Functional impairment in South African children with Obsessive Compulsive Disorder and Attention-Deficit/Hyperactive Disorder

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ABSTRACT

This study aimed to investigate the differences in functional impairment as experienced by school-aged South African children diagnosed with Obsessive Compulsive Disorder (OCD) or Attention Deficit Hyperactivity Disorder (ADHD). These two disorders often occur co-morbidly and are frequently confused by teachers and parents, and therefore this study aimed to contribute to disentangling the two by identifying the specific functional impairment associated with each. Furthermore, this study aimed to investigate, in both the OCD and ADHD groups, the differences between parent and child reports about functional impairment. Seventeen children and adolescents diagnosed with OCD and 13 children and adolescents diagnosed with ADHD participated in the research. The Mini International Neuropsychiatric Interview for Children and Adolescents (M.I.N.I Kid) was used as diagnostic tool. Measures of functional impairment included the Child-Behaviour Checklist (CBCL), The Strengths and Difficulties Questionnaire (SDQ), and the Schreiner Disability Scale (SDS). Results indicate that children and adolescents diagnosed with OCD experience most functional impairment in the social domain, while those diagnosed with ADHD experience most difficulties in the school domain. Agreement between parent and child reports was also statistically significant. Studying functional impairment in this way is of great importance because it adds to understanding and prediction of treatment and outcome of highly prevalent childhood psychiatric disorders such as ADHD and OCD.

Keywords: Obsessive-Compulsive Disorder; Attention-Deficit/Hyperactivity Disorder; children; adolescents; functional impairment; diagnosis

The term ‘functional impairment’ refers to ways in which a psychiatric disorder impacts on functioning in various domains of an individual’s life (e.g., school, home, social environment, etc.). Important reasons to investigate functional impairment are that it adds to the understanding and prediction of treatment need and outcome, and it helps to identify the need for specific services. For instance, if one discovered that a 14-year-old child with depression was functionally impaired by the disorder in terms of making friends at school, then one might adapt a social skills program to suit the specific needs of that child. Studying functional impairment is also important because it describes symptoms of a disorder in practical terms, making available information that is not provided by diagnostic tests. So, for instance, the parents and teachers of the 14-year-old depressed child could have symptoms explained in terms that are understandable to them, and so the functional consequences of them could be clearer.

The particular psychiatric disorders under consideration here are attention-deficit/hyperactivity disorder (ADHD) and obsessive-compulsive disorder (OCD). Despite their prevalence and frequent co-morbidity in children and adolescents, there is a lack of literature comparing functional impairment in children with OCD and ADHD.

BACKGROUND

Attention-Deficit/Hyperactivity Disorder (ADHD)

Epidemiology and clinical presentation. ADHD is a highly prevalent, clinically heterogeneous disorder, which often results in financial liabilities and other stressors for families and adverse academic and vocational outcomes for the diagnosed individual (Carrol et al., 2006). According the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association, 2000), the three primary symptoms of ADHD are poor sustained attention, impulsiveness, and hyperactivity. Behavioural deficits in line with these three criteria arise relatively early in childhood, typically before the age of 7 years, and remain persistent throughout the lifetime.

The DSM-IV-TR recognizes three subtypes of ADHD: Predominantly Inattentive Type (ADHD-PI), Predominantly Hyperactive/Impulsive Type (ADHD-HI), and Combined Type (ADHD-CT). The ADHD-PI subtype can be characterized as having difficulties in organizing or finishing tasks, executing daily routines, paying attention to details, and following instructions or

conversations. Hyperactive characteristics of the ADHD-HI subtype are as follows: fidgeting and excessive talking, inability to sit still (e.g., for a meal or while doing homework). Smaller children may run, jump or climb constantly. Characteristics of ADHD-HI related to impulsivity include interrupting others, grabbing objects and inappropriate verbal outbursts. It is hard for the person to wait their turn or listen to directions, while impulsivity may also lead to them sustaining more injuries and accidents than others. ADHD-CT is characterized by symptoms of both ADHD-HI and ADHD-PI, with symptoms of both types equally predominant in the diagnosed individual. Most research to date has unfortunately failed to discriminate between subtypes.

The DSM-IV-TR (APA, 2000) estimates that 3-7% of children suffer from ADHD. Some studies have estimated higher rates in community samples, while ADHD is diagnosed approximately three times more often in boys than in girls. As one of the most common neuro-behavioral disorders of childhood, ADHD can persist through adolescence and into adulthood. A complete description of the DSM-IV-TR diagnostic criteria for ADHD is presented in Appendix A.

Functional impairment associated with ADHD. Despite the relative prevalence of ADHD and the costs of this disorder to the diagnosed individual and his/her family, only four studies have focused on specific functional impairments associated with, or arising from, childhood and adolescent ADHD. Overall, these studies have found that a child or adolescent diagnosed with ADHD struggle with impulsive hyperactivity and/or have difficulty paying attention, which result in them struggling in domains of the school and home environment.

For instance, Whalen et al. (2006) noted that families of children and adolescents diagnosed with ADHD have to confront daily challenges across various domains of functioning. Usually problematic behaviour wax and wane throughout a regular day, and parents are able to identify specific triggers for certain behaviours. The researchers investigated the affective, cognitive, behavioural and social dimensions of provocation ecologies (in other words situational or temporal contexts in which the child's behavioural symptoms of ADHD are exacerbated).They focused specifically on one aspect of daily living that has been repeatedly identified as challenging by parents and children. This specific domain can be described as

"getting ready" or in other words: "preparing for an upcoming activity or making the transition from the one task to the next" (Whalen et al., 2006, p.167).

The focus was on affective and behavioural differences between getting ready and other activities, as reported independently by mothers and two groups of children, namely those that have been diagnosed with ADHD and a normal peer comparison group. The researchers equipped all participants with an Electronic Diary (ED) which generated individual randomized prompts and required them to complete a diary entry rating their location, social context, current activity, the child's behaviour and mood, the parent's mood as well as the interaction quality between parent and child. Monitoring occurred for seven consecutive days, during non-school hours.

Results supported the notion that preparatory activities pose special challenges for children diagnosed with ADHD and their families. Mothers in the ADHD sample group spent more time assisting their children in preparatory activities, reported more symptomatic behaviour in their children, and were more likely to feel stressed and angry, and less likely to report positive affect during these activities. Children with ADHD also reported more negative moods such as anger and stress while getting ready than their peers in the comparison group. Another interesting finding was that the ADHD mother-child dyads reported more contentious interaction patterns during the execution of preparatory activities, while the control group dyads reported becoming more task-oriented in these situations.

In contrast to Whalen and colleagues, who specifically excluded functioning in the school environment in their study, Carroll et al. (2006) investigated how children diagnosed with ADHD respond to interpersonal and physically provoking situations in the classroom. Children who are able to self-regulate are also able to execute socially appropriate responses to various situations. Children with low levels of self-regulation ability are likely to respond to intense stressful situations with great negative affect. This model can be applied to children with ADHD, given their inability to withhold their initial emotional response, and this would then suggest that they would experience highly negative affect states in provoking situations. Inhibition is central to self-control and regulation, and therefore an important aspect of executive functioning. The children and adolescents carrying a diagnosis of ADHD-PI are able to inhibit responses, which distinguishes them from those diagnosed with ADHD-CT and ADHD-HI.

Carroll et al. (2006) employed independent researchers to observe 35 children diagnosed with ADHD, and their 35 controls, in their school classrooms. The Responses to Interpersonal and Physically Provoking Situations (RIPPS; Hougton et al., 2005) is the classroom observation schedule which was employed to provide a comparison of the frequency and severity of student responses, as well as the triggers which elicited the behaviours.

Significant differences were found in classroom-based behavioural responses between children with and without ADHD. For example, children with ADHD exhibited more than twice as many solitary off-task behaviours (eg., drawing or swinging in their chairs) than the comparison group. The perceived severity of the responses elicited by the ADHD group was also rated significantly greater than those of the children in the control group. Another important finding saw differences in classroom responses between older and younger children within the ADHD group. While contextual triggers remained the same across the developmental range, differences were found in the behaviour with which the ADHD child/adolescent responded to the situation.

Power et al. (2006) investigated functional impairment in the merged domains of academic performance and the home environment, by conducting a study where patterns of homework problems were investigated, as assessed by parent reports on the Homework Problem Checklist (HPC). Two distinct dimensions of homework-related problems were identified by the parents of children with a diagnosis of ADHD. The one dimension referred to problems of paying attention, working efficiently, and working independently. The other dimension dealt with problems of poor productivity, and included knowing which assignments to complete and understanding what was expected from the task at hand.

