattention, hyperactivity, and impulsivity. The diagnostic term is most commonly used to describe individuals who have difficulty sustaining attention, adjusting activity levels, and regulating impulses over various social contexts (Lange et al., 2005). These social contexts may be within the family environment, at school, or within peer groups.

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association [APA], 2000), to qualify as true ADHD, problems of inattention, hyperactivity, and/or impulsivity must have been present before 7 years of age and must have been consistent for over 6 months. Generally, such problems are noticed from a very early age. The problems experienced by children with ADHD are genuinely disruptive to their everyday performance and wellbeing; mere naughtiness at home or not doing well at school cannot result in a diagnosis of ADHD. A complete description of the DSM-IV-TR diagnostic criteria for ADHD is presented in Appendix A.

ADHD is the most commonly diagnosed childhood neurological-behavioural condition, affecting at least 3-7% of school-aged children in Europe and the United States (APA, 2000). Furthermore, it often continues to affect diagnosed individuals throughout adulthood, with 60% of individuals with ADHD symptoms in childhood continuing to have difficulties in adulthood (Harpin, 2005). ADHD is more prevalent amongst boys than girls (Graetz, Sawyer, Hazel, Arney, & Baghurst, 2001).

ADHD is as prevalent on the African continent as in Western countries (Meyer, 1998; Meyer, 2005). In an epidemiological study, Meyer (2005) explored the prevalence rates of ADHD symptoms in South African children, with the specific aim of examining whether cultural differences made a difference to these rates. She found that prevalence rates in this country were similar to those reported in European and North American studies. This data suggests that ADHD might emerge from some fundamental neurobiological process.

DSM-IV-TR indicates that there are three subtypes of ADHD: Predominantly Hyperactive/Impulsive Type (ADHD-HI), Predominantly Inattentive Type (ADHD-PI), and Combined Type (ADHD-CT). These subtypes manifest themselves in different problem areas, and are associated with varying levels of functional impairment (Graetz et al., 2001). For example, a child with the ADHD-PI subtype experiences difficulty with tasks that require focusing and maintaining attention to detail or following instructions. Forgetfulness, being easily distracted, and having trouble organising and following instructions are all characteristics of ADHD-PI that disrupt daily activity.

Children with the ADHD-HI subtype are characterised as displaying the following hyperactive behaviour patterns: fidgeting, running about at inappropriate times, talking excessively, and having trouble enjoying leisure activities quietly. Individuals with ADHD-HI also experience problems related to impulsivity that can be manifested as blurting out answers or interrupting conversations. These characteristics affect behaviour in various social settings and are disruptive and inappropriate for the individual's developmental level. Such problems may result in the individual being more at risk of injury or accidents due to impulsive actions. For example, a child may dash across a road without checking for traffic.

Children with the ADHD-CT subtype experience an assortment of traits from both ADHD-PI and ADHD-HI subtypes. Therefore, they are more prone to problems rooted in both the ADHD-PI and ADHD-HI subtypes. Research focusing on the validity of the ADHD subtypes found children with ADHD-CT to have more externalizing behaviour problems (e.g., aggression, delinquency, and hyperactivity), and a higher level of functional impairment in social and scholastic domains, than children with ADHD-PI and ADHD-HI (Graetz et al., 2001).

Clearly, it is important for researchers and clinicians to distinguish between the three subtypes when evaluating family systems, as the behaviours and problems typical of each subtype could affect the child and family differently. Unfortunately, most ADHD research studies have not discriminated between diagnostic subtypes.

Parental Stress and ADHD

Parental stress is a complex construct involving behavioural, cognitive, and affective components that manifest into a tense child-parent relationship (Kadesjö, Stenlund, Wels, Gillberg, & Hägglöf, 2002). For example, the child's behaviour, and the parent's reaction to this behaviour, might cause negative thoughts and emotions in both the child and the parent.

Stress and poor parent-child interaction then increases when the parent's attempts to deal with the child's behaviour are unsuccessful.

For parents, the challenges that accompany an ADHD child's condition are various. For instance, financial strain might result from expensive medications being prescribed and from special schooling being required if functional impairment is within the realm of learning and academic achievement; social stress might result from trying to gain acceptance, or to avoid blame, in a society that stigmatizes any form of abnormal behaviour; relationship stress might result from difficulties associated with imposing a daily routine and discipline on the ADHD child (Austin & Carpenter, 2008). These stressors can result in mental health difficulties for parents, which in turn can have negative effects on the child. For example, in a family where one of the primary caregivers is morbidly depressed as a consequence of ADHD-related stress and he or she is therefore not able to complete childcare tasks, the child's basic daily needs might be neglected. Clearly, it is of extreme importance that researchers and clinicians recognize and address parental stress as a way towards developing interventions that might minimize the strain on these families.

Empirical studies investigating parental stress in families of ADHD children have generally found that parents are extremely stressed, may have difficulty accepting their child's disability, and may experience more difficulties in the marital relationship than do non-ADHD families. Kadesjö et al. (2002) investigated how mothers of children with ADHD perceived their situation and whether these perceptions affected their stress levels. Two groups of mothers of 3–7 year olds (one group with an ADHD child, $n = 131$, and the other without an ADHD child, $n = 131$) completed self-report questionnaires designed to assess their levels of stress, their evaluation of the child-rearing situation, attributions surrounding child-rearing outcomes, and perceptions and expectations of support and resources.

The researchers found that mothers of ADHD children scored significantly higher than mothers of typically developing children on all measures of perceived stress. For example, they tended to experience many more difficulties coping with and accepting their child, and often perceived their child as a burden. Importantly, the authors emphasised that stress may not have been exclusively due to the child's problems or functioning. Situational factors such as education level, financial support, and how the mothers perceived their position and their resources, all needed to be taken into account when analysing overall stress.

Gupta (2007) compared differences in parental stress levels in three groups: those with an ADHD child, those with a child diagnosed as experiencing a developmental disorder

(DD), and those with children experiencing general medical conditions. He found that the parents of ADHD and DD children had higher levels of parental stress than parents of children with general medical conditions.

Spratt, Saylor and Marcias (2007) also found that parents of children with ADHD experienced significantly higher stress levels than parents of children without ADHD. They examined the stress levels of parents of 4-12 year old children with both ADHD and learning disabilities ($n = 54$), intraventricular haemorrhage at birth ($n = 70$), and neural tube defects ($n = 45$). The study was designed to examine and compare potential parent-child relationships in relation to parental stress between diverse groups of children with special needs. The results, although not specific to ADHD, indicated that parental stress was related to child dysfunction. The level of child functioning was a significant predictor of total parental stress, accounting for 17% of the variance in total stress scores. Other factors such as availability of resources and support were able to stand alone as significant correlates of total parental stress, accounting for 30% of the variance in stress levels. With regard to parents of children with ADHD, stress arose predominantly from internalizing problems the child experienced (e.g., withdrawal, somatic complaints, anxiety/depression). In summary, Spratt et al. (2007) highlighted the connection between behaviour problems of the child and elevated stress levels of the parent, especially in conjunction with perceived inadequacy of support and/or resources.

Divorce as an outcome of parental stress in ADHD families. As noted above, parental stress related to the care of a child with ADHD can manifest itself in many forms, result from many situations, and affect various facets of family life. It can also result in a higher likelihood of divorce. Wymbs et al. (2008) found that in a sample of 282 families, 23% of parents with an ADHD-diagnosed child were divorced by that child's 8th birthday. By comparison, in parents matched on socio-demographic factors such as age, education, and income, but who did not have a child diagnosed with ADHD, only 13% were divorced by their child's 8th birthday. Additionally, parents of children with ADHD reported less marital satisfaction, more frequent arguments, and the use of fewer positive and more negative verbalisations during child-rearing discussions. Importantly, the authors noted that a child's disruptive behaviour does not in itself cause marriages to dissolve; such behaviour merely adds to other sources of stress, such as lack of support or resources and increased financial strain that spark marital conflict.

Compromised mental health as an outcome of parental stress in ADHD families. Genetic studies have demonstrated that ADHD is heritable (Shah, 2008). According to

Thapar, Holmes, Pulton, and Harrington (1999), the mean heritability of ADHD is 0.75 (i.e., 75% of the etiological contribution to the disorder is genetic). As a result, parents who have children with ADHD often have symptoms of the disorder themselves. These symptoms have an impact on their mental health as well as their ability to cope with the stress of caring for a child with ADHD. Surprisingly, however, very few studies have focused on the mental health of parents with an ADHD child.

The few studies that have investigated the relationship between comprised mental health and raising a child with ADHD have found that the presence of ADHD in a child is associated with increased levels of parental stress as well as parental psychopathology. For instance, Klassen, Miller, and Fine (2004) evaluated the relationship between child quality of life and parent mental health in a sample of 165 children referred to an ADHD clinic over a 1-month period in 2002. Parents of children with ADHD rated their own wellbeing as: 15% 'excellent', 33% 'very good', 36% 'good', and 15% 'fair/poor'. Parents of children with ADHD reported more emotional instability, more behavioural problems, poorer mental health, and lower self-esteem than parents of children without ADHD.

Previous literature (e.g., Psychogiou, Daley, Thomas, & Sonuge-Barke, 2008; Spratt et al., 2007) suggests that personal distress in parents of children with ADHD is associated with negative affect, depression, and anxiety disorders, all of which affect the ability to cope with stress. Psychogiou et al. (2008) explored the relationship between parental psychopathology, parental stress, and parenting empathy in mothers with children who have ADHD. Their results confirmed that child conduct problems (e.g., aggression to people or animals, deceitfulness or lying, serious rule violations) were associated with decreased maternal empathy (e.g., lack of responsiveness, less sensitive parenting ability, and lack of desire to offer their child comfort and help).

Specific Aims of the Current Study

Although some studies on ADHD and parental stress have been published, the relationship between different subtypes of ADHD (specifically, the different symptom severity levels and functional impairment present in each subtype) and parental stress levels has not been examined in the published literature. Few studies have focused on the mental health of parents with an ADHD child or attempted to identify the factors that contribute to a tense parent-child relationship. This study had six specific aims in investigating stress in families with an ADHD child. The aims were to:

1. Examine where, in relation to high-stress and low-stress mother-child dyads, mothers of ADHD children fit in terms of their stress levels;
2. Examine whether parental stress levels vary with the particular subtype of ADHD with which the child is diagnosed;
3. Determine to what extent the stress scores of mothers of children with ADHD fall within a range defined as 'clinically significant' by a commonly-used instrument in the field;
4. Examine the extent to which the level of functional impairment/problems present in the child impact on the mothers' stress;
5. Investigate how other aspects of mothers' lives are affected by, and affect, increased stress levels by examining associations between levels of parental stress, symptoms of depression, and perceptions of quality of life;
6. Establish the factors that best predict the degree of parental stress associated with having a child with ADHD.

The value of this research is twofold. Firstly, it indicates the extent to which mothers of children with ADHD are stressed and under strain. In so doing, the study will help raise awareness of the challenges faced by mothers of children with ADHD. Secondly, the research enables effective identification of the domains in which mothers of children with ADHD are likely to experience stress, and also helps identify potential predictors of parental stress. This identification will contribute to the effective implementation of effective advice, guidance, and support for parents of children with ADHD. This research will also allow mental health professionals an opportunity to develop more effective intervention programmes dealing with reduction of stress in parents of ADHD children.

METHODS

Research Design and Setting

Following the taxonomy of research types presented by Rosenthal and Rosnow (2008), the proposed research is of a quasi-experimental, cross-sectional nature. Quantitative measures (semi-structured interviews and self-report questionnaires) were used to collect data. Data was collected across South Africa; participants resided in the Western Cape, Gauteng, the Eastern Cape, and the Northern Cape.

Participants

Three distinct groups of participants were recruited. One group ($n = 100$) consisted of children with ADHD and their mothers. This group was subdivided into children with ADHD-CT and their mothers ($n = 63$) and children with ADHD-PI and their mothers ($n = 37$). The second and third groups served as controls for these ADHD participants and consisted, respectively, of children diagnosed with autism spectrum disorders and their mothers ($n = 20$), and typically developing (TD) children and their mothers ($n = 20$).

With regard to the autism spectrum control group, previous research has shown that parents of children with autism spectrum disorders (ASDs) experience exceptionally high levels of parental stress (e.g., Davis & Carter, 2008; Pisula, 2007). For instance, Tsai, Tsai, and Shyu (2008) found that parents of ASD children reported more stress than parents of TD children and parents of children with other developmental disorders (e.g., Down syndrome). Similarly, Osborne and Reed (2009) conducted two studies to investigate the relationship between parental stress and the behavioural problems of the child with autism. They showed that parental stress was associated with the *nature and characteristics* of the child's behavioural problems, rather than with the *severity* of the child's disorder. (As noted earlier, the current study aimed to conduct a similar investigation in terms of examining the types of problems and the functional impairment experienced by children with ADHD). Parents of children with ASD are recognised as a high stress group in comparison to parents of TD children and other disabilities. Parents of children with ADHD are also recognised as a high stress group in comparison to parents of TD children. It was therefore interesting, and appropriate, to use parents of ASD children as a comparison group.

ADHD mother-child dyads were recruited through the use of posters placed in public areas (see Appendix B), such as shopping malls, and at psychologists' practices. Additionally, members of the research team contacted principals and school psychologists at private and remedial schools in the Western Cape and Gauteng to inform them of the study. Interested schools were sent letters to provide parents with more information on the current study (see Appendix C). The majority of the recruitment efforts occurred through internet advertising. The Attention Deficit Hyperactivity Support Group of Southern Africa (ADHASA), a website focusing on living with ADHD and its accompanying difficulties (www.ladd.co.za), and a family website focusing on children in general (Connecting Kids; www.connectingkidz.co.za), promoted the study and advertised the poster in monthly online newsletters. Various support groups were contacted through these websites. Finally, a group providing advice, information on ADHD developments, and a forum for those interested in ADHD, was created on the online social networking site, Facebook. This online group was also used as a platform for interested parents to indicate their willingness to participate in the current study.

ASD and TD children and their mothers were recruited directly via email correspondence through school psychologists at private and remedial schools in the Western Cape and Gauteng. In terms of the children with ASD, only schools that specialised in providing for their needs were contacted. In terms of the children with TD, only private mainstream schools were contacted. Once schools showed interest in the study, the researchers distributed pamphlets about the study to them. Parents of children with ASD or TD then contacted the researchers via email if they wished to participate.

Inclusion and Exclusion Criteria of the current study

Inclusion criteria. All ADHD and ASD participants within the current study had been previously diagnosed with their specific disorder by a clinical psychologist or specialist before participation in the current study. Neither the ASD or TD groups were the focus of the current study; therefore their previous diagnosis was used as clarity for their disorder. Children were included if they were English or Afrikaans speaking. There were two reasons for this: Firstly, the instruments are provided only in English, and secondly, at least one of the researchers was fluent in Afrikaans and could translate where necessary. Only children within the range of 6-18 years were included as the instruments employed were designed for use within this age group.

Exclusion criteria. As stated previously, DSM-IV-TR distinguishes three subtypes of ADHD (ADHD-CT, ADHD-PI, and ADHD-HI). There were no participants with ADHD-HI in the current study because all of the ADHD children in the sample met, according to the *Mini International Neuropsychiatric Interview for Children and Adolescents (M.I.N.I Kid;* English version 5/6; Sheehan et al., 1998), diagnostic criteria for either ADHD-CT or ADHD-PI; no participants met the criteria for ADHD-HI.

This relative lack of ADHD-HI participants in the sample is in line with research presented by Lee et al. (2008), who examined the frequency of occurrence of the three ADHD subtypes. Of the 419 cases they examined, only 60 (11%) of the participants were diagnosed with ADHD-HI. In contrast, 200 (47.7%) were classified as having ADHD-CT and 113 (27%) were classified as having ADHD-PI. This finding is consistent with other research showing that ADHD-HI has the lowest base rate, and is therefore the least prevalent of the three subtypes (see, e.g., Hurtig, Ebeling & Taanila et al., 2007). Children with co-morbid disorders of a psychotic nature were excluded from the current study. This is because a diagnosis of this nature can greatly complicate an ADHD diagnosis and treatment. Children that were not attending school, even if they were in the correct age range, were excluded from the study. This exclusion criterion was put in place because the school domain is one of the functional areas examined by the Child Behaviour Checklist (CBCL); in other words, items on the CBCL would not be relevant for non-school going children.

Demographic characteristics of the current sample. The final sample consisted of 140 mother-child dyads (63 ADHD-CT, 37 ADHD-PI, 20 ASD, and 20 TD). The children ranged in age from 6 to 18 years. Only mothers were used in the study, in order to maintain consistency throughout the investigation: The stress and experiences a father is subjected to when caring for a child with ADHD may differ from that of a mother, particularly given that the latter is most often the primary caregiver. This is consistent with other studies of ADHD and parental stress (e.g., Barkley, DuPaul & McMurray, 1990; Chronis, Gamble, Roberts & Pelham, 2006; Spratt et al., 2007)

Tables 1 and 2 present a complete demographic description of the children and mothers that constituted the final sample. Table 1 indicates that the sample of children was relatively homogenous in terms of key demographic variables, although there were differences with regards to medication, type of schools attended, and history of repeating a grade. In terms of the gender distribution across the four groups of children (TD, ADHD-CT,

ADHD-PI, and ASD), more males than females were recruited. For instance, across the two ADHD groups, 72 males and 28 females were recruited; this distribution is in line with previously reported ADHD epidemiological data showing that the base rate of the diagnosis is significantly higher in males (see, e.g., Barkley, 2006). Of note, however, is that whereas the ADHD-CT group contained more males (50) than females (13), the ADHD-PI group contained more females (22) than males (15). This breakdown is in line with prevalence rates of these subtypes: Boys are more likely to be diagnosed with ADHD-CT than are girls, whereas girls are more likely to be diagnosed with ADHD-PI than are boys (Barkley, 2006).

With regard to the educational status of the children in the current sample, most children in the ADHD groups attended mainstream schools, although many had repeated a grade at some point in their school career. In contrast, almost all the children in the ASD group attended a school specialised to provide education suited to individuals with those disorders. All the children in the TD group attended mainstream schools

With regard to the medication status of the children in the current sample, most of the children in the ADHD-CT group (93.7%) and all of the children in the ADHD-PI group were prescribed medication for their ADHD. In contrast, only a few children in the ASD group (15%) were prescribed medication for their disorder, and none of the children in the TD group were on prescription medication.

With regard to the mothers in the sample, Table 2 shows that there was relative homogeneity in terms of key demographic variables, such as age, neighbourhood of residence, and income level (which could be classified as middle class). There were quite marked differences with regard to marital status, however: Of the 100 mothers of ADHD children, 54 were divorced, separated, re-married, or single. This, in comparison to the mothers of children in the ASD and TD groups, where only 3 and 2 mothers, respectively, were without a partner, highlights how having a child with ADHD might impact on all domains of the parent's life.