Many children and adolescents diagnosed with ADHD also meet criteria for Conduct Disorder (CD) and Oppositional Defiant Disorder (ODD). Satterfield et al. (2007) compared the official arrest records for a large sample of hyperactive boys were to those of a control group. After controlling for IQ and socioeconomic status (SES), they found that hyperactive subjects who had not manifested conduct problems in childhood did not show more adult antisocial behaviour than did control subjects. Those with a combination of hyperactivity and childhood conduct problems (i.e., those who were diagnosed with ADHD as well as CD), however, were at an increased risk for adult criminality.

Obsessive-Compulsive Disorder (OCD)

Epidemiology and clinical presentation. Obsessive-Compulsive Disorder (OCD) is a primary anxiety disorder characterized by persistent, time-consuming, recurrent, and uncontrollable obsessions and compulsions (Lewin et al., 2005). These cause marked distress or impairment in daily functioning. Obsessions are intrusive, recurrent and persistent thoughts, images or impulses that are unacceptable, upsetting and uncontrollable. Compulsions are repetitive, intentional behavioural or mental responses experienced as an urge to act, are performed according to certain rules and are intended to reduce anxiety. A complete description of the DSM-IV-TR diagnostic criteria for OCD is presented in Appendix B.

OCD is a relatively common disorder amongst children and adolescents, with a prevalence of 1-2% (Piacentini, Bergman, Keller, & McCracken, 2003). It is estimated that more than 80% of individuals with OCD experience the first onset of the disorder before the age of 18. If untreated, pediatric OCD tends to persist into adulthood and is associated with long-term negative outcomes. It is typically characterized by a chronic yet fluctuating course, while also presenting as symptomatically heterogeneous.

Comorbidity with other disorders is common in childhood OCD. Piacentini et al. (2003) found comorbidity to be common in their sample of children and adolescents diagnosed with OCD, with 68.2% of the sample meeting criteria for another Axis I disorder and 33.8% of the sample meeting criteria for two additional disorders. Anxiety disorders were found to be the most common comorbidity. Comorbidity often results in polypharmacy, since a variety of drugs are administered to treat symptoms (Kubiszyn, Carlson, & DeHay, 2005). Combined psychosocial and drug treatments have been recommended for internalizing disorders such as OCD, while psychodynamic interventions have been found to be ineffective in altering thought and behaviour patterns associated with the disorder (Gold-Steinberg & Logan, 1999).

Learning theorists see OCD as a set of learned responses that are acquired through classical conditioning (Cooper, 1996). It has also been suggested that the disorder has biological basis. Szechtman and Woody (2004) hypothesize that symptoms of OCD have an epistemic origin. They propose that the performance of security related behaviours fail to produce the feeling state that would normally shut down security motivation.

Functional impairment associated with OCD. OCD-related functional impairment may have dire consequences for a child or adolescent from a developmental perspective, since mastery and completion of critical developmental tasks can be affected negatively (Canino et al., 1999). Despite the negative impact that the disorder has on social, familial, academic and vocational functioning, there are only three studies that have dealt explicitly with the functional impairment associated with, or arising from, childhood and adolescent OCD. Overall these studies have found that OCD-related impairments occur in the social, home/family and school domains.

Piacentini et al., (2003) set out to describe the range and frequency of OCD-related functional problems across a broad range of relevant psychosocial contexts. They assessed the impact of reporting source by comparing parent and child reports, while also examining the effects of age and gender on the prevalence of specific OCD-related functional problems. Their sample consisted of 151 children and adolescents with a primary DSM-IV-TR diagnosis of OCD, ranging in age from 5 to 17 years.

Both the child/adolescent diagnosed with OCD, as well as a parent completed the Child OCD Impact Scale (COIS-R). Results showed that specific impairments were more prevalent in the home/family and school/academic realms of functioning than in the area of social functioning. Both parents and children reported concentrating on schoolwork, doing homework and getting ready for bed at night (parents) or doing household chores (children) as the most problematic areas. Almost all participants reported a significant problem in at least one functional domain, and almost half of the sample reported at least one significant problem in each of the three functional domains.

The Piacentini study was duplicated in a Scandinavian sample by Valderhaug and Ivarsson (2005). The same procedure was followed and the same measures used for assessment (COIS-R). Results indicated that, unlike in the previous study, functional impairments mostly occurred at home, while also occurring regularly in school and social domains. The items which revealed the highest levels of functional impairment were situations related to bedtime, activities that required concentration, and building or maintaining social relations. In contrast, Piacentini et al. (2003) found that the most significant functional problem in their sample was difficulty concentrating on schoolwork.

Hoppe (2007) duplicated the above studies in the first study aimed at describing functional impairments of South African children diagnosed with OCD. South African children

reported that they experience most difficulty in the school and social domains, while parents reported most impairment in the school domain. These findings are not consistent with the previous research studies. It is suggested that these differences can be related to recruitment methods and most importantly to cultural differences.

The studies by Piacentini et al. (2003) and Valderhaug and Ivarsson (2005) found a consistent trend towards parents reporting more severe impairments than their children, and parent-child agreements were generally low to moderate. These findings were contrasted by the results of the South African sample, in which the opposite pattern was found: Children reported higher rates of significant functional problems than did their parents, on almost all items common to both the parent and child versions of the measure.

Piacentini et al., (2003) found the frequency of OCD-related problems relatively consistent across age and gender, while Valderhaug and Ivarsson (2005) found that (a) girls reported more areas of functional impairment than did boys, (b) adolescents (ages 13-17 years) reported more areas of impairment than did children (ages 8-12 years), and (c) parent reports suggested a positive association between age and number of impaired areas in girls, but a negative association between age and number of impaired areas in boys. The South African study had a smaller sample size, and therefore age and gender differences could not be assessed significantly.

Comparison of Functional Impairment in ADHD and OCD

Even though co-morbidity with ADHD has frequently been reported among children and adolescents diagnosed with OCD, questions remain as to whether their inattention, distractibility and restlessness may in fact represent internal distraction from obsessional ideation or anxiety, and not true ADHD at all. Geller et al. (2004) examined the co-morbidity between OCD and ADHD in children and adolescents, using the Child Behaviour Checklist (CBCL; Achenbach & Rescorla, 2001) as a measure of functional impairment. Their results supported the idea of a true comorbidity model: Participants diagnosed with both disorders had CBCL findings consistent with both disorders, which reflected additive degrees of impairment from each individual disorder.

Masi et al. (2005) also aimed to explore the clinical implications of ADHD comorbidity in a sample of children and adolescents diagnosed with OCD. Slightly more than 25% of their

OCD sample had co-morbid ADHD, and in all cases the onset of ADHD preceded the onset of OCD. Findings were consistent with those of Geller et al. (2004) in that they indicated that children and adolescents diagnosed with both OCD and ADHD presented with more social and attentional problems, as well as higher scores on delinquent and aggressive scales. The authors also mention the important patterns of comorbidity among ADHD, OCD and conduct-related disorders such as ODD and CD, as well as among ADHD, OCD and bipolar disorder, and ADHD, OCD and tic disorders. In all three instances, co-morbidity of this nature was associated with an increase in disruptive and aggressive behaviour.

Ivarsson, Melin, and Wallin (2007) examined co-morbidity in 113 children and adolescents with OCD, and found significantly lower rates for specific co-morbid disorders. Specifically, only 9% of their sample was diagnosed with co-morbid ADHD, whereas Geller et al. (2004) had diagnosed 44% of their OCD sample with ADHD. Ivarsson and colleagues propose that the reason for this discrepancy is the fact that they conducted their research without assistants and interns, and therefore relied heavily on their own expert knowledge and experience (as senior psychiatrists) during diagnostic interviewing; they may, therefore, have used stricter diagnostic criteria and thus yielded more reliable estimates than in other studies.

Because OCD and ADHD are both highly prevalent disorders, and because the symptoms of each contribute to functional impairment in a unique way, children and adolescents who are diagnosed with both disorders are at great risk for severe functional impairment in multiple domains. The authors of the three studies reviewed above suggest further research comparing the functional impairment in ADHD and OCD, while they all agree that screening for ADHD should be performed in all patients diagnosed with OCD.

SPECIFIC AIMS

The aim of this study was to investigate, in a sample of school-aged South African children, the differences between the functional impairments experienced by those diagnosed with Obsessive Compulsive Disorder (OCD) and those with diagnosed with Attention-Deficit/Hyperactive Disorder (ADHD). Furthermore, this study investigated, in both the OCD and ADHD groups, the differences between parent and child reports regarding functional impairment.

DESIGN AND METHODOLOGY

Research Design

Following the taxonomy of research types presented by Rosenthal and Rosnow (2008), the current research was of a descriptive nature. The study is cross-sectional in design. Quantitative measures were used, including two semi-structured interviews and self-report questionnaires.

Participants

Recruitment consisted of posters that advertised the study in private psychology practices, doctors' rooms, social workers' offices and public notice boards. Private school principals were contacted about recruitment in their schools, and school psychologists and counselors were also informed of the study. The South African Attention-Deficit/Hyperactivity website was accessed via the internet, and through this platform many support groups in the Western Cape area were contacted. The site manager of that website advertised the study in a monthly newsletter that went out to all regular users. The study was also advertised on a local talk radio station.

Ultimately, two distinct groups of participants were recruited. One group (n = 17; 7 females) consisted of children and adolescents with a current diagnosis of OCD. The other group (n = 13; 5 females) consisted of children and adolescents with a current primary diagnosis of ADHD.

Demographic and Clinical Characteristics of the Sample

All participants were between the ages of 6 and 18 years. Table 1 presents a complete demographic description of the sample. As the table shows, the OCD sample was relatively homogenous in terms of race, education, and neighbourhood, although there were differences with regard to religious orientation and income bracket. The ADHD sample was a lot more heterogeneous with regard to all demographic characteristics.

Children with disorders co-morbid to the primary diagnosis were included in the study unless those co-morbid disorders were of a psychotic nature. Most of the children and adolescents who took part in this study presented with co-morbid disorders (see Figure 1). As the figure shows, the ADHD and OCD groups were equally affected by co-morbid mood disorders.

Because ADHD is classified as a behavioural disorder, it makes sense that the ADHD group has more co-morbid behavioural disorders then the OCD group. Similarly, OCD is classified as an anxiety disorder and therefore it makes sense that the OCD group has more co-morbid anxiety disorders than the ADHD group.

Table 1
Demographic Characteristics of the Current Sample

Variable	ADHD (n = 13)	OCD (n = 17)
Age (years)		
Range	7-14	7-18
Mean (SD)	10.38 (2.06)	14.18 (3.28)
Sex (Females:Males)	5: 8	7: 10
Education:		
Mean years (SD)	3.46 (1.98)	7.29 (3.41)
Never repeated a grade:Repeated	9: 4	11: 6
Race:		
Black African: Coloured: White	2: 4: 7	0: 0: 17
Neighbourhood:		
Suburban: Urban :Rural	12: 1: 0	15: 0: 2
Religion:		
Christian: None: Other	11: 0: 2	12: 3: 2
Family Income Bracket: (per annum)		
Children's Home	3	0
0 – 35000	0	0
36000 – 75000	1	0
76000 – 125000	0	0
126000 – 175000	0	2
176000 – 225000	0	1
226000 – 275000	1	0
276000 – 325000	3	5
326000 – 375000	2	1
376000 – 425000	0	2
426000 – 475000	2	1
476000 – 525000	0	1
> 526000	1	4

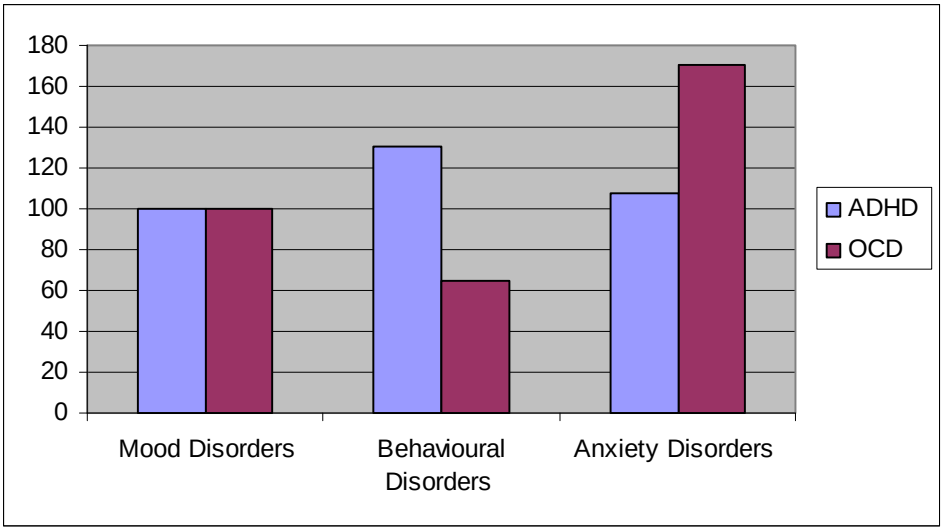

Figure 1. Comorbidity data for the current sample. The data are expressed as percentages due to differing sample sizes in the OCD and ADHD groups.

Measures

Table 2 presents a list of the measures used in the current study, along with their times of administration. Each of the instruments is discussed in more detail below.

Table 2

Instruments Used in the Current Study

Measure	Time for Administration
M.I.N.I Kid	Up to 90 minutes
CBCL	
Parent Report	Approximately 20 minutes
SDS	
Parent Version	Approximately 10 minutes
Self-Report Version	Approximately 10 minutes
SDQ (UK Version)	
Ages 4-16 Parent Report	Approximately 10 minutes
Ages 11-16 Self Report	Approximately 10 minutes

Demographic questionnaire

The demographic questionnaire was used to capture data related to certain domains of the participants' lives, including information on race, socio-economic status, religion, and education (see Appendix C).

Diagnostic tools

The *Mini International Neuropsychiatric Interview for Children and Adolescents (M.I.N.I Kid*; English version 5/6; Sheehan, Shytle, & Milo, 1998) was used to screen for the presence of DSM-IV-TR Axis I disorders. Most importantly, this measure determined whether the child does indeed qualify for the study by having OCD or ADHD and no co-morbid psychotic disorders. The M.I.N.I Kid has been successfully employed in previous studies of child psychiatric disorders (see, e.g., Bastiaens & Dello Stritto, 2005).

Although studies documenting the psychometric properties of the M.I.N.I. Kid are still underway (Sheehan, personal communication, 21 April 2008), the reliability and validity of the adult version of the M.I.N.I are well established. For instance, Sheehan et al. (1997) showed that the instrument had 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 authors found the M.I.N.I to have a very high inter-rater reliability (0.88-1.0) as well as very good test-retest reliability (0.76-0.93). Sheehan and colleagues underlined the value of short structured interviews in clinical and research settings, noting that administration of the M.I.N.I. took half as long as administration of corresponding sections of the SCID-P.

Functional impairment

The *Child-Behaviour Checklist* (*CBCL*; Achenbach & Rescorla, 2001) obtains reports from parent/guardians regarding children's competencies and behavioral/emotional problems. Parents provide information for 20 competence items covering their child's activities, social relations, and school performance. The CBCL has 118 items that describe specific behavioral and emotional problems, plus two open-ended items for reporting additional problems. Parents rate their child for how true each item is now or within the past 6 months using the following scale:

0 = not true (as far as you know); 1 = somewhat or sometimes true; 2 = very true or often true. Raw scores, *T* scores, and percentiles are obtained for three competence scales (Activities, Social and School), Total Competence, eight cross-informant syndromes, and Internalizing, Externalizing, and Total Problems. The cross-informant syndromes scored on the CBCL are Aggressive Behavior; Anxious/Depressed; Attention Problems; Rule-Breaking Behavior; Social Problems; Somatic Complaints; Thought Problems; and Withdrawn/Depressed.

One can also derive scores for six DSM-oriented scales: Affective Problems; Anxiety Problems; Somatic Problems; Attention Deficit/Hyperactivity Problems; Oppositional Defiant Problems; and Conduct Problems. These scales are based on new factor analyses of parents' ratings of 4,994 clinically referred children, and are normed on 1,753 children aged 6 to 18 (www.aseba.org/products/cbcl6-18.html) The CBCL was chosen as primary measure of functional impairment, since it was used successfully in previous studies of ADHD and OCD comorbidity (see Geller et al., 2004., Masi et al., 2005 and Ivarsson et al., 2007).

The *Strengths and Difficulties Questionnaire* (*SDQ*; Goodman, 1997) is a brief screening questionnaire about the behaviour of 3-16 year olds. It exists in several versions to meet the needs of researchers, clinicians and educationalists; in the proposed study the original English (UK) version will be used. This version consists of a self report form for 11-16 year olds, as well as a parent report version (see Appendix D and E).

All versions of the SDQ provide information on 25 attributes, some positive and others negative. These 25 items are divided between 5 scales: emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and pro-social behaviour. The scores on the 5 scales are added to generate a total difficulties score. The same 25 items are included in the parent and the child self-report questionnaires, though the wording is slightly different.