Table 1
Demographic Characteristics of the Current Sample: Children

Variable	Group				F/χ^2	<i>df</i>	<i>p</i>	ESE
	ADHD-CT (<i>n</i> = 63)	ADHD-PI (<i>n</i> = 37)	ASD (<i>n</i> = 20)	TD (<i>n</i> = 20)				
Age (years)								
Range	6-15	6-15	6-18	6-16				
Mean (SD)	9.89 (2.59)	9.97 (2.24)	9.95 (3.53)	10.45 (3.28)	0.214	3	.887	0.005
Sex								
Males:Females	50:13	22:15	17:3	14:6	6.352	3	.096	0.213
Race								
White:Coloured	52:11	29:8	15:5	16:4	0.627	3	.890	0.067
Medication for specific disorder								
Yes:No	59:4	37:0	3:17	0:20	109.598	3	< .001***	0.885
Education								
Remedial:Specialised:Non-remedial	49:0:14	25:0:12	3:17:0	0:0:20	162.007	6	< .001***	0.761
Repeated a grade								
Yes:No:N/A	19:44:0	15:22:0	3:0:17	0:20:0	12.768	3	.005**	0.302

Note. ESE = Effect size estimate. This was estimated by R^2 in the case of ANOVAs and by Cramer's V in the case of χ^2 analyses.

** p < .01. *** p < .001.

Table 2
Demographic Characteristics of the Current Sample: Mothers

Variable	Group				F/χ^2	df	p	ESE
	ADHD-CT (n = 63)	ADHD-PI (n = 37)	ASD (n = 20)	TD (n = 20)				
Age (years)								
Range	31-53	32-53	34-51	34-47				
Mean (SD)	41.71 (4.67)	41.73 (4.75)	42.55 (4.87)	39.50 (4.12)	1.648	3	.181	0.035
Marital status					28.005	12	.006**	0.258
Married	28	20	17	18				
Separated	6	1	0	0				
Divorced	15	11	3	2				
Re-married	9	1	0	0				
Single	5	4	0	0				
Neighbourhood					2.428	3	.488	0.132
Rural:Suburban	2:61	3:34	1:19	0:20				
Religion					8.788	3	.032*	0.251
Christian:Other	58:5	30:7	13:7	17:3				
Household Income Level					0.534	6	.997	0.440
Low	23	12	6	7				
Medium	21	13	7	6				
High	19	12	7	7				

Note. Household income was calculated by dividing household income by the number of household members and defining four income categories, as follows: Low = R 0-175000 per annum, Medium = R 176000-375000, High = 376000 >R 426000. ESE = Effect size estimate. This was estimated by R^2 in the case of ANOVAs and by Cramer's V in the case of χ^2 analyses.

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

Clinical characteristics of the current sample. As mentioned previously, children with disorders co-morbid to the primary diagnosis were included in the study unless the disorders were of a psychotic nature. For all participants in the ASD group, autism spectrum disorders were their only diagnosis. For all participants in the TD group, there were no psychiatric disorders present.

Figure 1 displays the patterns of psychiatric co-morbidity in the current sample of ADHD children. The ADHD-PI children displayed more mood and anxiety co-morbid disorders, perhaps due to their tendency toward the kinds of problematic internalizing behaviours (e.g., becoming more withdrawn) that children with this subtype of ADHD typically display. In contrast, the ADHD-CT children displayed more behavioural co-morbid disorders, such as Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD), perhaps due to their tendency toward the kinds of problematic externalizing behaviours (e.g., destroying property or personal belongings) that children with this subtype of ADHD typically display. The figure below illustrates the number of co-morbid disorders present in children in the ADHD-CT and ADHD-PI groups within the current sample.

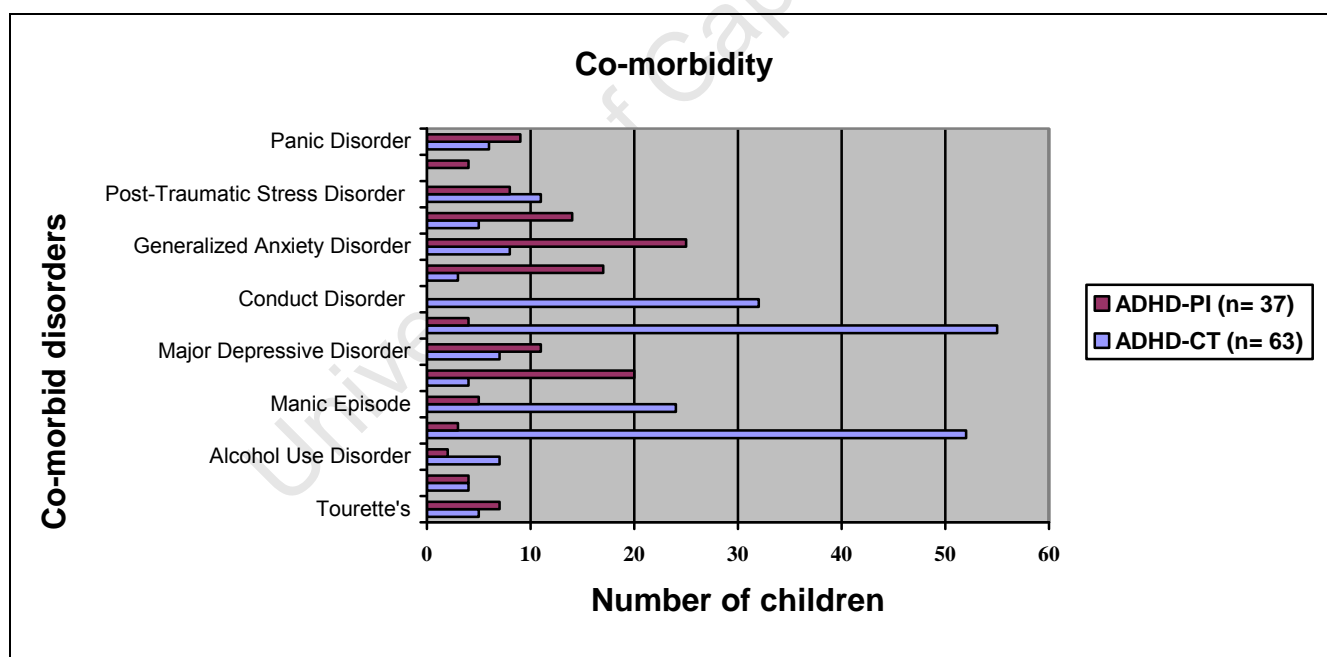


Figure 1. Psychiatric co-morbidity in the current sample of ADHD children.

Materials

Table 3 presents a list of the measures used in the study, along with the approximate time of administration for each measure. The instruments are discussed in more detail below.

Table 3
Instruments Used in the Study

Measure	Approximate time for administration (minutes)
Demographic questionnaire	5
M.I.N.I Kid	Up to 60
CBCL: Parent Report	5
Parenting Stress Index	20
Family Resource Scale	5
Family Support Scale	5
WHO Quality of Life Questionnaire	5
CES-D	5

Note: M.I.N.I Kid = Mini International Neuropsychiatric Interview for Children and Adolescents; CBCL = Child-Behaviour Checklist; CES-D = Center for Epidemiologic Studies-Depression Scale.

Child measures.

Diagnostic tool. The *M.I.N.I Kid* (English version 5/6; Sheehan et al., 1997) was used to assess the presence of DSM-IV-TR Axis I disorders in the child participants. This instrument provided verification as to whether the child qualified for the study by carrying a diagnosis of either ADHD-CT or ADHD-PI, with no co-morbid psychotic disorders. The *M.I.N.I Kid* is a reliable and valid measure for the clinical diagnosis of children and adolescence (Sheehan et al., 2010) For example, Sheehan et al. (1997) showed that the instrument has convergent validity with the Structured Clinical Interview for DSM-III-R Patients (SCID-P; Spitzer, Forman, & Nee, 1979) and with the Composite International Diagnostic Interview (CIDI; World Health Organization, 1990) for International Statistical Classification of Disease (ICD-10).

The *M.I.N.I Kid* has been used successfully in previous studies of child psychiatric disorders (see, e.g., Bastiaens & Dello Stritto, 2005) and has been used in previous studies of South African children by members of our laboratory (Hoppe, 2009; Fischer, 2010).

Functional impairment. The *Child-Behaviour Checklist (CBCL;* Achenbach & Rescorla, 2001) is a 113-item parent-completed questionnaire that inquires about a variety of child

behavioural and emotional domains of functioning. The CBCL includes 20 items that ask the parent to rate their child's competence in the domains of daily activities, social relations, and school performance. The only CBCL subscales used as outcome variables in the current study were Total Competence (used to indicate whether there was a clinically problematic level of competence, e.g., the individual required special assistance at school or at home to complete what should be age-appropriate activities) and the Externalizing and Internalizing problems subscales. On these subscales, parents rate the extent to which an item applies to their child now, or did apply within the past 6 months, using the following scale: 0 (*not true*); 1 (*somewhat or sometimes true*); 2 (*very true or often true*).

The CBCL has been carefully normed and has been widely used in ADHD clinical research (see, e.g., Geller et al., 2004; Spratt et al., 2007) as well as in previous studies of South African children (e.g., Cluver, Gardner & Operario, 2007; Shields, Nadasen & Pierce, 2008) and by a member of our laboratory (Fischer, 2010). Spratt et al. (2007) confirm that the CBCL is one of the strongest available measures of child internalizing and externalizing behaviour problems.

Parent measures.

Parental stress. The *Parenting Stress Index 3rd edition* (PSI; Abidin, 1995) is a 120-item instrument, suitable for parents of school-aged as well as younger children, used to measure self-perceived parental stress and the relative amount of stress within the parent-child system.

The PSI contains six subscales relating to characteristics of the child, forming what is known as the Child Domain: Adaptability, Mood, Distractibility/Hyperactivity, Demandingness, Reinforces Parent, and Acceptability. There are also seven subscales relating to characteristics of the parent, forming what is known as the Parent Domain: Competence, Isolation, Attachment, Health, Role Restriction, Depression and Spouse. All items are answered on a 5-point Likert-type scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). An example of a statement that parents would rate related to child characteristics is: *My child is so active it exhausts me*. An example of a statement that parents would rate related to their own characteristics is: *Being a parent is much harder than I thought*. The scores from the individual subscales within each of the Parent and Child Domains yield a stress score specific to that domain for each parent. An overall Total Stress score and Life Stress score can also be derived from this measure. The latter is based on the amount of stress that the parent is experiencing outside of the parent-child relationship, whereas the former is based on the combined total scores from the Child and Parent Domain subscales (Abidin, 1995). According to the PSI, Total Stress scores can range from extremely low; 13 (1 %ile) to extremely high; above 320 (99+ %ile). For Child Domain stress,

scores range from extremely low; -50 (1 %ile) to extremely high; above 145 (99+ %ile). In terms of Parent Domain stress, scores vary from extremely low; below 69 (1 %ile) to extremely high; above 188 (99+ %ile). In terms of Life stress on the PSI, scores can range from extremely low; 0 (1 %ile) to extremely high; 27(99+ %ile)

With regard to the psychometric properties of the instrument, internal consistency for the 120 items is high, and test-retest reliability for each of the subscales is good: $r = .63$ for the Child Domain, $.91$ for the Parent Domain, and $.96$ for the Total Stress score (Abidin, 1995). The PSI has been used as a primary measure in several ADHD and parental stress studies (see, e.g., Lange et al., 2005; Spratt et al., 2007; Van der Oord et al., 2006). The PSI has also been used previously in studies of South African parents (e.g., Harris, Ellison & Clement, 1999; Potterton, Stewart & Cooper, 2007) as well as by a member of the ACSENT laboratory (Oosthuizen, 2007).

Depression. The *Center for Epidemiologic Studies-Depression Scale (CES-D; Radloff, 1977)* was used to rate parents' subjective depression. This instrument consists of 20 items relating to mood, and asks individuals to rate depression symptoms over the past 7 days. Items are rated on a 4-point Likert-type scale ranging from 0 (*almost never*) to 3 (*most of the time or always*). A score of 16 or greater is considered clinically depressed.

Assessing the effects of the present level of depressive symptomatology is of interest in relation to parental stress. For instance, Van der Oord et al. (2006) used the CES-D to assess the effects of depressive symptomatology as a potential bias in informant agreement on ADHD, oppositional defiance disorder (ODD), and conduct disorder (CD) symptoms in clinically referred, DSM-IV-diagnosed children with ADHD. The same authors reported good internal consistency (Cronbach's $\alpha = .79-.92$) for the measure and rated its validity as similar to that of other depression measures

Resources and support. The *Family Resource Scale (FRS; Dunst, Jenkins, & Trivette, 1984)* and the *Family Support Scale (FFS; Dunst & Leet, 1984)* were used to gain information on material resources within the participating families and social support experienced by the mothers, respectively. The FRS consists of 30 items, each describing a particular resource (e.g., money to buy necessities, dependable transportation, time to be with spouse/friend, money to save); parents are asked to rate the adequacy and availability of these resources to their family. Each item is rated on a scale ranging from 0 (*does not apply*) to 5 (*almost always adequate*). The measure has a high internal consistency ($.92$) and a test-retest reliability of $.52$ over a period of 2-3 months (Spratt et al., 2007).

The FSS consists of 18 items, each describing a possible source of social support (e.g., spouse, friends, doctors, religious advisor); parents are asked to rate the amount of support

received from each source. Each item is rated on a scale ranging from 0 (*not available*) to 5 (*extremely helpful*). Spratt et al. (2007) reported that, in their sample, the measure had an internal consistency of .77, and a test-retest reliability of .91 over a 1-month interval.

Measures such as the FRS and FSS are important to use in studies of parental stress because often stress is increased by a lack of material resources or social support (Dunst & Leet, 1984). In the case of ADHD, these measures are especially important because the cost of medication and special schooling can add substantially to parents' financial stress (De Ridder & De Graeve, 2006). Furthermore, because there is still social stigma attached to having a child with ADHD (Singh, 2004), social support is important to parents as a potential buffer against stress.

Quality of life. The *WHO Quality of Life Questionnaire (WHO QoL;* Gururaj, Bada Math, Reddy, & Chandrashekar, 2008) was used to evaluate parent life satisfaction and wellbeing. The instrument emphasises the subjective responses of individuals rather than their objective life conditions. Respondents report and rate their quality of life in 31 separate domains (e.g., health, love, goals, home); they first rate the levels of importance of a domain in their life and then report to what degree they are satisfied with this aspect of their life. The first rating is done on a 3-point scale ranging from 0 (*not important*) to 3 (*extremely important*); the second rating is done on a 6-point scale ranging from -3 (*very dissatisfied*) to +3 (*very satisfied*). The higher an individual scores on this measure, the more satisfied he/she is with life across various domains.

Previous analyses of internal consistency, item-total correlations, discriminant validity and construct validity through confirmatory factor analysis indicate that the WHO QoL has good to excellent psychometric properties (Gururaj, Bada Math, Reddy, & Chandrashekar, 2008).

Leung and Li-Tsang (2003) used the WHO QoL to examine and compare the quality of life of parents of children with disabilities against that of parents of children without disabilities. They reported that the former group had lower quality of life in terms of social relationships and environmental domains (e.g., neighbourhood, community, and home). These results emphasise the personal strain that parents of children with disabilities experience.

Although this measure has not been used in South African studies on ADHD, it is useful for the current research because it gives a general subjective look at how parents view the quality of their lives; this subjective rating could then be evaluated against subjective ratings of parental stress levels, for instance.

Procedure

After participants were recruited and had indicated their willingness to participate in the study, the researchers scheduled an assessment time and venue that was comfortable for both mother and child. Preferred venues for the ADHD assessment were at the family's home ($n = 68$) or in a research laboratory at the UCT Department of Psychology ($n = 32$). As noted earlier, children in the ASD group had already been diagnosed by a professional in the field, and children in the TD group did not require a diagnostic assessment. Hence, for these participants, face-to-face assessments did not have to be set up, and so completion of all consent forms and questionnaires was done via email. Upon completion, the researchers went to the homes of these participants to collect the questionnaires.

With regard to the ADHD participants, once the mother and child had been informed about their respective roles in the research, the mother was asked to complete an informed consent document to consent to their participation in the study (see Appendix D for ADHD consent form, Appendix E for ASD consent form and Appendix F for TD consent form) and a consent for their child's participation in the study (see Appendix G). The mother then completed the demographic questionnaire (see Appendix H). The child was also asked to sign his/her name on an assent form (see Appendix I) after reading it or having it read to him/her. Two researchers were present during the assessments; one worked with the child and the other with the mother. Both parent and child (and thus both researchers) were present for the administration of the M.I.N.I Kid assessment. The child was asked a series of questions and the mother was encouraged to make comments. After this, the mother completed the PSI, CES-D, FSS, FRS, CBCL, and WHO QoL questionnaires. The researcher explained each questionnaire to the mother and was available for any queries during the completion of each measure.

When the assessment session was completed, mothers and children with ADHD were offered an opportunity to ask the researchers any additional questions. One week after participating, the mothers of ADHD, ASD and TD children received feedback via email about the information gathered on their child's functioning and the levels of parental stress. The feedback included recommendations relating to psychologists and other mental health professionals, support groups, and other sources of information relevant to their specific situation.

Ethical Considerations

Ethical approval was granted by the University of Cape Town's Faculty of Health Sciences Research Ethics Committee, and by the UCT Department of Psychology's Research Ethics Committee.

The following ethical issues were particularly pertinent to this study. Children are part of a vulnerable population, and therefore informed consent was obtained from their mothers. Where possible, assent was obtained from the children themselves. This was done to ensure the child felt comfortable in participating and an important part of the study. The confidentiality of all responses was assured, and parents could decide whether or not the findings were made available to their child's social worker/counsellor/psychologist. The child and mother were allowed to withdraw from the study at any time, without any negative consequences.

There was the potential for social harm to occur if people at the place where the study was being conducted noticed that these children/adolescents were participating in a study involving ADHD-related issues. This potential harm was avoided as far as possible by conducting the interviews at venues that respected the participants' privacy and that were free from interruption. Mothers of children with ADHD received a brochure featuring useful information on ADHD, as well as referrals to specialists in the field of childhood ADHD. The participants also received a full debriefing session before leaving the study venue, and received feedback within one week of participation (for an example of this feedback, see Appendix J). Mothers of children in the comparison groups (ASD and TD) also received feedback specific to the questionnaires they completed.

Statistical Analysis

After completion of data collection and scoring, data analysis proceeded across six stages. First, psychometric analyses were conducted to examine the reliability of the measures used in the current sample. Second, descriptive statistics were scrutinized to (a) do a preliminary determination of the domain of functioning that was most severely impaired by the child's ADHD, and (b) ensure that the distribution of data met the assumptions for parametric statistical analyses. Third, a series of planned comparisons was used to examine the relationship between group status (ADHD-PI, ADHD-CT, ASD, or TD) and parental stress levels, as measured by the PSI. Levene's test was used to assess for homogeneity of variance, and corrections to estimates of F were made where appropriate. Fourth, data relating to the mothers of children with ADHD from the current sample were analysed and PSI scores falling within the clinically significant range (i.e., above the 85th percentile compared to the instrument's normative sample) were

extracted. Fifth, correlation matrices (containing the Pearson's r correlation coefficient) were used to examine the relationship between the level of functional impairment and the types of problems present in children with ADHD, and the mothers' stress levels, mental health, and well-being. The correlation matrix also enabled a comparison of scores on the various outcome measures with each other. This step, for example, enabled me to examine whether the depression score from the CES-D is correlated with the depression score from the PSI depression domain, and to so deliver information about participants' responses in terms of reliability and consistency. Finally, multiple regression and canonical correlation analyses were conducted on all ADHD participants to determine the causal factors/predictors that best predicted parental stress associated with having a child with ADHD.

University of Cape Town

RESULTS

This section is organized as follows: First, I will present data establishing the reliability of the measures. Then, the rest of the section will be organized around the six specific aims presented previously, in this order: (1) the between-groups comparison (ANOVA) that sought to examine the relationship between group status (ADHD-PI, ADHD-CT, ASD, or TD) and the PSI outcome scores; (2) *t*-test comparisons that sought to examine whether parental stress levels vary with the particular subtype of ADHD with which the child is diagnosed; (3) data displaying the number of mothers from the current sample whose PSI scores fell within the clinically significant range (i.e., above the 85th percentile compared to the instrument's normative sample); (4) a correlational analysis that examined the association between parental stress and the level of functional impairment/problems present in the ADHD child; (5) a correlational analysis that examined the association between increased stress levels, symptoms of depression, and quality of life perceptions in mothers of children with ADHD; (6) multiple regression and canonical correlation analyses that aimed to establish the factors that best predicted the degree of parental stress associated with having a child with ADHD.

Reliability of Measures

To estimate the internal consistency reliability of the measures used in the current study, I calculated Cronbach's alpha based on the data collected. This initial step was important to take before further data analysis and interpretation, as it was essential to demonstrate that the instruments worked in the same way in the current study's population as in previous studies (including normative studies).

CBCL. As noted earlier, the CBCL is regarded within this field as perhaps the strongest measure of child internalizing and externalizing behaviour problems. Achenbach (2008) reported Cronbach's α 's ranging from .72 to .90 for a sample of mothers of children with aggression, attention, depression, delinquency, social, internalizing and externalizing problems; the α value for the current data (.92) was almost identical, suggesting that the instrument is as reliable in this study as in one conducted by the developer.

PSI. The instrument's developer (Abidin, 1995) documents the PSI as having the following internal consistency coefficients: Parent Domain, .93, Child Domain, .90, Total Stress, .95. In the current study, the internal consistency was in the same range: Cronbach's α was .92 for the Parent Domain, .93 for the Child Domain, and .95 for the Total Stress score. Again, the

suggestion here is that the instrument is as reliable in this study as in the standardization study conducted by the developer.

CES-D. As noted earlier, this instrument was used to measure depressive symptomatology in the current study. Van Oord et al. (2006) reported good internal consistency for this instrument (Cronbach's $\alpha = .79-.92$). The Cronbach's α value of .88 was at least as good as most of those previous estimates; again we can conclude that the instrument is as reliable in this study as in previous studies.

FRS. As noted earlier, this instrument was used to measure the mother's perceived resources. In the standardization study, Dunst and Leet (1984) estimated the FRS's internal consistency to be .92. In the current study, the Cronbach's α value was $\alpha = .93$. Again, we can conclude that the instrument is as reliable in this study as in the standardization study conducted by the developer.

FSS. As noted earlier, this instrument was used to measure the mother's perceived social support. In a recent study, Spratt et al. (2007) reported that the measure had an internal consistency of .77. The Cronbach's α value obtained from the current sample was somewhat more modest (.61), perhaps suggesting that current data derived from this measure should be interpreted cautiously.

WHO QoL. As noted earlier, this instrument was used to measure the mother's perceived quality of life. In a recent study, Gururaj et al. (2008) reported that the measure had an internal consistency ranging from .74-.78, with the exception of the social relationships domain which had an internal consistency of .54. In the current study, the Cronbach's α value was $\alpha = .81$. Again, we can conclude that the instrument is at least as reliable in this study as in previous studies.

Aim 1: An Examination of High-Stress and Low-Stress Mother-Child Dyads

Before conducting the between-group comparisons for the PSI Parent Domain, Child Domain, Total Stress, and Life Stress index scores, the assumptions underlying the relevant parametric statistical tests were checked. There were no violations of the normality assumption, though Levene's test suggested that the assumption of homogeneity of variance had been violated for Parent Domain and Life Stress variables. However, because ANOVA design is robust enough to withstand such violations, no modifications were made to the plan to conduct a series of simple one-way ANOVAs.

For these analyses, data from 20 participants from each of the ADHD-CT and ADHD-PI groups were selected. These smaller ADHD-CT and ADHD-PI groups were created so as to

match the sample sizes of the ASD and TD groups. The ADHD participants were selected so that the four comparison groups were matched on key demographic variables. A series of one-way ANOVAs demonstrated that this matching strategy was successful: the four groups ($n = 20$ in each) were statistically not significantly different in terms of income, $F(3,76) = 0.47, p = .50$, mother's age, $F(3,76) = 1.54, p = .21$, and child's age, $F(3,76) = 0.25, p = .86$.

Table 4 indicates that there were statistically significant between-group differences on all four PSI outcome variables. Therefore, several post-hoc pairwise comparisons based on estimated marginal means were conducted to further investigate and specify where these potential differences occurred. Table 5 displays results of first set of pairwise comparisons (the ASD group compared to each of the ADHD groups), based on the data shown in Table 4. As can be seen, there was a general trend on three of the four PSI variables for the ADHD-CT group to report higher stress levels than the ASD group. This trend, however, only reached statistical significance for one of the PSI outcome variables (Total Stress index score). Interestingly, this general trend was not repeated when the PSI-measured stress levels of the ADHD-PI group were compared to those of the ASD group. In this latter comparison, there were statistically significant between-group differences on the Parent Domain and Life Stress index scores, with participants in the ADHD-PI group reporting higher stress levels for the Parent domain only.

Table 5 also displays the results of the second set of pairwise comparisons based on the data shown in Table 4 (the TD group compared to each of the ADHD groups). The data here is quite clear: Mothers of children with ADHD experience statistically significantly higher stress levels, on all of the PSI index scores, than mothers of typically developing children. The only comparison that did not reach statistical significance was that between the ADHD-PI group and the TD group on the Life Stress index score.

Table 4
Between-Group Comparisons: Parental Stress Scores

PSI outcome variable	Group				<i>F</i>	<i>p</i>	<i>R</i> ²
	ADHD-CT (<i>n</i> = 20)	ADHD-PI (<i>n</i> = 20)	ASD (<i>n</i> = 20)	TD (<i>n</i> = 20)			
Total Stress	309.65 (30.95)	297.85 (33.69)	289.00 (34.76)	203.55 (19.12)	51.08	< .001***	0.67
Child Domain	155.25 (21.68)	140.95 (16.36)	145.00 (21.62)	88.90 (11.64)	52.63	< .001***	0.68
Parent Domain	154.45 (20.43)	156.90 (24.36)	142.40 (20.6)	114.65 (12.20)	18.92	< .001***	0.43
Life Stress	15.80 (8.64)	8.45 (6.48)	16.55 (10.77)	7.05 (5.55)	7.32	< .001***	0.22

Note. PSI = Parenting Stress Index – 3rd edition. The degrees of freedom for each comparison were (3, 76). Means are presented with standard deviations in parentheses.

****p* < .001.

Table 5
Between-Group Post-Hoc Pairwise Comparisons: p-values

PSI outcome variable	First set of comparisons		Second set of comparisons	
	ASD vs ADHD-CT	ASD vs ADHD-PI	TD vs ADHD-CT	TD vs ADHD-PI
Total Stress	.03*	.36	<.001***	<.001***
Parent Domain	.06	< .01**	<.001***	<.001***
Child Domain	.08	.49	<.001***	<.001***
Life Stress	.77	< .01**	<.001***	0.58

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

Aim 2: Between-Groups Comparison: ADHD subtypes and parental stress levels

The aim here was to compare the stress levels (measured using the PSI, as above) of mothers of children with ADHD-CT to those of mothers of children with ADHD-PI. I used a series of independent samples *t*-tests to explore potential differences in parental stress levels dependent on the particular subtype of ADHD with which the child was diagnosed. As noted earlier, it is important to examine these potential differences because each subtype manifests itself differently and therefore may affect parental stress to varying degrees.

Before conducting these between-group comparisons, the assumptions underlying the relevant parametric statistical test were checked. There were no violations of the normality assumption; however, Levene's test suggested that the assumption of homogeneity of variance had been violated for the PSI Parent Domain data. Therefore, for this outcome variable, the adjusted *t*-statistics were used. For this analysis, all of the data gathered from ADHD mother-child dyads (ADHD-CT *n* = 63, ADHD-PI *n* = 37) was used so as to maximize the available statistical power.

Table 6 displays the results from the relevant series of independent samples *t*-tests. As can be seen, mothers in both groups reported similarly high stress scores. Indeed, there were no statistically significant between-group differences in terms of PSI Total Stress, Child Domain, Parent Domain, and Life Stress index scores. Hence, this data suggest that, within the current sample, mothers' stress levels did not vary significantly depending on the specific subtype of ADHD with which their children presented.

Table 6
Between-groups Comparisons: Parental stress levels and ADHD subtype

PSI Outcome variable	Group		<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	ADHD-CT (<i>n</i> = 63)	ADHD-PI (<i>n</i> = 37)			
Total Stress	287.43 (33.74)	289.14 (38.51)	-0.23	.82	-0.05
Child Domain	142.00 (22.16)	140.00 (21.11)	0.44	.66	0.09
Parent Domain	145.44 (20.19)	149.15 (25.31)	-0.8	.42	-0.16
Life Stress	12.75 (10.52)	19.84 (7.21)	1.45	.14	-0.79

Note. PSI = Parenting Stress Index – 3rd edition. Means are presented with standard deviations in parentheses. For each *t*-test, the degrees of freedom were 98, except for the Parent Domain variable, where the adjusted degrees of freedom were 62.84.

Aim 3: Are Mothers of Children with ADHD Clinically Stressed?

The aim here was to provide an in-depth inspection of the PSI-measured stress levels of mothers of ADHD children within this sample. The PSI manual (Abidin, 1995) notes that a percentile score above 85 on any of the instrument's major scales or subscales is considered to be in the clinical range. By "clinical range", the manual's author means to emphasise the seriousness of such high stress levels, and recommends that parents who score in this range be referred for professional assistance.

An examination of the number of mothers of children with ADHD from the current sample, whose PSI scores fell within this clinically significant range ($> 85^{\text{th}}$ percentile), indicates the extent to which these mothers are distressed in their everyday lives. Figure 2 illustrates, the high levels of stress experienced across numerous domains by mothers of ADHD children in comparison with mothers of TD children. The majority of this stress appears to emerge from the Child Domain (i.e., from characteristics of the child's behaviour) and can therefore be viewed as a consequence of the child's disorder. A great deal of stress also appears to emerge from the Parent Domain (i.e., from the nature of the parents characteristics and feelings related to being a parent). Figure 2 clearly portrays the stark difference in stress levels between mothers of a child with ADHD, and mothers of a child with TD and emphasises the need for interventions and support for mothers of children with ADHD.

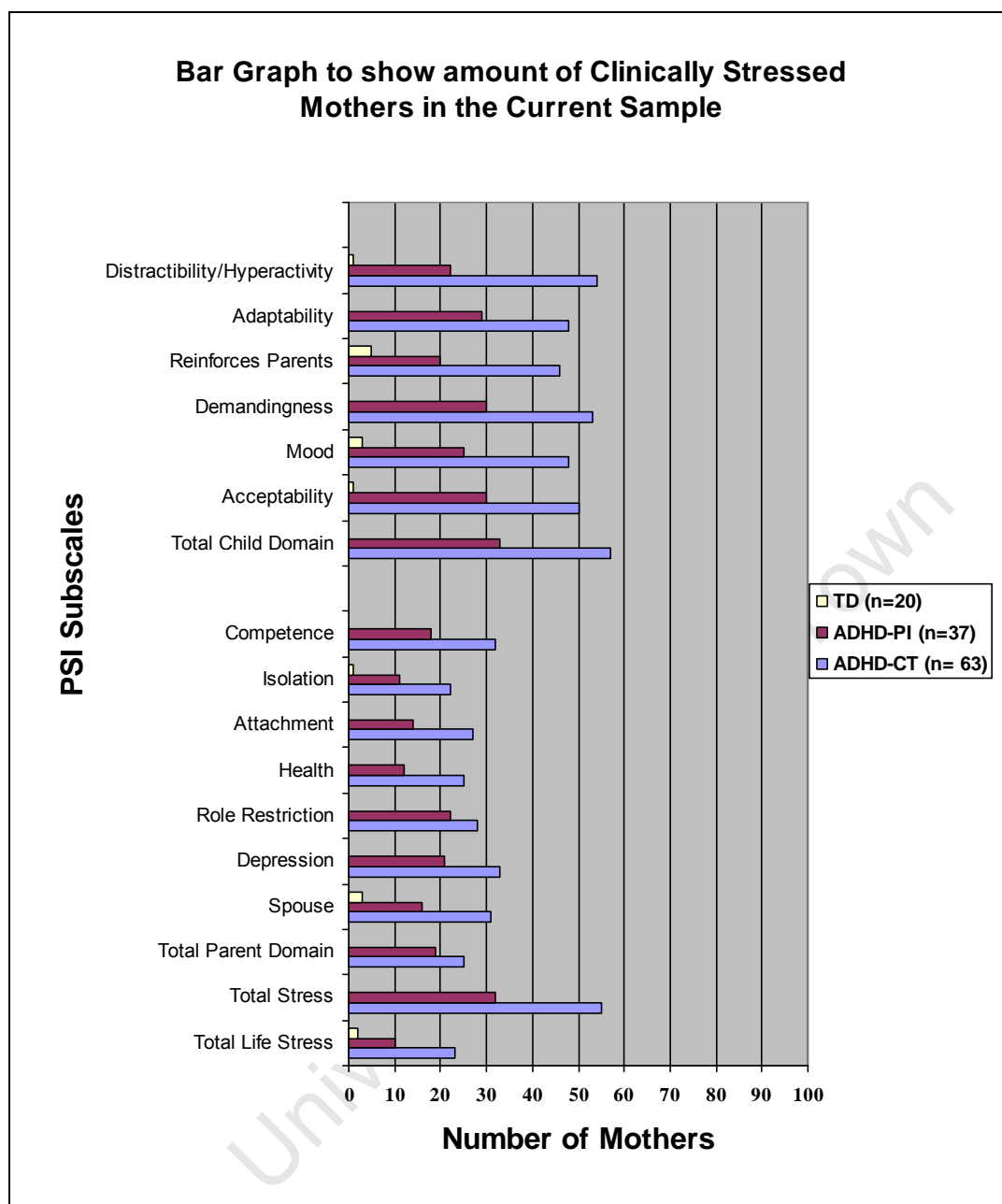


Figure 2. Profile for parental stress of the current sample.

Note: Percent in the clinical range for each PSI scale was determined using normative guidelines provided in that scale's manual (Abidin, 1995). The numbers in the figure represent the number of mothers who scored in the clinically significant range on various sub-domains.

Aim 4: Does Child Functional Impairment Affect Parental Well-being?

The aim here was to investigate the relationships among the level of functional impairment and the types of problems present in ADHD children with the stress levels, mental health, and overall well-being of their mothers. Before conducting this analysis, the assumptions underlying the relevant parametric statistical tests were checked. There were no violations of the

assumptions of linearity, normality, and homoscedasticity, and so the analysis proceeded in the conventional manner.

Functional impairment refers to the ways in which a specific disorder (ADHD) impacts on an individual's daily functioning in various domains of his/her life. Hence, two subscales of the CBCL (Total Competence and Total Problems) were correlated with the four PSI outcome variables. To capture more fine-grained information, and because ADHD-CT and ADHD-PI children typically display behavioural problems in different ways (Graetz et al., 2001), the Total Problems subscale was further separated into the Externalizing Problems and Internalizing Problems subscales.

Table 7 shows that, in the current sample, CBCL Total Competence scores were statistically significantly negatively correlated with PSI Total Stress and Child Domain index scores. The direction of these associations indicates that the less competent the child was reported to be (i.e., the more severely impaired he/she is), the more stress the mothers reported experiencing.

The table also shows that CBCL Total Competence scores were also positively correlated with mothers' CES-D scores. This association suggests that, the more severely impaired the child was reported to be, the more depressive symptoms the mother reported experiencing.

With regard to the child's externalizing behaviours (e.g., aggression, delinquency, hyperactivity), CBCL Externalizing Problems subscale scores were statistically significantly positively correlated with mothers' PSI Total Stress, Child Domain, and Life Stress index scores. The direction of these associations indicates that the more externalizing behaviours the child was reported to have, the more stress the mother reported experiencing.

Similar trends were evident with regard to the child's internalizing behaviours (e.g., anxiety, withdrawn, depression). Once more CBCL Internalizing Problems subscale scores were statistically significantly positively correlated with mothers' PSI Total Stress, Child Domain, and Life Stress index scores. Again, the direction of this association indicates that the more internalizing behaviours the child was reported to have, the more stress the mother reported experiencing.

The strongest positive correlations were, however, between CBCL Internalizing Problems subscale scores and CES-D scores. This association (and the absence of such a strong positive association between CBCL Externalizing Problems subscale scores and CES-D scores) suggests that, when children were reported to have high levels of internalizing behavioural problems, mothers' mental health was negatively affected.

Table 7
Correlation Matrix: Child functional impairment and parental well-being

	Parental well-being				
	PSI Index				CES-D
	Total Stress	Parent Domain	Child Domain	Life Stress	
Child functional impairment					
CBCL					
Total Competence	$r = -0.28$ $p = .005^{**}$	-0.14 0.15	-0.31 .002 ^{**}	-0.16 0.11	-0.09 0.36
Externalizing Problems	0.25 .011*	0.14 0.18	0.28 .006 ^{**}	0.30 .003 ^{**}	0.26 .01*
Internalizing Problems	0.24 .019*	0.17 0.10	0.21 .033*	0.27 .008 ^{**}	0.41 .001 ^{**}

Note. PSI = Parenting Stress Index-3rd edition; CES-D= Center for Epidemiological Studies-Depression Scale; CBCL = Child Behaviour Checklist.

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

A Further Examination: Functional impairment, types of problems and subtype of ADHD

The data presented in the above section brings to light the strong relationship between the functional impairment and types of problems experienced by the child with ADHD, on the one hand, and increased stress levels of mothers, on the other hand. That data is more or less consistent with data published in previous studies; previous research on ADHD has, however, neglected to discriminate between the subtypes of ADHD, as well as the functional impairment/severity of the child's ADHD in relation to the subtype of ADHD. To address this knowledge gap, I conducted a series of independent samples *t*-tests to examine whether ADHD-CT children differed from ADHD-PI children on CBCL measures of functional impairment and types of problems experienced.

For these analyses, the data from all ADHD participants (ADHD-CT $n = 63$, ADHD-PI $n = 37$) was used so as to maximize the available statistical power. Before proceeding onto the formal analyses, the assumptions underlying the relevant parametric statistical tests were checked. There were no violations of the normality assumption, and Levene's test suggested that the assumption of homogeneity of variance was upheld.

Table 8 presents the results of the between-group comparisons of the CBCL data. As can be seen, there were no statistically significant between-group differences in terms of the CBCL Total Competence or Internalizing Problems scores. There were, however, statistically significant between-group differences in terms of the CBCL Total Problems and Externalizing Problems scores. Specifically, ADHD-CT children were reported to have, in comparison to

children with ADHD-PI, significantly more problems, in total, as well as significantly more externalizing problems. The strong positive correlations between externalizing behaviours of the child and parental stress, as reported in the previous section, may thus be understood as occurring predominantly in ADHD-CT families.

Table 8

Between-Groups Comparisons: ADHD subtype and CBCL scores

CBCL outcome variable	Group		<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	ADHD-CT (<i>n</i> = 63)	ADHD-PI (<i>n</i> = 37)			
Total Competence	34.25 (8.24)	34.57 (8.61)	-0.18	.86	-0.04
Total Problems	67.13 (6.54)	63.03 (5.17)	3.26	.02*	0.70
Externalizing Problems	65.24 (6.22)	55.73 (6.85)	7.11	.01*	1.45
Internalizing Problems	61.78 (9.25)	61.19 (5.38)	-0.53	.73	0.08

Note. CBCL = Child Behaviour Checklist. Means are presented with standard deviations in parentheses. For each *t*-test, the degrees of freedom were 98.