Goodman and Scott (1999) compared the SDQ and CBCL in terms of their ability to describe functional impairment across different domains. Mothers completed the SDQ and the CBCL on 132 children aged 4 through 7 years, who were drawn either from psychiatric or dental clinics. Scores on the two instruments were highly correlated and equally able to discriminate the psychiatric from the dental cases.

The *Schneier Disability Scale* (SDS; Schneier et al., 1994) assesses current and lifetime impairment in 8 domains of functioning (see Appendix F). Each of the eight items is rated separately for current and most severe lifetime disability on a 5-point, descriptively anchored

scale ranging from 0 (no impairment) to 4 (severe impairment). The item scores may be totaled to obtain 2 summary scores, one rating overall current disability and the other most severe lifetime disability. Alternatively, item scores may be considered individually to provide descriptive information on the pattern of impairment across domains.

The SDS has been successfully employed in studies investigating functional impairment, for example in a study by Schneier et al., (1994) where it was used in establishing levels of functional impairment in individuals diagnosed with social phobia. The same study investigated the psychometric properties of the SDS by comparing it to Liebowitz's Self-Rated Disability Scale. The SDS was found to be internally consistent, with coefficients ranging between 0.87 and 0.92.

Procedure

After successful recruitment, children and parents were invited to schedule an appointment at a time and venue convenient for them. The interview sessions took place in the UCT Department of Psychology or at the participants' home or at another convenient venue.

Separate interviews were conducted with the child and his/her parent or legal guardian, and therefore two researchers were involved in data collection. Both researchers were present in the same room to administer the necessary assent and consent forms (see Appendix G and H), while the parent completed the demographic questionnaire. The parent and child were permitted to ask the researchers any questions they might have had while they completed these forms.

The M.I.N.I Kid was then administered to the child and parent. The researcher asked the questions of the child, while the parent was also encouraged to comment. After the completion of this interview, one of the researchers took the child to a separate room for further interviewing. The SDS was administered in the form of an interview in which the child had to rate the severity of impact that his/her ADHD or OCD has on various life domains. The SDQ was then completed in self-report form by 11-16 year old participants. In the case of younger participants, the researcher assisted the child in completing the questionnaire. While the first researcher assessed the child, the second researcher administered, in a separate room, the SDS, SDQ, and CBCL to the parent.

RESULTS

In this section, I will first present the results of between-group comparisons for each measurement instrument individually. Where relevant, I present comparisons of parent and child reports within these individual sections. Subsequent sections present the results of correlations between (a) overall scores of the various measures of functional impairment, and (b) domain-specific subscale scores within and between the various measures of functional impairment.

CBCL Scores

Three different indexes can be derived from the CBCL parent reports: Total Competence, Total Problems and a DSM-oriented Clinical scale. According to the CBCL manual (Achenbach & Rescorla, 2001), a score of less than 35 on the Total Competence scale indicates a clinically problematic level of competence (e.g., the individual requires special assistance at school or at home to complete what should be age-appropriate activities). Within the Total Competence scale, a score of less than 30 on any of the subscales (Activities, School and Social) indicates a clinically problematic level of competence in these domains. Again according to the CBCL manual, a score of more than 60 on the Total Problems scale indicates that the individual is experiencing clinically significant problems on either the Internalizing or Externalizing subscales. The Internalizing subscale measures to what degree the individual deals with problems in an internal manner (e.g., by becoming more withdrawn), whereas the Externalizing subscale measures to what degree the individual deals with problems in an acting-out manner (e.g., by destroying property or personal belongings). For the DSM-oriented Clinical scale, a score of more than 70 indicates that the subject falls into the clinical range for specific disorder subtype. Table 3 presents descriptive statistics for the CBCL for both the OCD and ADHD samples, as well as the results of between-group comparisons. Before conducting these comparisons, Levene's test was used to assess for homogeneity of variance between the two samples, and *t*-tests with separate variance estimates were performed where appropriate.

Table 3

CBCL: Between-Group Comparisons

	ADHD $n = 13$	OCD $n = 17$	t	p	Cohen's d
Total Competence Scale	39.15 (11.30)	40.88 (10.39)	-0.427	0.673	-0.16
Activities	44.77 (8.75)	45.24 (10.17)	-0.135	0.894	-0.05
Social	41.62 (12.03)	42.00 (10.97)	-0.090	0.929	-0.03
School	35.62 (7.01)	44.44 (10.90)	-2.636	0.014*	-0.91
Total Problems Scale	64. 23 (8.94)	64.00 (10.33)	0.063	0.950	0.02
Externalizing	63.46 (11.54)	57.25 (13.99)	1.284	0.210	0.46
Internalizing	57.77 (11.61)	66.81 (10.89)	-2.154	0.039*	-0.78
DSM-Oriented Clinical Scale					
Affective Problems	62.92 (7.92)	65.19 (9.52)	-0.685	0.499	-0.25
Anxiety Problems	57.92 (8.85)	67.69 (9.25)	-2.882	0.008**	-1.05
Somatic Problem	58.54 (7.71)	60.25 (10.12)	-0.502	0.620	-0.18
Attention/Deficit Hyperactivity Problems	68.46 (9.87)	60.06 (10.58)	2.190	0.037*	0.79
Oppositional Defiant Problems	65.15 (9.75)	59.56 (8.69)	1.633	0.114	0.53
Conduct Disorder Problems	62.31 (10.63)	59.63 (9.52)	0.716	0.480	0.26

Note. Means are presented with standard deviations in parentheses. The t-statistic is reported for 27 degrees of freedom in each case.
*$p < .05$, **$p < .01$

As shown in the table, there were statistically significant between-group differences on the following CBCL subscales: School Competence (the ADHD group was more affected in this domain), Internalizing Problems (the OCD group was more affected in this domain), Anxiety Problems (the OCD group was more affected in this domain), and ADHD Problems (the ADHD group was more affected in this domain).

SDQ Scores

The SDQ consists of five different subscales (Emotional Problems, Conduct Problems, Hyperactivity, Peer Problems, Pro-Social) which are summed to produce a Total Difficulties score. Participants also provide a Total Impact rating based on their perceptions of difficulty in the domains addressed by the subscales mentioned above. According to the SDQ developers (Goodman, 1997), abnormal scores are those above 5 on the Emotional Problems subscale, above 4 on the Conduct Problems subscale, above 7 on the Hyperactivity subscale, above 4 on the Peer Problems subscale and below 5 on the Pro-Social subscale. A Total Difficulties score above 17 indicates abnormality, as does a Total Impact score above 2.

Table 4

SDQ Descriptive Statistics: Parent and Child Reports

	ADHD		OCD	
SDQ Subscale	Parent report	Child report	Parent report	Child report
Emotional Problems	3.23 (2.12)	3.80 (2.62)	5.47 (2.94)	5.69 (2.77)
Conduct Problems	4.23 (2.66)	4.40 (2.12)	1.94 (1.75)	3.31 (2.06)
Hyperactivity	7.31 (2.55)	6.90 (2.77)	4.06 (3.44)	4.75 (2.49)
Peer Problems	2.69 (2.37)	3.20 (2.97)	3.53 (2.98)	2.00 (1.55)
Pro-Social Scale	7.46 (1.82)	8.70 (1.16)	7.94 (2.41)	7.75 (1.57)
Total Difficulties	16.69 (8.16)	18.30 (7.89)	15.00 (8.70)	15.75 (5.54)
Total Impact	2.62 (2.59)	2.70 (3.06)	2.71 (3.04)	3.06 (2.86)

Note. Means are presented with standard deviations in parentheses.

Descriptive statistics for the parent and child report versions of the SDQ, for both the OCD and ADHD samples, are presented in Table 4. As can be seen, there were no great differences between parent and child reports for any of the SDQ subscales; for example, the ADHD group's parent and child reports were very similar in rating Conduct Problems, as well as Hyperactivity and the Total Impact score. Similarly, in the OCD group, the parent and child reports were very similar with regards to the Emotional Difficulties and Total Difficulties subscales.

I used the McNemar test of disagreement to assess the degree of difference between the SDQ parent- and self-reports. Results of this analysis are reported in Table 5. Due to the relatively small sample sizes, the single assumption relating to frequency of counts within cells of this non-parametric test was violated; nonetheless, because no statistically significant differences were detected for any of the comparisons, one is justified in accepting the results of the analysis. Because there were no statistically significant differences found between the parent and child report versions of the SDQ, only the parent reports were used to analyse between-group differences on this measure.