**p* < .05.

Aim 5: Does Parental Stress Affect Depression and Quality of Life?

The aim here was to examine the relationships among levels of parental stress, mothers' symptoms of depression, and mothers' overall quality of life. The speculation here was that these constructs would all be interrelated, and that they would impact one another negatively. In other words, the more depressed one is, the more pessimistic one's perceptions of quality of life will be, and the more likely one is to experience parental stress and be unable to cope with that stress effectively; there will be a reciprocal circle of negative exchanges. In contrast to the previous section (Aim 4), where correlations between measures related to the child with ADHD were examined in relation to parental stress, this section examines interactions between measures related to the mother and her well-being.

Before proceeding with the correlational analysis, the assumptions underlying the relevant parametric statistical tests were checked. There were no violations of the linearity, normality, or homoscedascity assumptions, and so the analysis proceeded in the conventional manner.

The correlation matrix shown in Table 9 indicates that there were statistically significant correlations, in the expected direction, between the measures of interest. Specifically, CES-D scores were statistically significantly positively correlated with scores on all four of the PSI outcome variables. This association suggests that the more depressive symptoms reported by the

mothers, the more highly stressed they reported they were. CES-D scores were also statistically significantly negatively correlated with scores on the WHO Quality of Life scale ($r = -0.49, p < 0.001$), suggesting that poorer overall quality of life is associated with increased experience of depressive symptomatology. Furthermore, scores on the WHO Quality of Life scale were statistically significantly negatively correlated with PSI Total Stress, Parent Domain, and Life Stress index scores. This set of associations implies that when mothers of ADHD children perceived their quality of life as low, they also tended to report experiencing more stress.

Table 9

Correlation Matrix: Associations among parental stress, depression, and quality of life

Parental stress	Parental well-being	
	CES-D	WHO QoL
PSI		
Total Stress	$r = 0.44$ $p < .001^{***}$	-0.35 < .001***
Parent Domain	0.50 < .001***	-0.39 < .001***
Child Domain	0.21 .004**	-0.18 .08
Life Stress	0.26 < .001***	-0.2 .04*

Note. PSI = Parenting Stress Index – 3rd edition; CBCL = Child-Behaviour Checklist; CES-D = Center for Epidemiologic Studies-Depression Scale; WHO QoL = World Health Organisation Quality of Life scale.

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

Aim 6: Which Factors Best Predict Parental Stress?

The aim here was to explore the association among potential predictive factors (e.g., mother's perceived resources, mother's depressive symptoms, mother's marital status, mother's perceived social support, child's medication status, mother's age, mother's perceived quality of life, child's functional impairment) and increased parental stress in mothers of children with ADHD. The speculation was that analysis of these constructs in combination would allow for identification of the mix of factors that have the greatest effect on increased stress levels. To achieve this aim, I used multiple regression and canonical correlation analyses. Before conducting these analyses, the assumptions underlying the relevant parametric statistical tests were checked.

Regression Analysis

Descriptive statistics and plots suggested no serious violations of the assumptions of normality, linearity, homoscedasticity, and multicollinearity for the multiple regression analysis. Hence, the analysis proceeded in the conventional manner.

The following variables were used as predictors in the regression model: mother's perceived resources as measured by FRS score; mother's depressive symptomatology as measured by CES-D score; mother's marital status (a dichotomous variable, where 0 = no partner and 1 = partner); mother's perceived social support as measured by FSS score; child's medication status (a dichotomous variable, where 0 = no medication and 1 = medication is taken); mother's age; mother's perceived quality of life as measured by WHO Quality of Life scale score; and aspects of child's functional impairment as measured by CBCL Total Competence, Internalizing Problems, and Externalizing Problems scale scores. The PSI Total Stress index score was used as the criterion variable.

The set of predictor variables listed above was constituted thus because previous research has suggested that each can be an influence on stress levels. The PSI Total Stress score was suitable to use as the criterion variable because it combines factors relating to parent and child, and best reflects the mother's combined stress score. All predictor variables were entered into the model at once and in no specific order, as there were no preconceived ideas as to which factors would have more of an effect than others.

The results from the regression analysis are presented in Table 10. The model summary suggests that the total model was statistically significant and accounted for that 34% of PSI Total Stress scores, $R = 0.58$, $R^2 = 0.34$, $p < .001$. Two of the 10 factors emerged as significant predictors: CBCL Total Competence score and CES-D score. The Total Competence score (i.e., the mother's impression of whether the child had a clinically problematic level of competence, e.g., the child required special assistance at school or at home to complete what should have been age-appropriate activities) was the predictor with the most influence; the direction of the beta weight suggested that, as expected, the lower the child's perceived competence, the more total stress the mother reported experiencing.

The second predictor with a statistically significant influence on the model was the mother's level of depressive symptomatology, as measured by the CES-D. The direction of the beta weight here suggested that, the more depressive symptoms the mother reported experiencing, the higher her levels of stress tended to be.

Overall, this regression analysis suggests that the child's ADHD symptoms as well as the mother's mental health play a significant role in predicting increased parental stress; both of these factors thus need to be addressed in intervention programmes.

Table 10
Multiple Regression Analysis: Factors predicting PSI Total Stress

Predictor	<i>B</i>	Std. Error	β	<i>t</i>	<i>p</i>
Mothers: Demographic variables					
Marital status	-3.8	7.15	-0.05	-0.53	.596
Age	-1.11	0.71	-0.15	-1.55	.125
Mothers: Questionnaire scores					
FRS score	-0.3	0.24	-0.16	-1.27	.209
FSS score	0.11	0.37	0.03	0.29	.771
CES-D score	0.86	0.41	0.24	2.09	.039*
WHO QoL score	-0.33	0.29	-0.13	-1.14	.259
Child variables					
Medication status	19.43	16.57	0.11	1.17	.244
CBCL scores					
Total Competence	-1.09	0.39	-0.26	-2.77	.007*
Externalizing Problems	0.71	0.43	0.16	1.65	.102
Internalizing Problems	-0.07	0.47	-0.02	-0.15	.883

Note. PSI = Parenting Stress Index – 3rd edition; CBCL = Child-Behaviour Checklist; CES-D = Center for Epidemiologic Studies-Depression Scale; WHO QoL = World Health Organisation Quality of Life scale.

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

Canonical Correlation

The aim here was to explore more finely-grained data on the factors that may play a significant role in increased parental stress in mothers of children with ADHD. To achieve this aim, I conducted a set of canonical correlations to extend the multiple regression analysis reported above.

Although similar in principle to multiple regression analysis, a canonical correlation is a multivariate analysis that allows for the study of interrelationships among *sets* of multiple independent and dependent variables. Hence, a canonical correlation can help explain the nature of various relationships that exist between sets of independent and dependent variables, by measuring the relative contribution of each variable to the canonical functions that are extracted (Hair, Anderson, Tatham, & Black, 1998). This form of analysis was informative for the current

study because the aim here was to identify a set of potential factors that have the greatest effect on parental stress levels (as measured by a set of outcome variables).

The canonical correlation was created between two sets of variables: The set of dependent variables was labelled Parental Stress and consisted of the PSI Child Domain and Parent Domain index scores, and the set of independent variables was labelled Predictor Variables and consisted of: mother's age; mother's perceived resources as measured by FRS score; mother's perceived social support as measured by FSS score; mother's perceived quality of life as measured by WHO Quality of Life scale score; and CBCL Total Competence, Internalizing Problems, and Externalizing Problems scale scores. These independent variables were chosen because previous research has indicated that each has an influence on parental stress. The PSI Parent Domain and Child Domain index scores were appropriate to use as the set of criterion variables because they reflect stress-related factors relating to both parent and child, and in combination they provide a good estimate of overall parental stress.

The set of independent variables entered into the canonical correlation analysis differed from those entered into the multiple regression analysis in two ways: *mother's marital status* and *child's medication status* were present in the latter but not the former. These two variables were not entered into the canonical correlation analysis because they are categorical in nature, and canonical correlation analyses are only conducted with interval level variables. Because neither of these variables (marital status and medication) appeared as significant predictors of parental stress in the regression analysis, it is safe to assume that their omission was not problematic.

There were no serious violations of the assumptions of normality, linearity, homoscedasticity, and multicollinearity, and so canonical correlation analyses proceeded conventionally.

Table 11 presents the values for the correlations between the canonical variates, canonical coefficients, canonical loadings, and redundancies. *Canonical variates*, which can be defined for both independent and dependent variables, are linear combinations that represent the optimally weighted sum of two or more variables and are formed for both the dependent and independent variables in each canonical function (Hair et al., 1998). They are also referred to as linear composites, linear compounds, and linear combinations. *Canonical coefficients* are the individual weights of each variable in the canonical variates. The larger the canonical coefficient of a particular variable, the more it contributes to the overall model. For example, in this study, the canonical coefficient for each variable in the Parental Stress (dependent) set represents the degree to which that specific variable (either Parent Domain index score or Child Domain index score) contributed to increased parental stress. *Canonical loadings* measure the simple

correlation between various variables and their respective canonical variates. That is to say, the canonical loading of each variable indicates the type (positive, negative) and strength of relationship that it has with its respective canonical variate. *Redundancy* refers to the amount of variance in one canonical variate explained by the other canonical variate. For example, in the current study, the redundancy of the dependent canonical variate (Parental Stress) represents the amount of variance in the dependent variables explained by the independent canonical variate (Predictor Variables). As can be seen in Table 11, the set of Predictor Variables explained 22% of the variance within the set of Parental Stress variables. Likewise, the set of Parental Stress variables explained 9% of the variance within the set of Predictor Variables. In the current study, the amount variance of the set of dependent variables explained by the set of independent variables is most important because it provides a view into the predictive capacity of the canonical correlation.

The canonical correlations measure the strength of the overall relationships between the canonical variates for the independent and dependent variables. In other words, it displays the correlation between two canonical variates (Hair et al., 1998). To determine if there was a relationship between the two sets of variables, I conducted tests of dimensionality. The canonical correlation analysis indicated that the first canonical variate pair was statistically significant at the .05 level. (Canonical variate pairs are linear pairings of canonical variates, one from each of the two sets. The bivariate correlation between the pairs of variates is the canonical correlation.) Dimension 1 had a canonical correlation of .590 between the sets of variables. Because the first canonical variate pair was statistically significant, the second canonical variate pair between sets was examined. Dimension 2 had a canonical correlation of .371. With both dimensions included, Wilk's $\Lambda = .562$, $\chi^2(df = 16) = 53.952$, $p < .001$. When the first canonical correlation was removed, Wilk's $\Lambda = .862$, $\chi^2(df = 7) = 13.868$, $p = .054$. By way of explanation, the first Wilk's test determines whether all dimensions (i.e., all canonical variate pairs; in this case, two of them) are significant; the next test determines whether dimension 2, by itself, is significant; and the implication from the second test result is that only the first canonical variate pair is significant. Because the second canonical variate pair was not significant, no further canonical variate pairs were examined and therefore only the first canonical variate pair is summarized in Table 11.

Table 11 also displays the canonical loadings (simple linear correlations between the independent variables and their canonical variates) of the first pair of variates of set 1 (Parental Stress). The canonical correlation was characterised by high ($> .3$) positive loadings on both the Child Domain ($r = .563$) and Parent Domain ($r = .958$) outcome variables. High negative

loadings can be seen in the set of Predictor Variables on FRS scores, CBCL Total Competence, and WHO QoL scale score. High positive loadings can be seen on CES-D scores, CBCL Externalizing Problems score, and CBCL Internalizing Problems score.

In summary, the canonical correlation analysis suggests that these predictor variables are important factors to consider when attempting to predict the levels of parental stress experienced by mothers of children with ADHD. The canonical correlations suggest that being a mother of a child with ADHD is associated with a lack of resources, a low quality of life, and numerous symptoms of depression. These mothers' stress levels are also negatively associated with their children's competence levels and by the severity of their children's problems, be they internalizing or externalizing. The standardised coefficients within the set of Predictor Variables suggest, in fact, that depression experienced by the mothers is the most important factor in predicting their levels of parental stress. This piece of data confirms the results found in the regression analysis. The standardised coefficients also identify a lack of resources, a low-functioning child, and low quality of life as being associated with parental stress.

Table 11
Canonical Correlation Analysis: Predictors of parental stress

Variables	Canonical Variate 1	
	Correlation / Loading	Coefficient
Set 1 (Dependent Variables): Parental Stress		
PSI Child Domain index score	0.56	0.30
PSI Parent Domain index score	0.96	0.87
Variance explained by Predictor set (Redundancy)	22%	
Set 2 (Predictor Variables)		
Mother's age	-0.14	-0.26
FRS score	-0.70	-0.32
FSS score	-0.21	0.09
CES-D score	0.84	0.56
WHO QoL score	-0.67	-0.23
CBCL Total competence score	-0.37	-0.32
CBCL Externalizing Problems score	0.34	0.13
CBCL Internalizing Problems score	0.35	-0.08
Variance explained by Parental Stress set (Redundancy)	9.10%	

Note. PSI = Parenting Stress Index – 3rd edition; CBCL = Child-Behaviour Checklist; CES-D = Center for Epidemiologic Studies-Depression Scale; WHO QoL = World Health Organisation Quality of Life. * $p < .05$. ** $p < .01$.

DISCUSSION

This study examines the stress levels of South African mothers of children with ADHD. It is also one of the first studies to examine the relationship between subtype of ADHD diagnosis and levels of parental stress.

The study had a specific focus on the well-being of the parent rather than only that of the child with ADHD. It sought to identify factors that contribute to increased parental stress. This investigation was completed in the hope that the data could be used to inform stress management programmes for mothers of children with ADHD. The study therefore sought to provide a comprehensive picture of the extent to which these mothers are stressed and the difficulties that might arise when caring for children with ADHD.

These broad objectives of the study can be summarized as six specific aims:

1. Examine where, in relation to high-stress and low-stress mother-child dyads, mothers of ADHD children fit in terms of their stress levels;
2. Examine whether parental stress levels vary with the particular subtype of ADHD with which the child is diagnosed;
3. Determine to what extent the stress scores of mothers of children with ADHD fall within a range defined as 'clinically significant' by a commonly-used instrument in the field;
4. Examine the extent to which the level of functional impairment/problems present in the child impact on the mothers' stress;
5. Investigate how other aspects of mothers' lives are affected by, and affect, increased stress levels by examining associations between levels of parental stress, symptoms of depression, and perceptions of quality of life;
6. Establish the factors that best predict the degree of parental stress associated with having a child with ADHD.

Within the first section of the Discussion I will present the results and themes that emerged from statistical analyses associated with the study's six major aims. That section will be followed by a discussion of intervention programmes constructed specifically for the stress management of parents of children with ADHD. Lastly, I will present important directions for future research in this field.

Aim 1: An Examination of High-Stress and Low-Stress Mother-Child Dyads

The aim of the between-group comparisons here was to determine if there were significant differences in parental stress between mothers of children with ADHD-CT, ADHD-PI, or ASD, and mothers of TD children.

The first set of post-hoc comparisons examined the ASD group compared to each of the ADHD groups. Results from the first set of post-hoc pair-wise comparisons showed a general trend, on three of the four PSI outcome variables, for the ADHD-CT group to report higher stress levels than the ASD group. This trend only reached statistical significance for Total Stress index score, however. Interestingly, the trend found in the ADHD-CT and ASD comparison was not repeated when the PSI-measured stress levels of the ADHD-PI group were compared to those of ASD group. In this latter comparison there were statistically significant between-group differences on the Parent Domain and Life Stress index scores, with participants in the ADHD-PI group only reporting higher stress levels for the Parent Domain.

Parents of children with autism have been reported as experiencing higher stress levels than parents of children with other developmental disabilities (e.g., Dunn, Burbine, Bowers & Tantleff-Dunn, 2001; Montes & Halterman, 2007; Pisula, 2007). It is therefore interesting that in the current study, mothers of children with ADHD-CT and ADHD-PI scored significantly higher on some of the PSI indexes than mothers of ASD children.

There are two possible reasons for this difference between ADHD and ASD parental stress scores; firstly, as is typical in studies of this sort, and as is implied by name of the disorder, the ASD group contained children with a range of clinical characteristics, and who fell on a spectrum ranging from high functioning to severely impaired. For example, children with Asperger's syndrome (AS) are less functionally impaired than children with classical autism. The criteria for participation was open to mothers of children with any disorder on the autism spectrum, and so, for instance, some of the mothers in the ASD group may have been caring for children with AS, so may have been experiencing lower levels of stress than mothers caring for children with classical autism or with ADHD.

Secondly, the current study was advertised through ADHD support groups and participation was voluntary. Therefore, it is probable that the participating mothers were in support groups and seeking help, and that they may therefore have been particularly stressed compared to mothers of ADHD children who are not actively seeking help. This means that the current study may have contained a particularly highly-stressed group of mothers of children with ADHD. Nevertheless, these high stress scores in comparison to the stress scores of mothers

of children with ASD on several PSI indexes are important as they highlight the degree to which these mothers of children with ADHD are stressed.

Results from the first set of post-hoc comparisons also highlight the need for recognition of the stress these mothers of children with ADHD experience. Very often mothers of children with ADHD experience *courtesy stigma*. This term refers to a situation when a person is stigmatized or looked down upon because of his/her association with a stigmatized individual. Norvilitis, Scime and Lee, (2002) conducted research into courtesy stigma and mothers of children with ADHD. They found that mothers of children with ADHD reported criticism from acquaintances and strangers and experienced less tolerance of their child's behaviour. Because these mothers are stigmatised in this way they are often not given societal support or recognition for the stress they experience.

The significantly high stress scores of mothers of ADHD children in comparison to mothers of ASD children emphasises the need for adequate recognition of the stress mothers of ADHD children experience, and the importance of implementing effective stress management programmes for these individuals.

Results from the second set of second set of post-hoc comparisons (the TD group compared to each of the ADHD groups) clearly indicated that mothers of children with ADHD-CT and ADHD-PI reported experiencing significantly higher stress levels, on all of the PSI index scores, than mothers of TD children. The only comparison that did not reach statistical significance was that between the ADHD-PI group and the TD group on the Life Stress index score. These results are in line with previous studies of ADHD and parental stress that have emphasised that parents of children with ADHD experience significantly higher stress levels than parents of healthy non-ADHD children (e.g., Austin & Carpenter, 2008; Fischer, 1990; Gupta, 2007; Kadesjö et al, 2002; Spratt et al., 2007). For instance, in a recent study, Kadesjö et al. (2002) examined two groups of Swedish mothers of 3–7 year olds (one group with an ADHD child, $n = 131$, and the other without an ADHD child, $n = 131$). The mothers completed self-report questionnaires designed to assess their levels of stress, their evaluation of the child-rearing situation, attributions surrounding child-rearing outcomes, and perceptions and expectations of support and resources. The results indicated that mothers of children with ADHD reported experiencing more parental stress and also reported more negative attributions related to raising their child in comparison to mothers of healthy children without ADHD.

This examination into the relationship between group status (ADHD-CT, ADHD-PI, ASD, and TD) and parental stress levels clearly demonstrates that mothers of children with

ADHD are significantly more stressed than mothers of TD children. It is also interesting to note that, at least by some PSI measures, mothers of ADHD children are significantly more stressed than mothers of children with ASD. This examination also emphasises that recognition needs to be given to the mothers of children with ADHD in terms of the stress they have to cope with on a daily basis in relation to raising their children. Together these data suggest that the ADHD mothers in the current sample are particularly stressed individuals. Because these stress levels are high and wide-ranging, more research should examine the role that stress plays in the lives of mothers of children with ADHD.

Aim 2: Between-Groups Comparison: ADHD subtypes and Parental Stress Levels

A between-groups comparison was conducted to determine if the stress of mothers of children with ADHD differed depending on the particular subtype of ADHD with which the child was diagnosed. The results of the between-groups comparisons summarized above indicated that the mothers of children with ADHD were highly stressed in comparison to mothers of TD children. However, an examination into potential differences in stress levels based on the particular subtype of ADHD is needed. Such an examination is important because the consequences of the symptom profile of the various subtypes of ADHD manifest themselves in different problem areas and are associated with varying levels of functional impairment (Graetz et al., 2001). Few studies on ADHD examine the subtypes separately, preferring to group them together into one general “ADHD” group. The current study, however, aimed to examine the subtypes separately so that I could examine associations between different ADHD symptom profiles and varying parental stress levels.

Results from the between-groups comparison relevant to this aim were not statistically significant. Otherwise stated, there were no statistically significant differences in stress levels between ADHD-CT and ADHD-PI mothers on PSI, Total Stress, Parent Domain, Child Domain and Life Stress indexes. The high stress levels of mothers of children with ADHD in the current sample therefore do not vary with the particular subtype of ADHD and its accompanying characteristics. Mothers of children that display signs of hyperactivity, distractibility and externalizing behaviours (ADHD-CT) and mothers of children that display signs of inattention and internalizing behaviours (ADHD-PI) are both highly and equally stressed. As there is little literature on the differences in subtypes in relation to parental stress, more research is needed to examine the subtypes of ADHD and their impact on parental stress.

Aim 3: Are Mothers of Children with ADHD Clinically Stressed?

As noted earlier, previous studies (see, e.g., Austin & Carpenter, 2008; Gupta, 2007; Spratt et al., 2007) have shown that parents of children with ADHD experience more parental stress than parents of children without ADHD. As also noted earlier, the current data concur with those previous findings. The third aim of the current study was to elaborate on those findings in a clinical direction; that is, the aim here was to establish whether the stress scores of mothers of children with ADHD fell within the clinically significant range (85th percentile or above) on the various PSI scales and subscales.

The current data showed that mothers with ADHD reported experiencing clinically significant levels of stress, and also that much of this parental stress was associated with the child's disorder and its associated characteristics (i.e., a large proportion of the clinically significant scores were on the PSI Child Domain). This finding is in line with previous research which has identified the ADHD child's disorder-related characteristics as being a major contributor to parental distress (e.g., Fischer, 1990; Harrison & Sofronoff, 2002).

PSI Child Domain. The items constituting the subscales in this domain reflect how certain characteristics related to the child make it difficult for parents to fully realize their parenting role (Abidin, 1995). In the case of the current sample, 76% of mothers of ADHD children reported stress levels within the clinically significant range on items that referred to the consequences of the *distractibility/hyperactivity* of their child. According to the PSI manual, high scores on this subscale may be due to the parent lacking energy to keep up with the child, or to unreasonable expectations of the parent in relation to the child's behaviour (Abidin, 1995). In contrast, only 1 out of the 20 mothers of TD children scored within in the clinical range on the *distractibility/hyperactivity* subscale.

Within the PSI Child Domain, the term *adaptability* refers to characteristics of the child, such as his/her inability to adjust to changes in various social or physical environments, that may lead to increased stress for the parent (Abidin, 1995). Within the current sample, 77% of mothers of children with ADHD reported stress levels within the clinically significant range on this subscale. This pattern of data may arise from the types of disorder-related problems (e.g., internalizing, externalizing) ADHD children display. These problems often make it difficult for the children to cope in certain domains of life (e.g., school or socially). For example a child with ADHD-CT may display disruptive behaviours socially by causing fights or harm to other children and struggle to maintain social relationships. Or a child with ADHD-PI may experience distractibility within the classroom setting and struggle to cope academically. In contrast, none of

the mothers of TD children scored within the clinically significant range on the PSI adaptability subscale.

Within the PSI Child Domain, the term *reinforces parents* refers to a child's ability, via parent-child interactions, to make the parent feel inadequate (Abidin, 1995). In other words, interactions in the parent-child relationship are viewed and experienced negatively by the parent. Within the current sample, 66% mothers in the ADHD sample reported clinically significant levels of stress on this subscale. Abidin (1995) emphasises that scores in the clinical range on this subscale indicate a need for immediate intervention because an absence of positive reinforcement from parent-child interactions threatens the parent-child bond and can lead to feelings of rejection within both the parent and the child. In contrast, only 25% of mothers of TD children scored within the clinically significant range for issues related to this concept of reinforcement.

Within the PSI Child Domain, the term *demandingness* refers to parental feelings of burden associated with caring for a demanding child. According to the scale's developer, parents who score at or above the 85th percentile on this subscale may need interventions or guidance specifically focusing on appropriate discipline routines and compliance of their child (Abidin, 1995). Within the current ADHD groups, 83% of mothers scored within the clinically significant range on this subscale. Disorder-related characteristics displayed by children with ADHD-CT are, by definition, likely to display internalizing and externalizing behaviour problems, and children with ADHD-PI are likely to display more internalizing behaviours. Stressful and demanding situations in various settings are likely to occur for both subtypes as they display their problems differently. In contrast, none of the mothers of TD children scored within in the clinical range on this subscale.

Within the PSI Child Domain, the term *mood* is related to items dealing with how the child's unhappiness influences the parent's stress levels. A child may express his/her unhappiness by crying or by throwing tantrums. Within the current ADHD groups 76% of the mothers of children with ADHD scored in the clinically significant range on this subscale. A child with ADHD-PI is more likely to internalize his/her mood (e.g., sulking), while a child with ADHD-CT is more likely to overtly display his/her mood (e.g., tantrums). Either way, the negative mood of the child might then lead to increased stress for the parent who may not know how to cope with the situation. Abidin (1995) suggests that problems related to maternal attachment may lead to high stress scores on this subscale. In contrast, only 15% of mothers of TD children scored in the clinically significant range on this subscale.

Within the PSI Child Domain, the term *acceptability* refers to items documenting situations where the child's intellectual and emotional characteristics do not meet the expectations of his/her parents (Abidin, 1995). Within the current sample, 86% of mothers of children with ADHD-PI reported clinically significant levels of stress on this subscale. The ADHD-PI mothers may have been particularly stressed in this regard because children with that diagnosis do not typically display their problems in an overt manner and may appear to be quiet and well-behaved (Guab & Carlson, 1997). Therefore, the parent may expect the child to cope reasonably well with everyday tasks or situations, across a variety of functional domains. When the child does not cope, it may be difficult for the parent to understand and accept that something is wrong.

Compare this situation to that of an ADHD-CT child, whose problems are on display in most of his/her actions. However, even though children diagnosed with ADHD-CT display their problems more overtly, 79% of mothers in the ADHD-CT group scored within the clinically significant range on this subscale. This finding is in line with research by Kadesjö et al. (2002), who found that mothers of children with ADHD generally had difficulty accepting their child's developmental disability. In contrast, only 5% of mothers of TD children scored within the clinically significant range on this subscale.

The PSI Total Child Domain scores indicated 90% of mothers of children with ADHD scored within the clinically significant range on items related to the impact of the child's characteristics on their stress levels. These high scores are in line with research by Abidin (1995), who found that parents of children who display characteristics related to hyperactivity, emotional disturbances, and learning and behavioural difficulties achieve the highest scores on the PSI Child Domain. According to the PSI manual, these scores can sometimes reach into the 90th percentile and above.

The current findings are also consistent with research by Counts, Nigg, Stawicki, Rappley & Von Eye (2005). They sought to evaluate the relationship between family adversity, ADHD subtypes and behaviour problems. Participants consisted of 206 parents of children between the ages of 7-13 years of age. Parents completed questionnaires on stressful life events, marital conflict, and parental lifetime psychiatric disorders. Results from their study indicated that family adversity was related specifically to symptoms related to ADHD. More specifically, marital conflict and maternal psychopathology was directly related to disruptive behavioural symptoms of ADHD.

For the overall PSI Total Child Domain stress scores, none of the mothers of TD children scored within the clinically significant range. This piece of data highlights quite starkly the

unusually high stress levels, specifically related to the characteristics of the child, that mothers of ADHD children report experiencing.

PSI Parent Domain. Scores from this domain reflect stress originating from issues associated with the mother's functioning as a parent and with their wellbeing. Scores within this domain were slightly lower than the scores within the PSI Child Domain, indicating that child disorder-related characteristics as a dominant source of stress for the mothers of children with ADHD. Nevertheless, results from the PSI Parent Domain scores indicated that mothers of children with ADHD experience clinically high stress related to their functioning as a parent and their wellbeing. The results are in line with research by Harrison and Sofronoff (2002) who examined the role of demographics, child characteristics and parental cognitions in relation to parental distress. Participants consisted of mothers ($n = 100$) who completed questionnaires on ADHD knowledge, parenting stress, depression, behavioural disturbance and attributions of cause and controllability of ADHD related behaviours. Results indicated that a low perception of control in relation to their child's behaviours was directly associated with higher parental distress. The need for interventions that focus on the parents as well as the child with ADHD was emphasised.

The PSI Parent Domain is also divided into various subscales. The first of these, relating to the parent, is *competence*. The term competence refers to parents that may feel overwhelmed by the responsibilities of caring for their child. Within the current sample, 51% of mothers of children diagnosed as having ADHD-CT scored within the clinically significant range on this subscale. In contrast, 0% of mothers of TD children scored within in the clinical range in on this subscale.

Within the PSI Parent Domain, the term *isolation* refers to parental feelings of loneliness and social segregation. Parents who earn high scores related to this subscale are thought to be under immense stress and support or intervention is required as soon as possible (Abidin, 1995). Within the current sample, 33% of mothers in both ADHD groups earned clinically high scores on this subscale. Therefore, it is important that adequate social support programmes for mothers of children with ADHD are available. Such programmes would provide an opportunity for socializing as well as a forum to discuss shared experiences of raising a child with ADHD. In contrast, 5% of mothers of TD children scored within the clinically significant range on this subscale.

Within the PSI Parent Domain, the term *attachment* refers to a possible emotional dysfunction between parent and child. This dysfunction may stem from a lack of bonding or miscommunication of needs in the parent-child relationship (Abidin, 1995). Within the current

sample, 41% of mothers in the two ADHD groups earned high scores on this subscale. In contrast, 0% of mothers of TD children scored within in the clinical range on this subscale. The potential for emotional dysfunction in the mother-child relationship is serious and interventions focused on helping the mother understand her child's needs are vital if the bond is to be repaired. The importance of the parent-child bond will be discussed in more detail later.

Within the PSI Parent Domain, the term *health*, refers to deterioration of parental health as a result of a stressful parent-child relationship (Abidin, 1995). Within the current sample, 37% of mothers in the two ADHD groups earned high scores on this subscale. It is important for mothers of children with ADHD to take care of their own health as well as that of their children. The mothers in the current study may benefit for medical practitioners assessing their health. In contrast, 0% of mothers of TD children scored within in the clinical range on this subscale.

Within the PSI Parent Domain, the term *role restriction* refers to parents who feel they are limited or controlled by the demands of caring for their child. These feelings may lead to negativity or non-involvement which affects the parent-child relationship (Chronis, et al., 2006). Within the current sample, 50% of mothers in the two ADHD groups earned high scores on this subscale. In contrast, 0% of mothers of TD children scored within in the clinical range on this subscale.

Within the PSI Parent Domain, the term *depression* refers to parents who experience increased depressive symptomology. According to Abidin (1995), the questions in this subscale relate to guilt, unhappiness and other symptoms of depression. Negative parental cognitions may affect parenting responsibilities and add to the behavioral problem experienced by the child with ADHD (Chronis et al., 2006). Within the current sample, 54% of mothers in the two ADHD groups earned clinically high scores on this subscale. In contrast, 0% of mothers of TD children scored within in the clinical range in terms of depression.

Within the PSI Parent Domain, the term *spouse* refers to issues surrounding a lack of support (e.g., emotional or financial) from a partner. As stated earlier, families of children that have ADHD experience more marital problems than families of TD children (Wymbs et al, 2008). Within the current sample, 47% of the mothers in the two ADHD groups earned clinically high scores on this subscale. In contrast, 15% of mothers of TD children scored within in the clinical range on this subscale.

The PSI Total Parent Domain scores indicated 44% of mothers of children with ADHD scored within the clinically significant range on items related to the impact of their parenting related characteristics on their stress levels. For the overall PSI Total Parent Domain stress scores, none of the mothers of TD children scored within the clinically significant range. This

piece of data highlights quite starkly the high stress levels, related to the characteristics of the mother's functioning as a parent and her wellbeing in comparison to mothers of TD children.

In summary, with regard to data from both the PSI Child Domain and Parent Domain index scores, this study highlights an important trend: Parental stress is influenced by child-related as well as parent-related characteristics, and parental stress affects both the parent and the parent-child relationship. John Bowlby's (1988) work emphasises the importance of the mother-child relationship. His theory of attachment emphasised the negative effect that separation, loss, and maternal deprivation had on children during early years of life (Stevenson-Hinde, 2007).

A transactional approach to the influences in families is a particularly appropriate way to understand how parental stress accumulates in mothers of children with ADHD. This model proposes that the parent and child influence each other in a reciprocal manner through their interactions, and states that both child-related and parent-related factors have an influence on parental stress (Cook, 2001). Further, the model emphasises the importance of a positive parent-child relationship for positive development of the child. According to the model, problems experienced by the child can develop or increase if the parent-child relationship is tense or negative (Sigelman & Rider, 2006). Therefore, it is of utmost importance that these issues are addressed so that a positive parent-child relationship can be achieved and both mother and child can develop positively.

An example of an examination into the propositions of a transactional model of family influences by Gutman and Feinstein (2010) investigated the course of parenting behaviours and children's development from infancy to early childhood, the associations between parenting behaviours and children's development, and how these associations vary according to socioeconomic indicators. Mothers and children were examined from an ongoing longitudinal study of families resident in Avon in the United Kingdom. The mothers ($n = 14541$) expected delivery of birth had to lie between 1 April 1991 and 31 Dec 1992 to qualify for participation. Parents and children were sent evaluation forms consistently over a period of 9 years. Results highlight the significance of parenting in young children's lives. The results also confirmed the notion that positive mother-child interactions contribute to the positive development of the child. Children whose mothers engaged more with them had higher levels of social development in early childhood. It was also found that interactive parenting had a more positive association with the positive development of children. These results emphasise the importance of a positive mother-child relationship for the development of the child. Gutman and Feinstein (2010) conclude that because the relationship between parent and child is so important, interventions

focused on parenting would be beneficial for mothers of children with a tense parent-child relationship.

Aim 4: Does Child Functional Impairment Affect Parental Well-being?

The current study is one of the first to include an inspection of child functional impairment and the disorder-related problems associated with ADHD in an examination of parental stress. In the current sample, there was a significant association between the types of problems (e.g., externalizing or internalizing problems) experienced by the child with ADHD and mothers' reported stress levels.

More specifically, internalizing characteristics (e.g., the tendency to withdraw from social contact), such as those experienced by children diagnosed with ADHD-PI, were significantly correlated with mothers' stress levels and depression. This association may have arisen because internalizing behaviours are difficult to recognize and parents may feel incompetent in being able to assist their children in situations where it is unclear what is bothering the child.

Externalizing behaviours (e.g., overt aggression), such as those typically displayed by children diagnosed with ADHD-CT, were, however, also significantly associated with mothers' stress levels. This association may have arisen because such behaviours are difficult to manage and can occur at inappropriate times/situations. Outbursts and aggressive behaviour will place more stress on the mother as she needs to control the situation.

These findings, that there is a relationship between the types of disorder-related problems and increased parental stress, are consistent with previous research. For instance, Osborne and Reed (2008) found the stress of parents of autistic children was significantly associated with behavioural problems related to that disorder (e.g., tantrums, hyperactivity, self-injury, learning difficulties).

The section above summarized the relationship between parental stress in mothers of children with ADHD and the types of problems these children experience. It is important to also examine how the severity of the disorder affects parental stress. Functional impairment can be defined as "specific deficits in multiple domains of functioning developing subsequent to a disorder" (Winters et al., 2005, p. 309). In the current study, the Total Competence subscale of the CBCL was used to index the severity of ADHD symptomatology (i.e., the functional impairment) experienced by the child. My data analyses showed that these Total Competence scores were statistically significantly positively correlated with mothers' PSI Total Stress scores for both the ADHD-CT and ADHD-PI subtypes. More specifically, these results indicate that the

more severe the child's ADHD symptoms, the more stress the mothers report experiencing. This pattern of data makes sense because if a child has relatively severe difficulties in several areas of functioning, the mother may require more support and help (e.g., financially due to medications or school fees for remedial schools), thus putting more strain on her.

These findings related to the CBCL Total Competence subscale and parental stress are similar to those of Harrison and Sofronoff (2002) who examined the role of demographics, child characteristics and parental cognitions in relation to parental distress. Participants consisted of mothers ($n = 100$) who completed questionnaires on ADHD knowledge, parenting stress, depression, behavioural disturbance and attributions of cause and controllability of ADHD related behaviours. Regression analyses were conducted to examine if more severe ADHD behaviours and child behavioural disturbance, lower knowledge of ADHD, the tendency to attribute the cause and controllability of their child's behaviours as internal to the child, and lower perceived parental control over child behaviours would be associated with higher levels of psychological distress. Results indicated the combination of the variables contributed to the parental distress, accounting for 24% of the variance in parenting stress. However severity of child behaviour problems and the parent's inability to cope were the strongest predictor variables of parental distress. In other words, they concluded that the greater the severity of the ADHD child's behavioural disturbances and the lower the parents perceived control over their child's behaviour, the higher the stress experienced by the mothers.

My analyses also showed that CBCL Total Competence scores were also significantly correlated with maternal depression; the more severely impaired the child's functioning, the more depressive symptomatology the mother reported experiencing. These findings related to the CBCL Total Competence subscale and maternal depression are similar to those of Chronis et al. (2003). The aim was to examine the occurrence of psychological disorders in mothers of children with and without ADHD. Participants consisted of 98 mothers of children with ADHD and 116 mothers of TD children. Mothers completed questionnaires related to their child's ADHD symptomatology and co-morbid disorders. They also completed questionnaires on their own mood, anxiety and substance abuse disorders. Results indicated that maternal depression was significantly associated with children with ADHD that had more co-morbid disorders and hence more severe functional impairment. Maternal depression was also described as being predictive of the future course of child conduct problems, thereby emphasising the negative relationship between depression and raising a child with ADHD.

This potential for a negative parent-child relationship reinforces the notion that the best way to understanding ADHD and the parent-child relationship is with a reciprocal approach.

Therefore, intervention programmes need to focus on treating depression in mothers of children with ADHD not only in terms of improving their mental health but also to improve the development of their children.

Results for the correlations between functional impairment and mother's psychological well-being provide insight into the possible problem areas contributing to increased stress in mothers of children with ADHD. The current data support calls for more inspection of the differing subtypes of ADHD, variations in functional impairment, and their influence on parental stress. Examination into severity of functional impairment identified the severity of functional impairment and disorder-related problems experienced by the child as negatively affecting maternal mental health and well-being. .