Table 5

McNemar Test: Parent-Child Disagreement (parent > child) on the SDQ

SDQ Subscale	ADHD *n* = 13				OCD *n* = 17			
	χ^2	*p*	Odds Ratio	95% CI	χ^2	*p*	Odds Ratio	95% CI
Emotional Problems	0.250	0.617	3.000	0.24 - 157.49	0.800	0.3711	4.000	0.39 – 196.99
Conduct Problems	0.500	0.479	1.000	0.013 – 78.50	0.000	1.000	0.857	0.238 to 2.98
Hyperactivity	1.333	0.248	0.000	0.000 – 2.420	0.000	1.000	0.500	0.008 – 9.605
Peer Problems	0.500	0.479	1.000	0.013 – 78.500	0.000	1.000	0.000	0.000 – 39.00
Pro-Social Scale	0.000	1.000	0.000	0.000 – 39.00	0.000	1.000	0.000	0.000 – 39.00
Total Difficulties	0.500	0.479	1.000	0.013 – 78.500	0.500	0.479	1.000	0.013 – 78.500
Total Impact	1.333	0.248	0.000	0.000 – 2.420	0.167	0.683	2.000	0.287 – 22.11

Note. χ^2 value is with one degree of freedom; *p*-values are two-tailed; 95% CI = 95% confidence interval.

Table 6 presents the results of between-group comparisons on the SDQ. Before conducting these comparisons, Levene's test was used to assess for homogeneity of variance between the two samples, and *t*-tests with separate variance estimates were performed where appropriate. As shown in the table, there were statistically significant between-group differences on the following SDQ subscales: Emotional Problems (parents of OCD participants reported their children experienced more difficulties in this domain than did parents of ADHD participants), Conduct Problems (parents of the ADHD group reported their children experienced more difficulties in this domain than did the parents of the OCD group), and Hyperactivity (parents of the ADHD group reported their children experienced more difficulties in this domain than did the parents of the OCD group).

Table 6
SDQ: Between Group Comparisons

	t	*p*	Cohen's *d*
Emotional Scale	-2.294	0.029*	-0.83
Conduct Problems	2.606	0.017*	1.02
Hyperactivity	0.009	0.009**	1.02
Peer Problems	0.419	0.419	-0.30
Pro-Social Scale	0.560	0.560	-0.21
Total Difficulties	0.600	0.600	0.19
Total Impact	0.932	0.932	-0.03

Note. The *t*-statistic is presented for 28 degrees of freedom in each case.
*$p < .05$, **$p < .01$

SDS Scores

The SDS is divided into 7 subscales, each of which is rated on a categorical scale from 0-4. A score of 0 indicates no impairment in a domain; a score of 1 indicates functioning with a mild, non-impairing level of anxiety; and scores ranging from 2-4 indicates an increasing level of dysfunction (Schneier et al., 1994). Table 7 presents descriptive statistics for both the parent- and self-report versions of the SDS.

Table 7

SDS Descriptive Statistics: Parent and Child Reports

	ADHD *n* =13		OCD *n* = 17	
SDS Subscale	Parent report	Child report	Parent report	Child report
School	2.00 (0.58)	1.92 (0.64)	1.29 (1.26)	1.53 (1.18)
Work	1.69 (0.95)	1.62 (0.77)	0.88 (0.99)	1.00 (1.06)
Family	1.54 (0.88)	1.15 (0.90)	1.65 (1.27)	1.18 (0.88)
Dating	0.23 (0.83)	0.23 (0.60)	1.29 (1.57)	0.82 (1.33)
Friendships	1.38 (1.19)	1.38 (1.04)	1.65 (1.41)	1.00 (1.06)
Interests	1.23 (0.93)	1.08 (0.95))	0.94 (1.20)	1.35 (1.22)
ADLS	1.38 (1.12)	1.08 (0.86)	1.82 (1.47)	1.53 (1.23)

Note. Means are presented with standard deviations in parentheses. ADLs = Activities of Daily Living.

The McNemar test of disagreement was conducted to determine the degree of difference between the SDS parent- and self-reports. Results of this analysis are reported in Table 8. Again, because of the relatively small sample sizes, the single assumption relating to frequency of counts within cells of this non-parametric test was violated; nonetheless, because no statistically significant differences were detected for any of the comparisons, one is justified in accepting the results of the analysis. Again, because there were no statistically significant differences found between the parent and child report versions of the SDS, only the parent reports were used to analyse between-group differences on this measure.

Table 8

McNemar Test: Parent-Child Disagreement (parent > child) on the SDS

SDQ Subscale	ADHD *n* = 13				OCD *n* = 17			
	χ^2	*p*	Odds Ratio	95% CI	χ^2	*p*	Odds Ratio	95% CI
School	0.000	1.000	0.000	0.00 – 39.00	0.500	0.470	1.00	0.013 – 78.500
Work	0.800	0.371	0.250	0.005 – 2.526	0.250	0.617	0.333	0.006 – 4.151
Family	0.500	0.479	0.000	0.000 - 5.325	0.250	0.617	0.333	0.006 – 4.151
Dating	0.000	1.000	0.000	0.00 – 39.00	0.250	0.617	0.333	0.006 – 4.151
Friendships	1.333	0.248	0.000	0.00 – 2.420	1.500	0.221	0.200	0.004 - 1.787
Interests	1.333	0.248	0.000	0.00 – 2.420	0.571	0.450	2.500	0.409 – 26.253
ADLs	0.000	1.000	0.500	0.008 – 9.60	0.000	1.000	0.000	0.00 – 39.00

Note. χ^2 value is with one degree of freedom; *p*-values are two-tailed; 95% CI = 95% confidence interval. ADLs = Activities of Daily Living.

Table 9 presents the results of between-group comparisons on the SDS. Before conducting these comparisons, Levene's test was used to assess for homogeneity of variance between the two samples, and *t*-tests with separate variance estimates were performed where appropriate. As shown in the table, there were statistically significant between-group differences on the following SDS domains: Work (parents of ADHD participants reported their children experienced more difficulties in this domain than did parents of OCD participants) and Dating (parents of OCD participants reported their children experienced more difficulties in this domain than did parents of ADHD participants).

Table 9

SDS: Between Group Comparisons

SDS Subscale	*t*	*p*	Cohen's *d*
School	1.866	0.052	0.67
Work	2.258	0.031*	0.81
Family	-0.263	0.794	-0.10
Dating	-2.386	0.025*	-0.79
Friendships	-0.538	0.594	-0.20
Interests	0.721	0.477	0.26
ADLs	-0.895	0.378	-0.32

Note. The *t*-statistic is presented for 28 degrees of freedom in each case. ADLs = Activities of Daily Living.
*$p < .05$, **$p < .01$

CGAS Scores

Participants in the OCD group had a mean current CGAS score of 61.88 (*SD* = 10.75), whereas those in the ADHD group had a mean current CGAS score of 60.38 (*SD* = 11.60). Both these scores fall into the range described by Kaufman et al. (1997, p. 57) as:

> Some difficulty in a single area, but generally functioning pretty well (e.g. sporadic or isolated antisocial acts, such as occasionally playing hooky or petty theft; consistent minor difficulties with school work; mood changes of brief duration; fears and anxieties which do not lead to gross avoidance behaviour; self-doubts); has some meaningful

interpersonal relationships; most people who do not know the child well would not consider him/her deviant but those who do know him/her well might express concern. Otherwise stated, most participants in the current study did not, according to clinician ratings, show severe functional impairment across multiple domains, but rather displayed specific functional impairments in isolated domains.

I used *t*-tests to compare the CGAS scores across groups. Levene's test was not significant, and so no adjustments were made to the *t*-statistic formula to control for homogeneity of variance. The comparison showed there was no statistically significant between-group difference, $t(28) = 0.37$, $p = 0.72$, Cohen's $d = 0.13$.

Correlations Across Tests

Table 10 presents a correlation matrix showing the associations between all the major (i.e., cross-domain, or total overall functioning) measures used in this study. As can be seen, strong and statistically significant correlations were found for all cross-test associations, while *p*-values indicate that all correlations are statistically significant. The strongest, positive correlation was found between the CBCL Total Problems subscale and the SDQ Total Difficulties subscale. The weakest correlation was a moderate, negative correlation found between the CBCL Total Competence subscale and the SDQ Total Impact score.

These findings indicate that the measures are valid, in other words that they indeed measure functioning in those domains which they propose to assess. The strong correlations also indicate respondent reliability, which means that the participants were consistent in their responses on the different measures.