A Further Examination: Comparison between functional impairment/types of problems and subtype of ADHD

The results of the correlations summarized above indicated that the severity of functional impairment of the child with ADHD is highly associated with increased stress levels for mothers of ADHD children. Mothers of children that are more severely functionally impaired experience greater parental stress. However, I undertook an even more detailed examination into potential differences between functional impairment and the problems experienced by the child based on the particular subtype of ADHD. Such an examination was necessary, and important, because previous research has indicated that the consequences of the symptom profile of the various subtypes of ADHD manifest themselves in different problem areas and are associated with varying levels of functional impairment (Graetz et al., 2001). Therefore, an examination into the associations between functional impairment (CBCL Total Competence subscale) and the problems experienced by the child (CBCL Total problems, Externalizing and Internalizing Problems subscales).

Results from the relevant between-group comparisons indicated that there were no significant differences in the level of severity of functional impairment between children with different subtypes of ADHD. These results are in line with research by Fischer (2010), who examined the differences in functional impairment in children with ADHD in South Africa. Fischer (2010) compared the functional impairment of children with Obsessive-Compulsive Disorder (OCD) and ADHD to one another. The two groups consisted of 31 OCD and 47 ADHD diagnosed children. The domains where children were most severely impaired were examined. An examination between the subtypes of ADHD (ADHD-CT and ADHD-PI) and their functional

impairment was also conducted. Results indicated that there were no significant differences between ADHD-CT and ADHD-PI in terms of functional impairment.

In the current study, the results of the between-group comparison did, however, indicate that children with ADHD-CT experienced significantly more problems (e.g., cruelty to animals, violent, shows off, whines) in various domains (e.g., home, school, socially) than children with ADHD-PI. This finding is also consistent with research by Fischer (2010), who found that children with ADHD-CT have more co morbid disorders of a behavioural kind than children with ADHD-PI. Such co morbidity would also plausibly result in more areas or social settings where the behavioural problems would be on display. A potential reason for why children with ADHD-CT experience more problems than children with ADHD-PI is because children with ADHD-CT have problems with inattention in addition to problems with distractibility and hyperactivity. For instance, Barkley (2006) found children with ADHD-CT to be consistently more impaired and to have more severe behavioural disorders than children with ADHD-PI. Furthermore, Counts et al. (2002) confirmed in their examination of ADHD that family adversity was significantly more associated with children with ADHD-CT than children with ADHD-PI.

The previous section summarized that the types of problems associated with ADHD are significantly correlated with increased stress levels. This further examination into the subtypes of ADHD and their associated problems showed that children with more problems related to their ADHD subtype (in the current sample, the ADHD-CT children) increased the likelihood for heightened parental stress. Results from the between-group comparisons are important because they emphasise the need for parental-stress treatment and intervention programmes that target the types of problems the child with ADHD displays.

Aim 5: Does Parental Stress Affect Depression and Quality of Life?

This analysis was conducted to explore the potential connections between parental stress, mental health, and overall quality of life of mothers of children with ADHD. Consistent with previous literature, (e.g., Psychogiou et al, 2008; Spratt et al., 2007) depressive symptomatology was positively correlated with all of the PSI stress scores (Total, Child, Parent, Life stress). Previous research has identified that approximately 40% of mothers of children with ADHD have a history of major depressive disorder (Chronis, Lahey, Pelham, Kipp, Baumann, & Lee, 2003).

The DSM-IV-TR (2000) describes someone suffering from Major Depressive Disorder (MDD) as displaying specific symptoms. The characteristics of a major depressive episode (MDE) according to the DSM-IV-TR are: (a) depressed mood, (b) diminished interest in

pleasurable activities, (c) decrease in weight or appetite, (d) insomnia or hypersomnia, (e) psychomotor agitation, (f) fatigue or loss of energy, (g) feelings of worthlessness or guilt, (h) diminished ability to concentrate, and (i) recurring thoughts of death. All these symptoms need to be present almost every day for more than two weeks for a diagnosis of MDE. (See appendix K for the complete DSM-IV-TR criteria of MDE).

Previous literature on ADHD and depression indicate that parents of children with ADHD are considered an 'at risk' population for depression (Chronis et al., 2006). West, Houghton, Douglas, Wall & Whiting (1999) concur that parental psychopathology occurs more frequently in parents of children with ADHD than controls. For example, West et al. (1999) examined 80 randomly selected mothers of children with ADHD. The mothers completed questionnaires on depression related to various domains of their life. ANOVA's were conducted to determine the main effect for depression levels in mothers of children with ADHD. The results indicated that mothers of children with ADHD had significantly higher depression scores than mothers of healthy non-ADHD children. Furthermore, mothers of more than one child with ADHD scored significantly higher depression scores than mothers of a single child with ADHD. Results from that study emphasise that raising one or more children with ADHD has serious mental health consequences for the mothers of these children.

QoL describes an individual's subjective view of their present life situation in terms of their physical, psychological, and social well-being. In the current study, a significant, negative correlation was identified between depressive symptomology and WHO QoL scores. Results from a recent study by, Wehmeier, Schacht & Barkley (2010) emphasise that ADHD symptoms and disorder-related characteristics negatively affect the QoL of not only the child with ADHD but all members of the family. Furthermore, a study by Leung and Li-Tsang (2003) into the QoL of parents of children with and without disabilities indicated that social relationships and environmental domains of the WHO QoL differed significantly for parents of a child with and without disabilities. A total of 147 mothers of children with and without disabilities were recruited. Mothers completed the WHO QoL questionnaire as well as questionnaires on their child's functional impairment. Mothers of children with a disability had more difficulties in social relationships and viewed their environment negatively in comparison to parents of children without a disability. The results also indicated parental QoL to be significantly negatively correlated with the level of severity of their child's disability. The more severely impaired the child's disability the more negatively the parent viewed their personal QoL.

As previously stated, caring for a child with ADHD can be difficult when the parent's own emotional and health needs are put under strain. If mothers of children with ADHD are clinically depressed, they experience internalizing issues of their own which may make it difficult to fulfil their parenting roles. This can also lead to a tense parent-child relationship and ultimately results in increased stress levels and a lower perceived quality of life. These negative attributes in turn negatively affect that parent-child relationship. For instance, Wrate, Rooney, Thomas & Cox (1985) investigated whether children whose mothers had been depressed at some point experienced post-natal depression showed more behavioural disturbances than children of mothers who had never been depressed. The participants consisted of 103 mothers, who were re-contacted 3 years after participation to determine their present mental state. Results indicated that children of mothers who had at some stage experienced post-natal depression displayed more behavioural disturbances than children of mothers who did not display depressive symptomology. The results from that study indicated that depression and maternal psychopathology have the potential to negatively affect the mother-child relationship and the development of the child.

The significant, negative association between QoL and PSI Total Stress and Parent Domain stress can be interpreted as such; a lower perceived QoL places the mother at risk for psychological distresses, and negative cognitions (e.g., anxiety, emotional disturbances) that impact the parent-child relationship and result in increased stress for the mother.

Results from this correlation hints towards potential factors (depression and QoL) that may contribute significantly to increased stress levels for mothers of children with ADHD. This notion will be further explored in the regression and canonical correlation analysis discussion.

Aim 6: What Factors Best Predict Parental Stress?

Regression. A regression analysis was conducted to explore the factors that could potentially predict stress in mothers of children with ADHD. Through the regression analysis, two important factors emerged as the top predicting factors of stress in mothers of children with ADHD. These factors were; (a) the Total Competence of the child according to the CBCL and (b) depression experienced by the mothers of children with ADHD. These findings are supported by previous literature (e.g., Counts et al., 2005; Harrison & Sofronoff, 2002; Psychogiou et al., 2008; Spratt et al., 2007) An important finding from these results is that stress is influenced by child-related as well as parent-related characteristics and hence does not only affect the parent but the parent-child relationship as well. .

In terms of the competence of the child with ADHD, Podolski and Nigg (2001) examined issues surrounding ADHD severity and parent distress. Results indicated that the severity of ADHD behaviour had a significant negative effect on increased parental distress. As previously stated, parental stress is a complex construct involving behavioural, cognitive, and affective components that manifest into a tense child-parent relationship (Kadesjö et al., 2002). Therefore, if the child is more severely affected by ADHD symptoms, this in turn may affect the mother, be it financially, emotionally or socially. In this way, the more problem areas the child with ADHD has, the more stress and difficulty the mother may experience in trying to support her child (financially/emotionally) and fulfil her parenting roles. The competence/ functional impairment of the child has to do with factors directly related to having ADHD. As a result, in the current study, low functional impairment of the child with ADHD emerged as a significant factor in predicting parental stress of mothers of children with ADHD. This indicates that parental stress is directly related to symptoms of the disorder itself.

However, the second significant factor in the regression analysis was maternal depression. As previously stated, genetic studies have demonstrated that ADHD is heritable (Shah, 2008). Therefore, parents who have children with ADHD may experience symptoms of the disorder themselves. These symptoms can in turn affect the parent's ability to fulfil their parenting roles, their health, their mental well being as well as their ability to cope with the stress of caring for a child with various developmental issues. Results from this regression analysis are in line with previous literature (Harrison & Sofronoff, 2002) and indicate that the child's disorder-related characteristics as well as parental psychopathology need to be carefully considered when planning intervention programmes for parents of children with ADHD.

Canonical correlation. This further examination into the potential factors that affect parental stress indicated that parental stress is significantly influenced by the mother's perceived resources, perceived quality of life, depression, the competence of their child and the types of problems their child may have associated with their subtype of ADHD. In other words, low resources, low quality of life, high depression and a child that has severe ADHD symptomology all contribute to and are indicative of higher stress levels for mothers of children with ADHD. The factors in the Predictor set explained much of the variance in the parental stress set. This is important for the reason that it contributes to the predictive capacity of the canonical correlation.

In terms of the significant factors that arose from this analysis, depression once again appeared as the factor with the most influence on parental stress. Since depression has a great

influence on stress, maternal psychopathology is an issue which desperately needs to be addressed in ADHD interventions.

As stated previously, depression is correlated with low QoL and if mothers are depressed, they will most likely perceive their quality of life as lower (Chronis et al., 2006). Therefore, there is a bidirectional relationship between these factors which contribute to a cycle of increased parental stress.

Although little research has focussed on the financial burden of raising a child with ADHD, a recent study by De Ridder and De Graeve (2006) reported that parents of children with ADHD are less productive than other parents. They also found that raising a child with ADHD resulted in more frequent visits to hospitals, general practitioners and emergency departments. This higher use of health care facilities contributed to the parent's lower perception of their available financial resources.

The potential contributing factors to increased parental stress identified in the current study are intertwined with one another. These results support the notion that the parent-child relationship is interdependent and factors from both mother and child contribute to increased stress levels.

By conducting a canonical correlation, this study sought to determine which specific predictors relate to increase parental stress. By conducting this analysis and identifying the contributing factors related to increased parental stress, it is anticipated that stress management for parents of children with ADHD can be more successfully approached and implemented. Results from the canonical correlation analysis confirmed and added to the findings of the multiple regression. Not only was parental depression identified as a significant predictor of parental stress but resources, quality of life and issues directly relating to their child's functional impairment were identified as playing an important role in increased parental stress. This emphasises that factors relating to the parent, child and family environment need to be understood and examined in order to effectively manage parental stress in mothers of children with ADHD.

Review of Intervention Programmes designed for Parents of Children with ADHD.

Results from the current study emphasise the need for intervention programmes that reduce stress in the families of children with ADHD. Increased stress levels, parental psychopathology and tense parent-child interactions emphasise the need for interventions that account for parental characteristics and take into consideration mental health issues of parents. Therefore, appropriate intervention programmes are examined and discussed in relation to the

results of the current study. Although the literature on the strain (e.g., emotional, financial, and social) associated with raising a child with ADHD is well documented, few studies have specifically addressed the topic (Treacy, Tripp & Baird, 2005). Until this is done, appropriate intervention programmes that attend to parental issues can not be effectively designed and successfully implemented.

As stated earlier, few studies that examine ADHD and stress focus on the parent and their mental health issues, rather focussing on the child and their experience with ADHD. The same can be said for intervention and treatment programmes. The majority of intervention and treatment programmes aimed for families of children with ADHD focus on stimulant, behavioural and educational treatments for the child (e.g., Eiraldi & Power, 2001; Findling, 2008). The current study has emphasised that the interactions within the parent-child relationship are interconnected. Therefore, in a family of a child with ADHD, where the interactions are reciprocally negative, intervention and treatment plans will not benefit from approaches focussing purely on the child's experiences. Interventions need to be reciprocal in nature, attending to the parent and the child if long lasting effects are to remain.

The aim of the following section is to examine the literature of appropriate intervention programmes that are available and specifically designed for parents of children with ADHD. In doing so, a better understanding of what factors are the focus when helping parents of children with ADHD will be achieved. The following section will also enable an examination as to whether results from the current study are in line with current intervention programmes aimed at parents of children with ADHD. Results from the current study may also highlight important factors which are not receiving attention in intervention plans.

Parent Stress Management Training (PSM) for Attention Deficit/Hyperactivity Disorder.

The importance of taking parents' psychological well-being into account in the management of ADHD has been acknowledged but never directly addressed (Treacy, et al., 2005). Therefore, recently, Treacy et al, (2005) designed the first intervention programme to directly focus on issues related to parents of children with ADHD in the management of ADHD.

This intervention programme aimed to reduce parenting stress and improve parental mood, family functioning, parenting style, locus of control and increase perceived support (Treacy et al. (2005). They aimed to address both child and parent characteristics as well as environmental factors that lead to increased stress levels in this trial intervention programme.

The trial intervention was of a randomised wait-list design, consisting of 63 parents (40 mothers and 23 fathers) in the immediate and wait-list groups. The intervention extended over 9

weeks, consisting of 2-hour sessions. This was concluded with a 6 month and 12 month follow up session. Each weekly session reviewed the previous week's discussions. This was followed by group discussions, exercises and homework for each parent. Each session focussed on issues to do with parenting and living with a child with ADHD.

In brief, the sessions that were covered were: (1) *Orientation to the program*, which familiarised the parents with the aims and layout of the upcoming sessions, (2) *Education about ADHD*, in which parents were informed of symptoms, treatment options and misconceptions about ADHD, (3) *Rights and resources*, in which parents were informed of various options they have in their community in the hope of reducing their feelings of hopelessness, (4) *Problem solving skills*, in which parents were taught how to deal with situations with their child that they may experience at home, (5) *Cognitive restructuring*, in which parents were taught to have more realistic expectations of their child, (6) *Communication skills*, in which parents were taught how to mend the negative interactions they have with their child, (7) *self care skills*, in which parents learnt the value of time management and relaxation techniques, (8) *parenting skills*, in which parents were taught more effective discipline techniques, (9) *Wrap up*, which consisted of a review of all issues covered (Treacy et al., 2005)

Results from this trial intervention indicated a decrease in parent domain stress in terms of over-reactivity, laxness and parenting style for mothers (Treacy et al., 2005). For fathers, the only change seen was in parenting style. These results were maintained at 6 and 12 months and the intervention programme was seen as a success by the parents that participated (Treacy et al., 2005).

Results from the current study are in line with the aims of the trial intervention programme designed by Treacy et al. (2005) in terms of focussing on characteristics of the parent, with the aim of reducing stress within the parent-child relationship. The PSM trial is a good example of what future intervention programmes for parents of children with ADHD should be based on. As this was the first trial to focus specifically on the parent, there is a need for replication and adjustments of this programme. An example of such replication, within the South African context is by Prithivirajh (2007), who replicated the design of the PSM trial. Prithivirajh's (2007) qualitative study emphasised the benefits of the PSM in stress reduction for parents of children with ADHD.

However, one of the aims of Treacy et al. (2005) was to design a programme that addressed both child and parent characteristics, this was only achieved to a degree within the *parenting styles* session. Results from the current study found competence of the child with ADHD (severity of ADHD symptomology) to be one of the significant predictors of increased

parental stress levels. Therefore, including the child in sessions and focussing on ADHD characteristics of the child as well as characteristics of parenting would contribute greatly to intervention programmes such as PSM. Improving the mood of parents was also one of the aims of the PSM trial however, no mention is made of whether this was achieved or not. Within the current study, maternal depression was one of the significant predictors of increased stress levels. Therefore, intervention programmes such as PSM would benefit from focussing on and reducing the psychopathology of these parents.

Cognitive-Behavioural Depression Treatment for Mothers of Children with ADHD.

As previously stated the current study identified maternal depression as one of significant predictors of parental stress. Chronis et al. (2006) adjusted the Coping with Depression Course (CWDC) for mothers of children with ADHD. The aim of this intervention programme was to address the issue of maternal depression in mothers of children with ADHD and this is in line with the results from the current study and various other studies (see e.g., Counts et al., 2005; Harrison & Sofronoff, 2002; Psychogiou et al., 2008; Spratt et al., 2007).

The CWDC intervention programme was run directly after mothers had attended a summer programme on ADHD with their children in the United States of America. Mothers were placed in either the immediate or wait-list groups. The intervention specifically aimed to improve maternal functioning, negative cognitions related to ADHD behaviour, parent-child relationships and family impairment (Chronis et al., 2006). The programme consisted of 12 sessions where mothers were taught how to control thoughts, feelings and behaviours. Relaxation training increased pleasurable activities, cognitive restructuring and social skills training formed part of group discussions and homework (Chronis et al., 2006). The mothers were also made to complete self report questionnaires on their well-being throughout the course of the programme.

Results from this intervention programme indicate that the CWDC can be successfully applied to mothers of children with ADHD. There was an overall improvement in maternal depressive symptomology, self esteem, negative cognitions toward their child and perceived family impairment (Chronis et al., 2006). The CWDC was considered a success by the mothers that participated; however, there was little improvement in terms of parent-child relationships. Creating intervention programmes that reduce depression in parents is difficult because maternal depression and marital dysfunction are associated with high participation drop-out rates (Chronis et al., 2006). The CWDC intervention programme focused on alleviating depressive symptomology experienced by mothers of children with ADHD and is a step in the right direction towards effective treatment plans for mothers of children with ADHD.

Results from the current study indicated depression and the functional impairment of the child (level of competence) as re-current significant factors related to increased stress levels in mothers of children with ADHD. The intervention programmes described above are two of the few programmes to take parental issues into account when treating families of children with ADHD. There is, however, a need for replication and adjustments of these programmes; for example, to include the child in sessions and combine parenting training skills with reduction in psychopathology. However, the current study also identified perceived QoL and perceived resources as significant predictors of parental stress. Therefore, there are many other factors which need to be considered when treating families of children with ADHD. If anything, the current study and the above intervention programmes emphasise that because the parent-child relationship is interconnected and parental stress, maternal psychopathology and child behaviours have a reciprocal influence on one another, it is imperative to intervene without delay.

Limitations and Directions for Future Research

Similar to many studies that have been conducted on parental stress in families with children that have special care needs, the current sample was of a middle-class, suburban background. In a country such as South Africa, it is particularly important to examine culturally and ethnically diverse groups in studies such as this, particularly because parents from lower SES strata will have fewer financial and physical resources, and might have less access to health information and health professionals, and so might experience higher levels of stress related to their child's disorder. Future research should aim at remedying this shortcoming of the current study by actively recruiting participants from lower SES neighbourhoods.