Table 10
Correlations Matrix for Cross-Test Associations

	1	2	3	4	5	6
1. CBCL – Total Competence	1.00					
2. CBCL - Total Problems	-.60 .001***	1.00				
3. SDQ – Total Difficulties	-.71 .000***	.84 .000***	1.00			
4. SDQ – Total Impact	-.56 .001***	.65 .000***	.61 .000***	1.00		
5. SDS – Average Score	-.60 .001***	.66 .000***	.59 .001***	.64 .000***	1.00	
6. CGAS	.56 .001***	-.70 .000***	-.68 .000***	-.69 .000***	-.76 .000***	1.00

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

Correlations Across Domains Measured by Different Instruments

To determine whether there were consistent patterns of functional impairment reported across different instruments (i.e., to test the reliability of reports as well as to check whether subscales purporting to measure the same construct were actually doing so), I conducted the correlational analyses presented in Tables 11 and 12. In each case, CBCL subscales formed the foundation of the analysis because it is the 'gold standard' measure of functional impairment in childhood and adolescence. So, Table 11 shows the correlations between the SDQ subscales and the CBCL subscales that most closely resemble them in terms of their measurement targets. Similarly, Table 12 shows the correlations between the SDS subscales and the CBCL subscales that most closely resemble them in terms of their measurement targets.

As shown in Table 11, the correlations were all in the expected direction, with strong positive correlations between all corresponding domains of the two tests, except for the Social Competence and Peer Problems subscales, which yielded a moderate, negative correlation (which was also in the expected direction). All the correlations were statistically significant, as indicated by the *p*-values.

Table 11
Correlations Across Measures and Domains: CBCL and SDQ

CBCL Subscale	SDQ Subscale	Pearson's *r*	*p*
Affective Problems	Emotional Scale	0.625	0.000***
Conduct Problems	Oppositional Defiant Problems	0.819	0.000***
Conduct Problems	Conduct Problems	0.781	0.000***
Social Competence	Peer Problems	-0.580	0.001**
ADHD Problems	Hyperactivity	0.813	0.000***

*p < .05, **p < .01, ***p < .001

Table 12

Correlations Across Domains: CBCL and SDS

CBCL Subscale	SDS Subscale	Pearson's *r*
Activities Competence	Interests	-0.180
Social Competence	Social	-0.628***
School Competence	School	-0.500**

*p < .05, **p < .01, ***p < .001

As shown in Table 12, a strong negative correlation was found between the CBCL Social Competence subscale and the SDS Social subscale ($p = 0.000$) and a moderate negative correlation was found between the CBCL School Competence subscale and the SDS School subscale ($p = 0.006$). The correlation between CBCL Activities Competence subscale and the SDS Interests subscale was found to be weak and negative.

DISCUSSION

This study was the first to investigate functional impairment in South African children and adolescents with Attention-Deficit/Hyperactivity disorder (ADHD) and Obsessive Compulsive disorder (OCD). More specifically, I contrasted similarities and differences between domains of functional impairment in the two clinical groups, and examined the way in which their functional impairments were captured by several different measures.

ADHD-Specific Functional Impairment

According to the CBCL, children and adolescents with ADHD had the most difficulty in the domain of school competence. Scores on the SDS also indicated that children and adolescents with ADHD experienced significant difficulty in the school domain. This is consistent with previous research, where Carroll et al. (2006) found that children and adolescents with ADHD exhibited more than twice as many solitary off-task behaviours (e.g., drawing on desks or swinging in their chairs) than a non-ADHD comparison group. The perceived severity of the responses elicited by the ADHD group was also rated significantly greater than those of the children in the control group.

The current research also found that, according to the CBCL and the SDQ, children and adolescents with ADHD experience significant levels of conduct problems. This finding makes sense given that many children and adolescents diagnosed with ADHD also meet criteria for Conduct Disorder (CD) and Oppositional Defiant Disorder (ODD). Satterfield et al. (2007) found that boys with a combination of hyperactivity and childhood conduct problems (i.e., those who were diagnosed with ADHD as well as CD) were at an increased risk for adult criminality. This finding is therefore very important in informing treatment plans to protect children who are at risk for developing a criminal record in adulthood.

Another important finding indicated that the ADHD group experienced great functional impairment in the area of work. This piece of data is consistent with research conducted by Power et al. (2006) who investigated functional impairment in the merged domains of academic work performance and work in the home environment. Problems included paying attention, working efficiently, and working independently, as well as poor productivity and understanding what was expected from the task at hand.

OCD-Specific Functional Impairment

According to the CBCL, children and adolescents in the OCD group reported most difficulty in the social domain of functioning. This finding is also reflected by SDS reports, which indicated that participants were most impaired in the domains of Friendships and Activities of Daily Living. However, the Peer Problems subscale of the SDQ suggested no significant impairment. In previous research conducted by Piacentini et al., (2003) it was found that specific impairments

were more prevalent in the home/family and school/academic realms of functioning than in the area of social functioning. The Piacentini study was duplicated in a Scandinavian sample by Valderhaug and Ivarsson (2005), who found that functional impairments mostly occurred in the home domain, while also occurring regularly in school and social domains. Hoppe (2007) found that South African children with OCD experienced most difficulty in the school and social domains.

It is also interesting to note that children and adolescents with OCD were found to experience significant emotional problems on all three measures of functional impairment. The Child OCD Impact Scale (COIS-R) was used as measure of OCD-specific functional impairment in the studies conducted by Piancentini et al. (2003), Valderhaug and Ivarsson (2005) and Hoppe (2007). The COIS-R measures functional impairment in three areas, namely the home, school and social domain (Piacentini & Jaffer, 1999, as cited in Piacentini et al., 2003). This measure does not consider emotional problems that the child or adolescent might be experiencing as a result of their OCD diagnosis. In light of the current research findings, it might be important to include in the assessment of OCD-related functional impairment a measure that assesses emotional functioning in addition to the three other domains of functioning.

ADHD versus OCD Functional Impairment

Results on the CBCL indicate a significant difference in the School domain, with the ADHD group reporting more difficulty in this area. The SDQ results indicate that the OCD group experience more Emotional Problems, while the ADHD group experience more difficulty related to Conduct Problems and Hyperactivity. It was also found that the OCD group reported more difficulty in the domain of Dating on the SDS, while the ADHD group had significantly more problems in the area of Work.

These results make sense when one considers that it was also found that the ADHD group experienced more co-morbid disorders of a behavioural nature (e.g., CD and ODD), while the OCD group experienced more co-morbid disorders that can be classified as anxiety disorders (e.g., Separation Anxiety Disorder and Specific Phobias). This finding follows logically, since ADHD itself is a behavioural disorder, while OCD is an anxiety disorder.

Correlations across Measures and Domains

A correlation analyses was conducted across the different tests. Strong and statistically significant correlations were found for all cross-test associations, while *p*-values indicated that all correlations are statistically significant. These findings are evidence for the validity of the tests, as well the reliability of the participants. Most importantly however, the strong correlations indicate that the results from the clinician rated CGAS was in line with the findings on all the other tests of functional impairment.

Results of correlation analyses also indicate strong, positive correlations across all domains of the CBCL and SDQ, except for the Social Competence and Peer Problems subscales, which yielded a moderate, negative correlation. This is evidence for the validity of these measures, in other words, one can be sure that these measures of functional impairment really assess an individual's functioning in the various domains, as they claim to do. The strong correlations also indicate that the participants were reliable in their reports, since their scores were similar for the specific domains of functioning on both tests.

Correlations between the CBCL and SDS were not as strong, and it was found to be especially weak between the CBCL Activities Competence subscale and the Interests subscale of the SDS. The reason for this may be related to social desirability bias, because the CBCL is a self-report measure and the SDS is administered in an interview. Shadish (1993) states that the difference in a participant's results on two tests, that are said to measure the same construct, can be explained by the different administration properties of the tests (e.g., paper-and-pencil tests versus computer aided administration)

Directions for Future Research

The current study did not consider gender differences and the effect that these may have on functional impairment in either the ADHD or OCD groups. Graetz, Sawyer, and Baghurst (2005) found that boys and girls diagnosed with ADHD do not display different symptoms when the three subtypes (Predominantly Inattentive Type, ADHD-PI; Predominantly Hyperactive-Impulsive Type, ADHD-HI; and Combined Type, ADHD-CT) are collapsed into a single group, with the exception that girls report more somatic complaints related to ADHD, while boys struggle more in the school domain as a result of their ADHD symptoms. Gender differences were more evident in the second part of the study, where results indicated that boys who are

diagnosed with ADHD-CT or ADHD-HI subtype are rated as being more functionally impaired than girls with the same diagnoses. On the other hand it was found that boys diagnosed with ADHD-PI were rated as equally or less impaired than girls with the same diagnosis.
The authors warn that there might be gender-specific risks with respect to ADHD symptom expression and functional impairment that are possibly overlooked in studies where there is no distinction between the three subtypes of the disorder. Future researchers should strongly consider making a distinction between the three subtypes of ADHD.

In the current study, the mean age of the OCD group was a lot higher than the mean age of the ADHD group. Future research should consider matching the two groups on age, since some domains of functional impairment (e.g., dating) may be more problematic as a result of certain developmental tasks than a true difference between ADHD and OCD.

With regard to expanding and building upon the current study, the general structures set in place will not need to be altered, apart from the option of including ADHD- and OCD-specific measures of functional impairment (e.g., the COIS-R). With regard to data analysis, with a larger sample size one may be able to examine more closely and accurately parent-child disagreement using statistical techniques such as the McNemar Test; as noted above, in the current study, with its small sample size, the assumptions of this test were violated. With a larger sample size one can also employ regression-based analyses to examine, for instance, the contributory role of culture on ADHD- and OCD-related functional impairment, while also examining age- and sex-related individual differences in ADHD- and OCD-related functional impairment.

Conclusion

In conclusion, this study has provided preliminary steps towards reaching the goal of a comprehensive understanding of childhood ADHD- and OCD-related functional impairment in South Africa. A better understanding of the unique contribution that each disorder adds to functional impairment of a child or adolescent will lead to fewer misdiagnoses and adequate treatment plans.

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APPENDIX A

DSM-IV-TR DIAGNOSTIC CRITERIA FOR ADHD

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 behavior 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).

II. Some symptoms that cause impairment were present before age 7 years.

III. Some impairment from the symptoms is present in two or more settings (e.g. at school/work and at home).

IV. There must be clear evidence of significant impairment in social, school, or work functioning.

V. 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

DSM-IV-TR DIAGNOSTIC CRITERIA FOR OCD

A. Either obsessions or compulsions:

Obsessions as defined by (1), (2), (3), and (4):

(1) recurrent and persistent thoughts, impulses or images that are experienced, at some time during the disturbance, as intrusive and inappropriate and that cause marked anxiety or distress

(2) the thought, impulses, or images are not simply excessive worries about real-life problems

(3) the person attempts to ignore or suppress such thoughts, impulses or images, or to neutralize them with some other thought or action

(4) the person recognizes that the obsessional thoughts, impulses, or images are a product of his or her own mind (not imposed from without as in thought insertion)

Compulsions as defined by (1) and (2):

(1) repetitive behaviors (e.g., hand washing, ordering, checking) or mental acts (e.g., praying, counting, repeating words silently) that the person feels driven to perform in response to an obsession, or according to rules that must be applied rigidly;

(2) the behaviors or mental acts are aimed at preventing or reducing distress or preventing some dreaded event or situation; however, these behaviors or mental acts either are not connected in a realistic way with what they are designed to neutralize or prevent or are clearly excessive

B. At some point during the course of the disorder, the person has recognized that the obsessions or compulsions are excessive or unreasonable. **Note:** This does not apply to children.

C. The obsessions or compulsions cause marked distress, are time consuming (take more than one hour a day), or significantly interfere with the person's normal routine, occupational (or academic) functioning, or usual social activities or relationships.

D. If another Axis 1 disorder is present, the content of obsessions or compulsions is not restricted to it (e.g., preoccupation with food in the presence of Trichotillomania; concern with appearance in the presence of Body Dysmorphic Disorder; preoccupation with drugs in the presence of a Substance Use Disorder; preoccupation with having a serious illness in the presence of Hypochondriasis; preoccupation with sexual urges or fantasies in the presence of a Paraphilia; or guilty ruminations in the presence of a Major Depressive Disorder).

E. The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.

Specify if:

With Poor Insight: if, for most of the time during the current episode, the person does not recognize that the obsessions and compulsions are excessive or unreasonable.

APPENDIX C

DEMOGRAPHIC QUESTIONNAIRE

1. **Age: _____**
2. **Sex (circle one):** Male Female
3. **What is your race or ethnic background?**

   WHITE

   AFRICAN

   COLOURED

   ASIAN

   OTHER: (specify) _____
4. **Religion**: _____
5. **Home Language**: _____
6. **Size of house (indicate the number of rooms in the house)**:

   _____
7. **Number of people who live in the house**:

   _____
8.

   8.1. What term best describes the kind of neighbourhood in which you live?

   SUBURBAN

   URBAN

   TOWNSHIP

   INTERMEDIATE

   8.2. What is the name of the neighbourhood in which you live?

   _____

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

0-35000: _____

36000-5000:_____

76000-25000:_____

126000-175000:_____

176000-225000:_____

226000-275000:_____

276000-325000:_____

326000-375000:_____

376000-425000:_____

426000-475000:_____

476000-525000:_____

> 526000:_____

EDUCATION LEVEL OF CHILD

10. Education (highest grade completed): _____

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

RURAL URBAN

12. Has he/she repeated any grades? YES

NO

If yes, please specify which grade(s):

_____

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

_____

APPENDIX D

STRENGTHS AND DIFFICULTIES QUESTIONNAIRE (SELF REPORT)

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of how things have been for you over the last six months.

Name..... Male/Female Date of Birth.....

	Not True	Somewhat True	Certainly True
I try to be nice to other people. I care about their feelings			
I am restless, I cannot stay still for long			
I get a lot of headaches, stomach-aches or sickness			
I usually share with others (food, games, pens etc.)			
I get very angry and often lose my temper			
I am usually on my own. I generally play alone or keep to myself			
I usually do as I am told			
I worry a lot			
I am helpful if someone is hurt, upset or feeling ill			
I am constantly fidgeting or squirming			
I have one good friend or more			
I fight a lot. I can make other people do what I want			
I am often unhappy, down-hearted or tearful			
Other people my age generally like me			
I am easily distracted, I find it difficult to concentrate			
I am nervous in new situations. I easily lose confidence			
I am kind to younger children			
I am often accused of lying or cheating			
Other children or young people pick on me or bully me			

I often volunteer to help others (parents, teachers, children)

I think before I do things

I take things that are not mine from home, school or elsewhere

I get on better with adults than with people my own age

I have many fears, I am easily scared

I finish the work I'm doing. My attention is good

Overall, do you think that you have difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?

Yes-definite difficulties ☐

Yes-minor difficulties ☐

Yes-severe difficulties ☐

No ☐

If you have answered "Yes", please answer the following questions about these difficulties:

- How long have these difficulties been present?

Less than a month ☐

Over a year ☐

1-5months ☐

- Do the difficulties upset or distress you?

Not at all ☐

Quite a lot ☐

A great deal ☐

Only a little ☐

- Do the difficulties interfere with your everyday life in the following areas?

	Not at all	Quite a lot	A great deal	Only a little
HOME LIFE				
FRIENDSHIPS				
CLASSROOM				
LEARNING				
LEISURE				
ACTIVITIES				

- Do the difficulties make it harder for those around you (family, friends, teachers, etc.)?

Not at all ☐

Quite a lot ☐

A great deal ☐

Only a little ☐

Your Signature .....Today's Date .....

Thank you very much for your help

APPENDIX E

STRENGTHS AND DIFFICULTIES QUESTIONNAIRE (PARENT REPORT)

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months.

Child's Name..... Male/Female Date of Birth.....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings			
Restless, overactive, cannot stay still for long			
Often complains of headaches, stomach-aches or sickness			
Shares readily with other children (treats, toys, pencils etc.)			
Often has temper tantrums or hot tempers			
Rather solitary, tends to play alone			
Generally obedient, usually does what adults request			
Many worries, often seems worried			
Helpful if someone is hurt, upset or feeling ill			
Constantly fidgeting or squirming			
Has at least one good friend			
Often fights with other children or bullies them			
Often unhappy, down-hearted or tearful			
Generally liked by other children			
Easily distracted, concentration wanders			
Nervous or clingy in new situations, easily loses confidence			
Kind to younger children			
Often lies or cheats			

Picked on or bullied by other children

Often volunteers to help others (parents, teachers, other children)

Thinks things out before acting

Steals from home, school or elsewhere

Gets on better with adults than with other children

Many fears, easily scared

Sees tasks through to the end, good attention span

Overall, do you think that your child has difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?

Yes-definite difficulties ☐

Yes-minor difficulties ☐

Yes-severe difficulties ☐

No ☐

If you have answered "Yes", please answer the following questions about these difficulties:

- How long have these difficulties been present?

Less than a month ☐

Over a year ☐

1-5months ☐

- Do the difficulties upset or distress your child?

Not at all ☐

Quite a lot ☐

A great deal ☐

Only a little ☐

- Do the difficulties interfere with your child's everyday life in the following areas?

	Not at all	Quite a lot	A great deal	Only a little
HOME LIFE				
FRIENDSHIPS				
CLASSROOM				
LEARNING				
LEISURE				
ACTIVITIES				

- Do the difficulties make it harder for you and the family as a whole?

Not at all ☐

Quite a lot ☐

A great deal ☐

Only a little ☐

Your Signature .....Today's Date .....