Continuing on from this, the sample in the current study consisted of English and Afrikaans speaking individuals. No individuals speaking languages other than English or Afrikaans were included in the sample. This was due to financial, time and logistical reasons to do with translating the necessary measures. Future research would benefit by doing this as it will give more appropriate results reflecting the South African population. Furthermore, future research would benefit from introducing recruitment procedures at a community level in various socio-economic contexts. This would allow for the recruitment of participants from a variety of social and economic contexts. A more realistic reflection of the South African population would be achieved through these kinds of recruitment procedures.

The current study is one of the first to examine and differentiate between the subtypes of ADHD when examining parental stress. Future research may benefit from examining gender differences and how they affect functional impairment as well as parental stress as it is another important factor which was not taken into consideration in the current study. It could also be useful to examine the age of onset of ADHD between male and female children and how this affects the parents stress.

Results of the current study identified maternal depression to be an important factor related to parental stress. For this reason, future research should focus specifically on the mental health of parents of children with ADHD. Previous literature (e.g., Psychogiou et al., 2008; Spratt et al., 2007), highlight that parents of ADHD children experience personal suffering and as a result experience negative effect, depression, and anxiety disorders, all of which affect the ability to cope with stress and successfully parent their child. There is a need for research that focuses specifically on the mental health of the parents of children with ADHD because, if the parent is suffering from their own psychopathology, they cannot care for themselves or their child adequately. Since the parent-child relationship is so closely associated with stress, this is of utmost importance. Future research might do so by looking more closely at the mental health issue of the parent, be they associated with having a child with ADHD or pre-existing. In this way, health professionals can better understand parental well-being and appropriate interventions that support the parent as well as the child's needs can be designed.

With regard to expanding and building upon the current study, the general structures set in place would not need to be altered. Self-report questionnaires were used in the current study and there is an element of risk in doing so, as the researcher has to assume the participants' responses portray their feelings accurately. There was a relatively large sample for the ADHD group, however, the comparative groups were small and the analyses that were used for all four groups, had little statistical power. This is something future research should endeavor to rectify. Hence, increasing the sample size in all groups is of utmost importance to obtain results that will be more statistically valid and significant in relation to the given population. Future studies may also benefit from using multiple informants (mothers, fathers, teachers,) when gathering information on the parent-child interactions and problems prevalent with raising a child that has ADHD as this may provide a different picture of the predominant issues in various contexts.

Clinical Significance

Results from the current study found significant differences in stress levels experienced by South African mothers of children with ADHD when compared to mothers of typically developing children and children on the autism spectrum. This finding supports the notion that mothers of children with ADHD are under immense stress and that raising a child with ADHD specifically, contributes to increased stress levels. An important finding from the results of this study is that stress is influenced by child-related as well as parent-related characteristics and that stress does not only affect the parent but the parent-child relationship as well. This finding will hopefully lead to better treatment plans being developed for families of children with ADHD. Therefore, a transactional approach to understanding the interactions between mother and child should be adopted when dealing with families of children with ADHD.

There were no statistically significant differences found between the subtypes of ADHD (ADHD-CT and ADHD-PI) in terms of parental stress levels. Children with ADHD-CT, however, displayed significantly more problems than children with ADHD-PI. The suggestion here is that this is because children with ADHD-CT experience problems related to inattention as well as hyperactivity and distractibility, and therefore there is a higher probability for their behavioural problems to occur in more social settings. These findings are important because they call for further investigation into the subtypes of ADHD in relation to parental stress.

It was discussed at length in the current study that mothers of children with ADHD are at risk of developing mental health problems. This finding is important because it emphasises that the presence of mental health problems in mothers of children with ADHD needs to be an important factor when considering the management of their stress.

The results of this study have provided preliminary steps towards a comprehensive understanding of the potential factors that are associated with increased parental stress levels. The findings of this study identify; maternal depression, low resources, low quality of life and problems directly associated with ADHD to be the main predictors of increased parental stress. Findings such as these will help improve the construction of correct and effective treatment and intervention plans for families of children with ADHD.

Conclusion

The current study has provided preliminary steps towards examining and understanding parental stress in mothers of children with ADHD in South Africa. The study highlighted the extent to which mothers of children with ADHD are stressed in relation to other parent-child groups. The current study aimed to contribute to a better understanding of the factors potentially associated with parental stress and make mental health practitioners and the general public more aware of these mothers' stressful situations. The current study concluded that parental stress in families of children with ADHD is directly negatively influenced by maternal depression, low resources, low quality of life and problems directly associated with disorder-related characteristics of ADHD. Through doing this, an understanding of the stress experienced by mothers of children with ADHD can be achieved. In conclusion, the degree to which ADHD symptomology, functional impairment and parent QoL, resources and psychopathology affect the families of children with ADHD is still not adequately addressed or managed and there is a need for further examination into the factors that predict parental stress. This will lead to better implementation of family preventative interventions focused specifically on the mothers of these children.

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APPENDIX A

DSM-IV-TR Diagnostic Criteria for Attention-Deficit/Hyperactivity Disorder

I. Either A or B:

- A. Six or more of the following symptoms of *inattention* have been present for at least 6 months to a point that is disruptive and inappropriate for developmental level:

Inattention

Often does not give close attention to details or makes careless mistakes in schoolwork, work, or other activities.

1. Often has trouble keeping attention on tasks or play activities.
2. Often does not seem to listen when spoken to directly.
3. Often does not follow instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behaviour or failure to understand instructions).
4. Often has trouble organizing activities.
5. Often avoids, dislikes, or doesn't want to do things that take a lot of mental effort for a long period of time (such as schoolwork or homework).
6. Often loses things needed for tasks and activities (e.g. toys, school assignments, pencils, books, or tools).
7. Is often easily distracted.
8. Is often forgetful in daily activities.

- B. Six or more of the following symptoms of *hyperactivity-impulsivity* have been present for at least 6 months to an extent that is disruptive and inappropriate for developmental level:

Hyperactivity

1. Often fidgets with hands or feet or squirms in seat.
2. Often gets up from seat when remaining in seat is expected.
3. Often runs about or climbs when and where it is not appropriate (adolescents or adults may feel very restless).

4. Often has trouble playing or enjoying leisure activities quietly.
5. Is often "on the go" or often acts as if "driven by a motor".
6. Often talks excessively.

Impulsivity

1. Often blurts out answers before questions have been finished.
2. Often has trouble waiting one's turn.
3. Often interrupts or intrudes on others (e.g., butts into conversations or games).
4. Some symptoms that cause impairment were present before age 7 years.
5. Some impairment from the symptoms is present in two or more settings (e.g. at school/work and at home).
6. There must be clear evidence of significant impairment in social, school, or work functioning.
7. The symptoms do not happen only during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder. The symptoms are not better accounted for by another mental disorder (e.g. Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

Based on these criteria, three types of ADHD are identified:

1. ADHD, Combined Type: if both criteria 1A and 1B are met for the past 6 months
2. ADHD, Predominantly Inattentive Type: if criterion 1A is met but criterion 1B is not met for the past six months
3. ADHD, Predominantly Hyperactive-Impulsive Type: if Criterion 1B is met but Criterion 1A is not met for the past six months.



APPENDIX B

Example of Poster

ADHD, AUTISM, PARENTAL STRESS?!!

Are you interested in finding out more about your child's disability? Or how it may be affecting you?

Researchers at the University of Cape Town are conducting a study to understand how **AUTISM, Attention Deficit (Hyperactivity) Disorder (ADHD/ADD)**, normally developing children and the accompanying **Parental Stress** affect the daily lives of the people involved. In addition to this, we are looking at aspects surrounding the **medication** of ADHD children.

This study calls for the **participation of PARENTS** of children who have been diagnosed as Autistic or ADHD/ADD as well as normally developing children. Participation in this study would be greatly appreciated.

The research consists of a maximum session of 1 hour for completing questionnaires on Parental Stress which can be emailed for your convenience.

If you are interested in taking part, or for additional information, please contact:

- **Jessica Cheesman on 0741331899**
jecheesman@gmail.com or chsjes001@uct.ac.za
- **Claudia Coetzee on 0835787722**
ctzcla002@uct.ac.za
- **Lesia Smith on 0722369868**
lesiasmith@gmail.com

APPENDIX C

Example of Letter to Interested Parents

UNIVERSITY OF CAPE TOWN



Department of Psychology

University of Cape Town - Rondebosch 7701 - South Africa
 Telephone: (021) 650 9111
 Fax No: (021) 650-4104

Attention Deficit/ Hyperactivity Disorder (ADHD) and Autism Research Study

Dear Parent/Guardian:

Researchers at the University of Cape Town are carrying out a study with parents of Autistic or ADHD diagnosed children. This research is a continuation of research which was started in 2008. Specifically, we are interested in seeing how ADHD/ADD and Autism affects the daily lives of the participants, as well as how these disorders impact on parental stress and coping. We have obtained permission from the relevant ethics committees at the University of Cape Town to conduct this research.

We aim to recruit approximately 15 to 25 parents/ legal guardians who have a child who has either already been diagnosed with ADHD/ADD and/or Autism or may be showing signs of the disorder. This year we would aim to include parents of normally developing children as well to have a clear comparison of the differences in stress levels of all the parents.

The study involves questionnaires with a parent, these can be done in the company of the primary researcher (Jessica Cheesman) or be taken home and completed and returned the following day. Questionnaires will address how your child is functioning in various domains of his/her life, as well as measuring parental stress and coping. At the end of the study, you will receive personalized feedback as well as the overall findings that resulted from the research study. If your child is seeing a psychologist or social worker it will be up to you to decide whether or not his/her therapist will have access to the findings. Appropriate referral details will also be made available.

If you decide to take part, all information gathered will be kept strictly confidential. Ultimately, we hope our research will improve our understanding of ADHD/ADD and Autism, to inform future diagnosis and treatment of these disorders, as well as to alleviate parental burden and stress.

If you have any questions about the information in this letter or about the study in general, please do not hesitate to contact either of the researchers.

Jessica Cheesman
Masters Student
Department of Psychology
University of Cape Town
E-mail: jecheesman@gmail.com/ chsjes001@uct.ac.za
Tel: 0741331899

Kevin G. F. Thomas, Ph.D.
Senior Lecturer
Department of Psychology
University of Cape Town
E-mail: kevin.thomas@uct.ac.za
Tel: (021) 650-4608

We look forward to hearing from you!

APPENDIX D

Mothers of ADHD Children Informed Consent Form

Raising an ADHD Child: Relations between parental stress, child functional impairment, and subtypes of the disorder

Dear Parent:

You are invited to take part in a research study. This form provides you with information about the study and seeks your authorization for the collection, use, and disclosure of your mental health and other personal information necessary for the study. The Principal Investigator (the person in charge of this research) or a representative of the Principal Investigator will also describe this study to you and answer all of your questions. Your participation is entirely voluntary. Before you decide whether or not you want to take part, read the information below and ask questions about anything you do not understand. By participating in this study you will not be penalized or lose any benefits to which you would otherwise be entitled.

1. Investigators and Telephone Number(s)

Jessica Cheesman

Master's Degree Candidate

Department of Psychology

University of Cape Town

Telephone: 021-650-3430

Kevin G. F. Thomas, Ph.D.

Senior Lecturer

Department of Psychology

University of Cape Town

Telephone: 021-650-4608

2. What is the purpose of this research study?

The purpose of this research study is to explore the varying levels of stress parents of children diagnosed with attention-deficit/hyperactivity disorder (ADHD) experience in

comparison to parents of children diagnosed with autism spectrum disorders and parents of typically developing children.

3. What will be done if you take part in this research study?

You will be asked to complete questionnaires about your mental health/wellbeing, your stress levels, and your quality of life. You are being asked to participate because you are the parent of a child diagnosed with ADHD, and we suspect that such parents experience a great deal of stress.

Possible locations for the interviews are: the University of Cape Town's Department of Psychology or your home. Each interview session will be conducted by a postgraduate psychology student who has been trained in the use of the measures that will be administered, and who is under the supervision of a clinical psychologist.

After the session, you will have the opportunity to ask questions and thus learn more about psychological research. However, your particular results will not be disclosed.

If you have any questions now or at any time during the study, you may contact the one of the Investigators listed in #1 of this form.

4. If you choose to participate in this study, how long will you be expected to participate in the research?

The study consists of 1 session, which will last for a maximum of 2 hours. If at any time during this session you find any of the procedures uncomfortable, you are free to skip a particular question or stop entirely.

5. How many parents are expected to participate in the research?

50-100

6. What are the possible discomforts and risks?

You may experience slight fatigue. If you become tired during the interview session, we will take a break. You will be allowed to take breaks whenever requested. You may feel slight discomfort with the fact that you are taking part in a study focussing on your child's problems and your reactions to them; some of the questions asked are of a personal nature

and may bring up feelings you did not expect. However, privacy will be maintained, as best as is possible, in the place where the study is conducted.

If you wish to discuss the information above or any discomforts you may experience, you may ask questions now or call one of the Investigators listed on the front page of this form.

7a. What are the possible benefits to you?

You may or may not personally benefit from the research. However, we are happy to send you and any treatment professionals you may be working with feedback from your questionnaires. This may assist you with finding a way forward.

7b. What are the possible benefits to others?

The information from this study may help improve our understanding of stress levels in parents who have a child diagnosed with ADHD or with an autism spectrum disorder. This information may allow us to identify ways in which we can help decrease those stress levels.

8. If you choose to take part in this research study, will it cost you anything?

Participating in this study will not cost you anything.

9. Will you receive compensation for taking part in this research study?

There will be no compensation for participation in this study.

10a. Can you withdraw from this study?

You are free to withdraw from participation in this study at any time. If you do withdraw, there will be no penalty.

If you have any questions regarding your rights as a research participant, you may phone the Psychology Department offices at 021-650-3430.

10b. If you withdraw from this study, can information about you still be used and/or collected?

Information already collected may be used.

11. Once personal and performance information is collected, how will it be kept secret (confidential) in order to protect your privacy?

Information collected will be stored in locked filing cabinets or in computers with security passwords. Only certain people have the right to review these research records. These people include the researchers for this study and certain University of Cape Town officials. Your research records will not be released without your permission unless required by law or a court order.

12. What information about you may be collected, used, and shared with others?

The information gathered from you will be on your mental wellbeing and stress levels and the impact having a child diagnosed with ADHD has on your everyday life. If you agree to take part in this study, it is possible that some of the information collected might be copied into a “limited data set” to be used for other research purposes. If so, the limited data set may only include information that does not directly identify you. For example, the limited data set cannot include you or your name, address, telephone number, ID number, or any other photographs, numbers, codes, or so forth that link you to the information in the limited data set.

The results of the research will be presented as part of a Master’s research project for the University of Cape Town. Also, the results may be submitted for publication in a peer-reviewed journal. In both instances you will not be identified in any way.

13. Signatures

As a representative of this study, I have explained to the participant the purpose, the procedures, the possible benefits, and the risks of this research study; and how his/her data will be collected, used, and shared with others:

Name of Researcher and writer of thesis _____

Signature of Person Obtaining Consent and Authorization Date

You have been informed about this study’s purpose, procedures, possible benefits, and risks; and how data will be collected, used and shared with others. You have received a copy of this

form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time.

You voluntarily consent to participate in this study. You hereby authorize the collection, use and sharing of information regarding your mental wellbeing and stress levels in relation to raising a child diagnosed with ADHD, as well as other data. By signing this form, you are not waiving any of your legal rights.

Name of Participant (“Study Subject”) _____

Signature of Person Consenting and Authorizing

Date

Please indicate below if you would like to be notified of future research projects conducted by our research group:

_____ (initial) Yes, I would like to be added to your research participation pool and be notified of research projects in which I or my child might participate in the future.

Method of contact:

Phone number: _____

E-mail address: _____

Mailing address: _____

APPENDIX E

Mothers of ASD Children Informed Consent Form

Raising an ADHD Child: Relations between parental stress, child functional impairment, and subtypes of the disorder

Dear Parent:

You are invited to take part in a research study. This form provides you with information about the study and seeks your authorization for the collection, use, and disclosure of your mental health and other personal information necessary for the study. The Principal Investigator (the person in charge of this research) or a representative of the Principal Investigator will also describe this study to you and answer all of your questions. Your participation is entirely voluntary. Before you decide whether or not you want to take part, read the information below and ask questions about anything you do not understand. By participating in this study you will not be penalized or lose any benefits to which you would otherwise be entitled.

1. Investigators and Telephone Number(s)

Jessica Cheesman

Master's Degree Candidate

Department of Psychology

University of Cape Town

Telephone: 021-650-3430

Kevin G. F. Thomas, Ph.D.

Senior Lecturer

Department of Psychology

University of Cape Town

Telephone: 021-650-4608

2. What is the purpose of this research study?

The purpose of this research study is to explore the varying levels of stress parents of children diagnosed with attention-deficit/hyperactivity disorder (ADHD) experience in

comparison to parents of children diagnosed with autism spectrum disorders and parents of typically developing children.

3. What will be done if you take part in this research study?

You will be asked to complete questionnaires about your mental health/wellbeing, your stress levels, and your quality of life. You are being asked to participate because you are the parent of a child diagnosed with an autism spectrum disorder, and we suspect that such parents experience a great deal of stress.

Possible locations for the interviews are: the University of Cape Town's Department of Psychology or your home. Each interview session will be conducted by a postgraduate psychology student who has been trained in the use of the measures that will be administered, and who is under the supervision of a clinical psychologist.

After the session, you will have the opportunity to ask questions and thus learn more about psychological research. However, your particular results will not be disclosed.

If you have any questions now or at any time during the study, you may contact the one of the Investigators listed in #1 of this form.

4. If you choose to participate in this study, how long will you be expected to participate in the research?

The study consists of 1 session, which will last for a maximum of 2 hours. If at any time during this session you find any of the procedures uncomfortable, you are free to skip a particular question or stop entirely.

5. How many parents are expected to participate in the research?

50-100

6. What are the possible discomforts and risks?

You may experience slight fatigue. If you become tired during the interview session, we will take a break. You will be allowed to take breaks whenever requested. You may feel slight discomfort with the fact that you are taking part in a study focussing on your child's problems and your reactions to them; some of the questions asked are of a personal nature

and may bring up feelings you did not expect. However, privacy will be maintained, as best as is possible, in the place where the study is conducted.

If you wish to discuss the information above or any discomforts you may experience, you may ask questions now or call one of the Investigators listed on the front page of this form.

7a. What are the possible benefits to you?

You may or may not personally benefit from the research. However, we are happy to send you and any treatment professionals you may be working with feedback from your questionnaires. This may assist you with finding a way forward.

7b. What are the possible benefits to others?

The information from this study may help improve our understanding of stress levels in parents who have a child with ADHD or with an autism spectrum disorder. This information may allow us to identify ways in which we can help decrease those stress levels.

8. If you choose to take part in this research study, will it cost you anything?

Participating in this study will not cost you anything.

9. Will you receive compensation for taking part in this research study?

There will be no compensation for participation in this study.

10a. Can you withdraw from this study?

You are free to withdraw from participation in this study at any time. If you do withdraw, there will be no penalty.

If you have any questions regarding your rights as a research participant, you may phone the Psychology Department offices at 021-650-3430.

10b. If you withdraw from this study, can information about you still be used and/or collected?

Information already collected may be used.

11. Once personal and performance information is collected, how will it be kept secret (confidential) in order to protect your privacy?

Information collected will be stored in locked filing cabinets or in computers with security passwords. Only certain people have the right to review these research records. These people include the researchers for this study and certain University of Cape Town officials. Your research records will not be released without your permission unless required by law or a court order.