Thank you very much for your help

APPENDIX F

SCHNEIER DISABILITY SCALE (ADMINISTERED TO PARENT AND CHILD)

A. Main disorder being rated _____

B. Rate impairment due to the disorder relative to the individual's child's desired/potential level of functioning. Use all available information. Sample probes: "If your child were free of this problem, would anything be different in their [work] performance? If your child don't have this problem, would they still [be at the same job]?

1. Lifetime Past 2 weeks
(worst impairment)
_____1.SCHOOL

0. No impairment from this disorder
1. Distress but not clear impairment
2. Moderate: Impaired performance (e.g. lower grades), but disorder does not prevent completing desired level of education
3. Severe: Dropped out temporarily, but able to complete desired level of education.
4. Extreme: Dropped out, unable to complete desired level of education

Complete PAST 2 WEEKS rating for item 1 only if the individual's child is now in school full time or if the child would be in school full time if he/she had not dropped out due to emotional problem.

2. Lifetime Past 2 weeks
(worst impairment)
_____2.WORK (OUTSIDE OR INSIDE THE HOME)

0. No impairment from this disorder
1. Distress but not clear impairment in job appropriate for individual's child's abilities
2. Moderate impairment in job appropriate for individual's child's abilities (e.g., occasional absenteeism, moderate criticism from boss, avoidance of seeking an appropriate promotion, failing to do various household chores or doing them poorly)
3. **Severe** impairment in job appropriate to child's ability (e.g., frequent absenteeism or other behaviour that could jeopardize employment, largely unable to complete household chores); or Underemployed (employed at a job beneath patient's abilities/qualifications)
4.Extreme: Unemployed or completely unable to function as homemaker or severe impairment in job beneath abilities

Complete PAST 2 WEEKS rating for item 2 only if the individual's child is not a full-time student (i.e., only if you do not rate PAST 2 WEEKS for item 1)

3. Lifetime Past 2 weeks
(worst impairment)
_____ 3.FAMILY

0. No impairment from this disorder in relationships with relatives
1. Distress but not clear impairment
2. Moderate: Intact but impaired relationships with relatives (e.g., argues, too dependent)
3. Severe: Severed relationships with a close relative or avoids most contacts
4. Extreme: Severed relationships with most of family

4.Lifetime Past 2 weeks
(worst impairment)

_____ 4.MARRIAGE / DATING

0. No impairment from this disorder
1. Distress but no impairment in dating or marriage
2. Moderate impairment (e.g., dating somewhat less frequently than desired, mildly impaired functioning on dates, or minor marital problems)
3. Severe impairment (e.g., dating infrequently, markedly impaired functioning on dates, major marital problems, separation or divorce)
4. Extreme: Unable to date or marry

5. Lifetime Past 2 weeks
(worst impairment)

_____ 5.FRIENDSHIPS

0. No impairment from this disorder
1. No clear impairment, but **distress** in initiating or maintaining friendship
2. Moderate: The child has a few close friends and acquaintances, but fewer than desired
3. Severe: No close friends or distress in most activities with acquaintances
4. Extreme: No clear friends and distress in almost all activities with acquaintances

6. Lifetime Past 2 weeks
(worst impairment)

_____ 6. OTHER INTERESTS
(RELIGIOUS ACTIVITIES, CLUBS, HOBBIES ETC)

0. No impairment from this disorder in pursuing other interests
1. Distress, but no impairment
2. Moderate impairment: Participates in activities but avoids some or does not participate fully
3. Severe impairment: Participates in far fewer activities than desired, is quite limited in ability to participate (e.g., attends church only sporadically despite desire to be active)
4. Extreme: Unable to pursue any interests

7. Lifetime Past 2 weeks
(worst impairment)

_____ 7. ACTIVITIES OF DAILY LIVING (ADL)

0. No impairment from this disorder in ADL
1. Distress, but no impairment
2. Moderate impairment: Delays in ADL. Minor dysfunction or avoidance of ADL
3. Severe impairment: Major dysfunction or avoidance. Needs some assistance
4. Extreme: Needs assistance in most ADL tasks

APPENDIX G

Consent Form

You are being asked 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 as other 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 your child and yourself 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. Name of Participant ("Study Subject")

_____

2. Title of Research Study

Comparing Functional Impairments of Children and Adolescents with Obsessive Compulsive Disorder and Children with Attention Deficit Hyperactive Disorder

3. Investigators and Telephone Number(s)

Kevin G. F. Thomas, Ph.D.
Senior Lecturer
Department of Psychology
University of Cape Town
Telephone: 021-650-4608

Mareli Fischer
Honours Student
Department of Psychology
University of Cape Town
Telephone: 082 588 8727

4. Source of Funding or Other Material Support

None

5. What is the purpose of this research study?

The purpose of this research study is to describe the nature of functional impairments in South African children and adolescents with Obsessive-Compulsive Disorder (OCD) and to compare their functional difficulties with those of children/ adolescents with Attention Deficit Hyperactive Disorder (ADHD).

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

In this study, you and your child will undergo two interviews that will ask you questions relating to your child's mental health. Both you and your child will undergo the same interview at separate times. In addition, both you and your child will separately complete a questionnaire relating to the impact that your child's ADHD symptoms has had on their lives.

Possible locations for the interviews and filling out the questionnaires and completing the interviews are: the University of Cape Town's Department of Psychology; the Medical Research Council's Anxiety and Stress Disorders Research Unit; child's clinicians' practice; or at your home. Each testing 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 testing 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 Principal Investigator listed in #3 of this form.

7. 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 the interviews or when filling out the questionnaire, you or your child finds any of the procedures uncomfortable, you are free to discontinue participation without penalty.

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

25

9. What are the possible discomforts and risks?

There are no known risks associated with participation in this study. The only possible discomfort your child may experience is slight fatigue. If he/she becomes tired during either of the interviews or when they are completing the questionnaire, 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.

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

10a. What are the possible benefits to you and your child/adolescent?

You and your child may or may not personally benefit from the research

10b. What are the possible benefits to others?

This study will help validate or disconfirm previous research conducted on the functional impairments of children and adolescents with OCD and ADHD. In particular, it will help to establish whether children and adolescents with OCD in South Africa exhibit different functional impairments to children and adolescents with ADHD. All this will help inform the future treatment and diagnosis of OCD and ADHD in children and adolescents.

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

Participating in this study will not cost you anything.

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

You will receive R150 for taking part in the study to cover transport costs .

13a. Can you withdraw your child from this study?

You are free to withdraw your consent and to stop participating 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.

13b. If you withdraw your child from this study, can information about you still be used and/or collected?

Information already collected may be used.

14. 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.

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

The information gathered from your child will be on their mental health status and functional impairments related to Obsessive Compulsive Disorder. 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 an Honours 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.

16. 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

17. How will the researcher(s) benefit from your being in the study?

In general, presenting research results helps the career of a scientist. Therefore, the Principal Investigator and others attached to this research project may benefit if the results of this study are presented at scientific meetings or in scientific journals.

18. 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:

_____ _____
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.

_____ _____
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

Assent Form

Project Title: Functional Impairments of South African Children with Attention Deficit/ Hyperactivity Disorder

Principal Investigator: Mareli Fischer

Why are you here?

"Your doctors/parents want to tell you about a research study involving children with Attention Deficit/ Hyperactivity (ADHD/ADD).
Research is a special way to learn about something. They want to see if you would like to be in this study. Mareli Fischer and some other researchers are doing this study."

Why is this study being done?

"Your doctors are doing this study because they want to learn more about how ADHD/ADD is affecting children's lives, so that this can provide psychologists and psychiatrists with information that will help them to treat children with ADHD/ADD."

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/dad will also be asked the same questions about you. You and your parents will be asked these questions on two different days. But 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 later."

What if you have any questions?

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

Who will know you are in the study?

"When the study is finished we will tell other researchers, psychiatrists and psychologists what we found out, but we won't tell them your name."

Do you have to be in the study?

"You don't have to be the study. No one will be mad at you if you don't want to do this. If you don't 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 Representative Date

_____ _____
Signature of Person Obtaining Consent Date

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

Signed copies of this consent form must be 1) retained on file by the principal investigator, 2) given to the subject and 3) placed in the subject's medical record (when applicable).

Plagiarism Declaration

1. I know that plagiarism is wrong. Plagiarism is to use another's work and to pretend that it is one's own.

2. I have used the APA for citation and referencing. Each significant contribution to, and quotation in, this essay from the work, or works, of other people has been acknowledged through citation and reference.

3. This research report is my own work.

4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.

5. I have done the word processing and formatting of this assignment myself. I understand that the correct formatting is part of the mark for this assignment and that it is therefore wrong for another person to do it for me.

_____ _____

Signature Date