12. What information about you may be collected, used, and shared with others?

The information gathered from you will be on your mental wellbeing and stress levels and the impact having a child diagnosed with an autism spectrum disorder has on your everyday life. If you agree to take part in this study, it is possible that some of the information collected might be copied into a “limited data set” to be used for other research purposes. If so, the limited data set may only include information that does not directly identify you. For example, the limited data set cannot include you or your name, address, telephone number, ID number, or any other photographs, numbers, codes, or so forth that link you to the information in the limited data set.

The results of the research will be presented as part of a Master’s research project for the University of Cape Town. Also, the results may be submitted for publication in a peer-reviewed journal. In both instances you will not be identified in any way.

13. Signatures

As a representative of this study, I have explained to the participant the purpose, the procedures, the possible benefits, and the risks of this research study; and how his/her data will be collected, used, and shared with others:

Name of Researcher and writer of thesis _____

Signature of Person Obtaining Consent and Authorization Date

You have been informed about this study’s purpose, procedures, possible benefits, and risks; and how data will be collected, used and shared with others. You have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time.

You voluntarily consent to participate in this study. You hereby authorize the collection, use and sharing of information regarding your mental wellbeing and stress levels in relation to raising a child diagnosed with an autism spectrum disorder, as well as other data. By signing this form, you are not waiving any of your legal rights.

Name of Participant (“Study Subject”) _____

Signature of Person Consenting and Authorizing

Date

Please indicate below if you would like to be notified of future research projects conducted by our research group:

_____ (initial) Yes, I would like to be added to your research participation pool and be notified of research projects in which I or my child might participate in the future.

Method of contact:

Phone number: _____

E-mail address: _____

Mailing address: _____

University

APPENDIX F

Mothers of TD Children Informed Consent Form

Raising an ADHD Child: Relations between parental stress, child functional impairment, and subtypes of the disorder

Dear Parent:

You are invited to take part in a research study. This form provides you with information about the study and seeks your authorization for the collection, use, and disclosure of your mental health and other personal information necessary for the study. The Principal Investigator (the person in charge of this research) or a representative of the Principal Investigator will also describe this study to you and answer all of your questions. Your participation is entirely voluntary. Before you decide whether or not you want to take part, read the information below and ask questions about anything you do not understand. By participating in this study you will not be penalized or lose any benefits to which you would otherwise be entitled.

1. Investigators and Telephone Number(s)

Jessica Cheesman

Master's Degree Candidate

Department of Psychology

University of Cape Town

Telephone: 021-650-3430

Kevin G. F. Thomas, Ph.D.

Senior Lecturer

Department of Psychology

University of Cape Town

Telephone: 021-650-4608

2. What is the purpose of this research study?

The purpose of this research study is to explore the varying levels of stress parents of children diagnosed with attention-deficit/hyperactivity disorder (ADHD) experience in

comparison to parents of children diagnosed with autism spectrum disorders and parents of typically developing children.

3. What will be done if you take part in this research study?

You will be asked to complete questionnaires about your mental health/wellbeing, your stress levels, and your quality of life. You are being asked to participate because you are the parent of a child who has not been diagnosed with a learning disorder or a psychiatric disorder; we suspect that such parents might experience a great deal less stress than those parents who have children diagnosed with such disorders.

Possible locations for the interviews are: the University of Cape Town's Department of Psychology or your home. Each interview session will be conducted by a postgraduate psychology student who has been trained in the use of the measures that will be administered, and who is under the supervision of a clinical psychologist.

After the session, you will have the opportunity to ask questions and thus learn more about psychological research. However, your particular results will not be disclosed.

If you have any questions now or at any time during the study, you may contact the one of the Investigators listed in #1 of this form.

4. If you choose to participate in this study, how long will you be expected to participate in the research?

The study consists of 1 session, which will last for a maximum of 2 hours. If at any time during this session you find any of the procedures uncomfortable, you are free to skip a particular question or stop entirely.

5. How many parents are expected to participate in the research?

50-100

6. What are the possible discomforts and risks?

You may experience slight fatigue. If you become tired during the interview session, we will take a break. You will be allowed to take breaks whenever requested. You may feel slight discomfort with the fact that you are taking part in a study focussing on your child's

problems and your reactions to them; some of the questions asked are of a personal nature and may bring up feelings you did not expect. However, privacy will be maintained, as best as is possible, in the place where the study is conducted.

If you wish to discuss the information above or any discomforts you may experience, you may ask questions now or call one of the Investigators listed on the front page of this form.

7a. What are the possible benefits to you?

You may or may not personally benefit from the research. However, we are happy to send you feedback from your questionnaires.

7b. What are the possible benefits to others?

The information from this study may help improve our understanding of stress levels in parents. This information may allow us to identify ways in which we can help decrease those stress levels.

8. If you choose to take part in this research study, will it cost you anything?

Participating in this study will not cost you anything.

9. Will you receive compensation for taking part in this research study?

There will be no compensation for participation in this study.

10a. Can you withdraw from this study?

You are free to withdraw from participation in this study at any time. If you do withdraw, there will be no penalty.

If you have any questions regarding your rights as a research participant, you may phone the Psychology Department offices at 021-650-3430.

10b. If you withdraw from this study, can information about you still be used and/or collected?

Information already collected may be used.

11. Once personal and performance information is collected, how will it be kept secret (confidential) in order to protect your privacy?

Information collected will be stored in locked filing cabinets or in computers with security passwords. Only certain people have the right to review these research records. These people include the researchers for this study and certain University of Cape Town officials. Your research records will not be released without your permission unless required by law or a court order.

12. What information about you may be collected, used, and shared with others?

The information gathered from you will be on your mental wellbeing and stress levels. If you agree to take part in this study, it is possible that some of the information collected might be copied into a “limited data set” to be used for other research purposes. If so, the limited data set may only include information that does not directly identify you. For example, the limited data set cannot include you or your name, address, telephone number, ID number, or any other photographs, numbers, codes, or so forth that link you to the information in the limited data set.

The results of the research will be presented as part of a Master’s research project for the University of Cape Town. Also, the results may be submitted for publication in a peer-reviewed journal. In both instances you will not be identified in any way.

13. Signatures

As a representative of this study, I have explained to the participant the purpose, the procedures, the possible benefits, and the risks of this research study; and how his/her performance and other data will be collected, used, and shared with others:

Name of Researcher and writer of thesis _____

Signature of Person Obtaining Consent and Authorization Date

You have been informed about this study’s purpose, procedures, possible benefits, and risks; and how data will be collected, used and shared with others. You have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time.

You voluntarily consent to participate in this study. You hereby authorize the collection, use, and sharing of information regarding your mental wellbeing and stress levels, as well as other data. By signing this form, you are not waiving any of your legal rights.

Name of Participant (“Study Subject”) _____

Signature of Person Consenting and Authorizing

Date

Please indicate below if you would like to be notified of future research projects conducted by our research group:

_____ (initial) Yes, I would like to be added to your research participation pool and be notified of research projects in which I or my child might participate in the future.

Method of contact:

Phone number: _____

E-mail address: _____

Mailing address: _____

University of

APPENDIX G

Child Informed Consent Form

Raising an ADHD Child: Relations between parental stress, child functional impairment, and subtypes of the disorder

Dear Parent:

Your child is invited to take part in a research study. This form provides you with information about the study and seeks your authorization for the collection, use, and disclosure of your child's mental health and other personal information necessary for the study. The Principal Investigator (the person in charge of this research) or a representative of the Principal Investigator will also describe this study to you and answer all of your questions. Your child's participation is entirely voluntary. Before you decide whether or not you want your child to take part, read the information below and ask questions about anything you do not understand. By participating in this study your child will not be penalized or lose any benefits to which he/she would otherwise be entitled.

1. Investigators and Telephone Number(s)

Jessica Cheesman

Masters Student

Department of Psychology

University of Cape Town

Telephone: 021-650-3430

Kevin G. F. Thomas, Ph.D.

Senior Lecturer

Department of Psychology

University of Cape Town

Telephone: 021-650-4608

2. What is the purpose of this research study?

The purpose of this research study is to explore the varying levels of stress of parents of ADHD children in comparison to parents of children autism spectrum disorders and parents of typically developing children.

3. What will be done if your child/adolescent takes part in this research study?

Your child will be asked questions about his/her mental health, specifically about his/her symptoms of ADHD and the effect they have had on your lives.

Possible locations for the interviews are: the University of Cape Town's Department of Psychology or at your home. Each interview session will be individually conducted by a postgraduate psychology student who has been trained in the use of the measures that will be administered, and who is under the supervision of a clinical psychologist.

After the session, you will have the opportunity to ask questions and thus learn more about psychological research. However, your child's particular results will not be disclosed.

If you have any questions now or at any time during the study, you may contact the one of the Investigators listed in #1 of this form.

4. If you choose to allow your child to participate in this study, how long will he/she be expected to participate in the research?

The study consists of 1 session, which will last for a maximum of 2 hours. If at any time during this session you or your child finds any of the procedures uncomfortable, you are free to skip a particular question or stop entirely.

5. How many children are expected to participate in the research?

50-100

6. What are the possible discomforts and risks?

Your child may experience slight fatigue. If he/she becomes tired during the interview session, we will take a break. Your child will be allowed to take breaks whenever requested. Your child may feel slight discomfort with the fact that he/she is taking part in an ADHD study and that people at the venue of the study may know of his/her ADHD diagnosis.

However, privacy will be maintained, as best as is possible, in the place where the study is conducted. Your child may also feel some sadness or slight embarrassment over some of the questions.

If you wish to discuss the information above or any discomforts your child may experience, you may ask questions now or call one of the Investigators listed on the front page of this form.

7a. What are the possible benefits to your child?

Your child may or may not personally benefit from the research. However, we are happy to send you and any treatment professionals you may be working with feedback from your questionnaires, and this may assist you with finding a way forward.

7b. What are the possible benefits to others?

The information from this study may help improve our understanding of stress levels in parents who have a child with ADHD. This information may allow us to identify ways in which we can help decrease those stress levels.

8. If you choose to let your child take part in this research study, will it cost you anything?

Participating in this study will not cost you anything.

9. Will your child receive compensation for taking part in this research study?

There will be no compensation for participation in this study.

10a. Can you withdraw your child from this study?

You are free to withdraw your consent and to stop your child's participation in this research study at any time. If you do withdraw your consent, there will be no penalty.

If you have any questions regarding your child's rights as a research participant, and your rights as the individual granting consent for research participation, you may phone the Psychology Department offices at 021-650-3430.

10b. If you withdraw your child from this study, can information about you still be used and/or collected?

Information already collected may be used.

11. Once personal and performance information is collected, how will it be kept secret (confidential) in order to protect your privacy?

Information collected will be stored in locked filing cabinets or in computers with security passwords. Only certain people have the right to review these research records. These people include the researchers for this study and certain University of Cape Town officials. Your research records will not be released without your permission unless required by law or a court order.

12. What information about your child may be collected, used, and shared with others?

The information gathered from your child will be on his/her mental health status and the impact of ADHD symptoms on his/her everyday life. If you agree that your child can be in this research study, it is possible that some of the information collected might be copied into a “limited data set” to be used for other research purposes. If so, the limited data set may only include information that does not directly identify you or your child. For example, the limited data set cannot include you or your child/adolescents’ name, address, telephone number, ID number, or any other photographs, numbers, codes, or so forth that link you or your child/adolescent to the information in the limited data set.

The results of the research will be presented as part of a Masters research project for the University of Cape Town. Also, the results may be submitted for publication in a peer-reviewed journal. In both instances neither you nor your child will be identified in any way.

13. What should you tell your child?

You may wish to discuss the study with your child to find out or determine whether he/she feels comfortable taking part. Your child should also know that if he/she does choose to participate, he/she can withdraw at any time during the study with no negative consequences

14. Signatures

As a representative of this study, I have explained to the parent/guardian of the participant the purpose, the procedures, the possible benefits, and the risks of this research study; and how the participant’s performance and other data will be collected, used, and shared with others:

Name of Researcher and writer of thesis _____

Signature of Person Obtaining Consent and Authorization Date

You have been informed about this study's purpose, procedures, possible benefits, and risks; and how your child's mental health status and ADHD-related functional impairments and other data will be collected, used and shared with others. You have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time.

You voluntarily consent to allow your child to participate in this study. You hereby authorize the collection, use and sharing of your child's mental health status and ADHD-related functional impairments and other data. By signing this form, you are not waiving any of your legal rights.

Name of Participant ("Study Subject") _____

Signature of Person Consenting and Authorizing

Date

Please indicate below if you would like to be notified of future research projects conducted by our research group:

_____ (initial) Yes, I would like to be added to your research participation pool and be notified of research projects in which I or my child might participate in the future.

Method of contact:

Phone number: _____

E-mail address: _____

Mailing address: _____

APPENDIX H

Demographic Form

1. Age :

2. Sex (circle one): Male Female

3. What is your race or ethnic background? (circle one)

WHITE

AFRICAN

COLOURED

ASIAN

OTHER : (SPECIFY)

4. Religion :

5. Home Language :

6. Marital status : (circle one)

MARRIED

DIVORCED

SEPERATED

SINGLE

7. Is your child on medication? (circle one) Yes No

8. Size of house (indicate the number of rooms in the house):

.....

9. Number of people who live in the house:

10.1 What term best describes the kind of neighbourhood in which you live:

SUBURBAN

URBAN

TOWNSHIP

INTERMEDIATE

10.2 What is the name of the neighbourhood in which you live?

.....

11. Household Income per annum (tick appropriate income category):

0-35000:.....

36000-50000:.....

76000-125000:.....

126000-175000:.....

176000-225000:.....

226000-275000:.....

276000-325000:.....

326000-375000:.....

376000-425000:.....

426000-475000:.....

476000-525000:.....

>526000:.....

EDUCATION LEVEL OF CHILD

12. Education (highest grade completed):

13. Has most of your child's schooling been in a rural or urban setting (circle one)?

RURAL

URBAN

14. Has he/she repeated any grades?

YES

NO

If yes, please specify which grade(s):

.....

15. What grade is your child presently in? (If not in school please indicate this):

.....

University of Cape Town

APPENDIX I**Assent Form****Raising an ADHD Child: Relations between parental stress, child functional impairment,
and subtypes of the disorder.****1. Investigators and Telephone Number(s)**

Jessica Cheesman

Masters Student

Department of Psychology

University of Cape Town

Telephone: 074 133 1899

Kevin G. F. Thomas, Ph.D.

Senior Lecturer

Department of Psychology

University of Cape Town

Telephone: 021-650-4608

2. Why are you here?

“We want to tell you about a study involving children with Attention Deficit/ Hyperactivity Disorder (ADHD).

Research is a special way to learn about something. We want to see if you would like to be in this study. Jessica Cheesman and some other researchers are doing this study.”

3. Why is this study being done?

“We are doing this study because we want to learn more about how ADHD is affecting children’s lives, so that this can provide psychologists and psychiatrists with information that will help them to treat children with ADHD.”

4. What will happen to you if you agree join this study?

“If you take part you will be asked some questions about your feelings and your life. Your mom will also be asked the similar questions about you. You will only be asked these questions if you join the study.”

“This study won’t make you feel better or get well. But the researchers might find out something that will help other children like you.”

5. What if you have any questions?

“If you have questions about the study you can ask us at any time. You can ask now. You can also ask later. You can talk to us or you can talk to someone else. Do you have any questions now?”

6. Who will know you are in the study?

“When the study is finished we will inform other researchers, psychiatrists and psychologists on what we have found, but we will not tell them your name.”

7. Do you have to be in the study?

“You do not have to be in the study. No one will get angry with you if you do not want to do this. If you do not want to be in this study, you just have to tell us. If you want to be in the study, you just have to tell us. You can say yes now and change your mind later. It is up to you.”

“If you want to be in this study print your name here”

I want to be in this study _____

Signature or Mark of Subject or Legally Authorized
Guardian

Date

Signature of Person Obtaining Assent

Date

Witness to Consent if Subject Unable to Read or Write
(Must be different than the person obtaining consent)

Date

APPENDIX J

Example of Feedback

Dear Madison

The following is an overview from what came up in the assessment as well as some personal feedback on the questionnaires you completed.

Caroline: In terms of mood, Caroline showed no signs of any mood disorders. She did mention experiencing anxiety, specifically when in new situations where there are many people and she many feel overwhelmed.

The DSM-IV-TR indicates that there are three subtypes of ADHD: Predominantly Hyperactive/Impulsive Type (ADHD-HI), Predominantly Inattentive Type (ADHD-PI) and Combined Type (ADHD-CT). From the questions answered, Caroline met criteria for ADHD-Combined type; A child with the ADHD-CT experience an assortment of traits from both ADHD-PI and ADHD-HI subtypes. For example; problems related to impulsivity that can be manifested as blurting out answers, interrupting conversations, and having trouble waiting for their turn or difficulty with tasks that require focusing and maintaining attention to detail or following instructions and forgetfulness, being easily distracted and having trouble organising and following instructions are all characteristics of ADHD-CT that disrupt daily activity.

Caroline shows few or no signs of conduct behaviour. She did however show some oppositional/defiant tendencies such as arguing with adults and annoying people on purpose, this however may be the age she is at the moment. Caroline came across as friendly child and polite young lady who was very open and honest when answering all of the questions posed to her and she was extremely pleasant to chat with during the assessment.

Your stress and wellbeing: From the questionnaires you completed, Parental stress is divided into two domains, child and parent domain. This allows one to see the dominant areas where stress may be originating. It appears from your answers to the stress questionnaire that you are experiencing an extreme amount of stress, specifically in the child domain. Caroline's "demandingness", "ability to reinforce you as a parent", "mood", "hyperactivity/distractibility" and "adaptability" are causing you a great deal of stress. You are also experiencing stress from the parent domain with; "feelings of competence", and "feelings of attachment to your child"

being the main indicators of stress for you. It is important to remember that looking after your health and wellbeing is just as important as caring for your child's.

Resources and social support: Caroline is lucky to live in a home environment where almost all material resources are perceived as adequate. However some resources such as “travel” and “money for family entertainment” were perceived as being not adequate. What is worrying is the lack of social support you appear to be receiving. It appears you have a great deal of support from the school your child is at and from other parents but in other fields you appear to have little to no support. It is a good idea to consider joining a support group for families with ADHD as this allows you time to socialise and meet with people going through similar situations. I am not sure if you are aware of the ADHD support group for Southern Africa (ADHASA).

I really enjoyed meeting with both you and Caroline and appreciate you taking the time to participate in the research and complete all the questionnaires with so much detail. Once again, thank you for taking the time to take part in the research and do not hesitate to contact me if you have any more queries.

Many Thanks

Jessica Cheesman

APPENDIX K

DSM-IV-TR Diagnostic Criteria for Major Depressive Episode

A. Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.

Note: Do not include symptoms that are clearly due to a general medical condition, or mood-incongruent delusions or hallucinations

1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful). Note: In children and adolescents, can be irritable mood.
2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others).
3. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. Note: In children, consider failure to make expected weight gains.
4. Insomnia or hypersomnia nearly every day.
5. Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).
6. Fatigue or loss of energy nearly every day.
7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).
8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others).
9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

B. The symptoms do not meet criteria for a Mixed Episode

C. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hypothyroidism)

E. The symptoms are not better accounted for by Bereavement, i.e., after the loss of a loved one, the symptoms persist for longer than 2 months or are characterized by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation.