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Assessment Of Obsessive-Compulsive Disorder In Youth
Using Parent And Youth Rating Scales

by

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A Dissertation Submitted in Partial Fulfilment of the
Requirements for the Degree of

DOCTOR OF PHILOSOPHY

in the Department of Psychology

We accept this dissertation as conforming
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ABSTRACT

This study compared a parent-report measure of childhood OCD symptoms, the survey form of the Leyton Obsessional Inventory – Parent Version (SLOI-PV), with a youth self-report measure, the survey form of the Leyton Obsessional Inventory – Child Version (SLOI-CV); specifically, the psychometric properties of the scales were examined, along with their efficacy in discriminating youth with OCD symptoms from other clinically-referred and normal youth. Participants were 72 youth-parent pairs. Youth ranged from 9 to 18 years of age; 31 youth were diagnosed with OCD or obsessive-compulsive behaviours (OCB), 11 youth were clinical controls and 30 were normal controls. The psychometric properties of the SLOI-PV and SLOI-CV were adequate and an optimal cut-off score of 15 was found for both scales. The parent-rated scale, the SLOI-PV, was more accurate in classifying the youth into the three groups and more sensitive to OCD symptoms than the SLOI-CV. Implications of these findings are discussed in view of the potential use of the SLOI-PV as a screening tool for identifying childhood OCD in community and clinical populations.

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LIST OF ACRONYMS

ADHD	Attention-Deficit/Hyperactivity Disorder
ANOVA	Analysis of Variance
APA	American Psychiatric Association
CBCL	Child Behavior Checklist
CC	Clinical Control
CNS	Central Nervous System
CSDQ-CV	Children's Social Desirability Questionnaire - Child Version
CSDQ-PV	Children's Social Desirability Questionnaire - Parent Version
CT	Computerized Tomography
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders (4th Edition)
FSIQ	Full Scale Intelligence Quotient
GABHS	Group A, β-Hemolytic Streptococcal Infections
HSD	Honestly Significant Difference (e.g., Tukey's HSD test)
LOI-CV	Leyton Obsessional Inventory - Child Version
MRI	Magnetic Resonance Imaging
NC	Normal Control
OCBs	Obsessive Compulsive Behaviors
OCD	Obsessive Compulsive Disorder
PANDAS	Pediatric Autoimmune Neuropsychiatric Disorders
PET	Positron Emission Tomography
PIQ	Performance Intelligence Quotient

SLOI-CV	Survey Form of the Leyton Obsessional Inventory - Child Version
SLOI-PV	Survey Form of the Leyton Obsessional Inventory - Parent Version
SRIs	Serotonin Reuptake Inhibitors
TD	Tourette's Disorder
WAIS-R	Wechsler Adult Intelligence Scale – Revised
WAIS-III	Wechsler Adult Intelligence Scale – Third Edition
WISC-III	Wechsler Intelligence Scale for Children - Third Edition
VIQ	Verbal Intelligence Quotient
YSR	Youth Self Report

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I would like to thank all of the youth and parents who participated in this study for their time and for allowing me to learn from their experience. I hope that in turn, this research and the clinical skills that I have acquired, will be of benefit to youth with OCD and their families.

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CHAPTER 1

1.1 Introduction

Obsessive-compulsive disorder (OCD) is a chronic and potentially disabling neuropsychiatric condition which often emerges during late childhood or early adolescence. This disorder is characterised by recurrent obsessions and/or compulsions which are recognised as excessive or unreasonable and are severe enough to be time consuming, cause marked distress, and significantly impair daily functioning (American Psychiatric Association, 1994; see Appendix A for Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition criteria). Until recently, OCD was believed to be very rare (Wolff & Wolff, 1991); however, this condition is now known to have a 2-3% estimated lifetime prevalence in the United States (Whitaker et al., 1990) and it is the primary diagnosis of approximately 11% of children referred to paediatric anxiety disorder clinics (Last & Strauss, 1989). There is considerable evidence that OCD is under-diagnosed in the general population (Berg, Whitaker, Davies, Flament & Rapoport, 1988; Flament et al., 1988; Rasmussen & Eisen, 1992a), and especially in child and adolescent psychiatric populations (Apter & Tyano, 1988).

OCD dominates every aspect of the affected child's life (Wolff & Wolff, 1991). The presence of obsessive thoughts and the overwhelming need to perform compulsive rituals may adversely affect the child's family and peer relationships, school performance, vocational functioning, participation in extracurricular activities, self-esteem, and emotional well-being (Wand, Furer & Shady, 1993; Thomsen & Jensen, 1991; Toro, Cervera, Osejo & Salamero, 1992; Adams, Waas, March & Smith, 1994). Children with OCD often become withdrawn and isolated, feel overwhelmed by their symptoms, or may

fear that they are "going crazy" (Leonard, Swedo, Allen & Rapoport, 1994). Thus, it is not surprising that children with OCD have higher than average rates of depression, phobias, sleep disturbance, other anxiety disorders, and suicide (Swedo & Rapoport, 1989; Rapoport, Elkins & Mikkelson, 1980).

Given the chronic and incapacitating nature of this disorder, one would expect a wealth of reliable and valid tools for assessing childhood OCD. Unfortunately, this is not the case because assessment is complicated by several factors: (1) the practical and theoretical difficulties in differentiating obsessional personality, sub-clinical OCD, and clinical OCD, (2) the lack of public and professional awareness regarding the diagnosis and treatment of childhood OCD, (3) children's lack of insight into the nature and cause of their symptoms, and (4) the "secrecy" (i.e., the internal and private nature of many of the symptoms) of this condition which allows afflicted individuals to hide or deny their obsessions and compulsions.

Thus, although cognitive-behavioural and psychophamaceutical treatments (e.g., serotonin re-uptake inhibitors) have been shown to be effective in reducing obsessive-compulsive symptoms (March, Mulle & Herbel, 1994; March & Mulle, 1998; Leonard, Lenane & Swedo, 1993; March, Leonard & Swedo, 1995), difficulties in accurately screening community and psychiatric populations for these behaviours have hindered diagnosis and the timely implementation of treatment (Wolff & Wolff, 1991). This situation has led some professionals to characterise childhood OCD as a "hidden epidemic" (Jenike, 1989).

1.2 OCD in Childhood and Adolescence

It has been estimated that at least one-third of the 4 to 6 million Americans who suffer from OCD are children (Rapoport, 1989) and approximately 80% of adults with OCD identify their onset of symptoms before age 18 (Pauls, Alsobrook, Goodman, Rasmussen & Leckman, 1995) . Unlike many other psychiatric disorders, the clinical presentation of OCD in children and adolescents is virtually identical to that in adults (McGough, Speier & Cantwell, 1993; Bolton, 1996). However, children tend to have less insight regarding their illness relative to their adult counterparts (Foa & Kozak, 1995). According to the most current version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA, 1994), obsessions are defined as recurrent and persistent thoughts, images, or impulses that are ego-dystonic, intrusive, and for the most part, acknowledged as senseless. They generally cause marked anxiety or distress. Obsessions are commonly accompanied by dysphoric affect, such as fear, disgust, doubt, and a feeling of incompleteness. Individuals with OCD typically attempt to ignore, suppress, or neutralise their obsessive thoughts and associated distress by performing compulsions. Compulsions are repetitive, purposeful behaviours which are often performed according to certain rules or in a stereotyped fashion. Generally, compulsions serve to neutralise or alleviate anxious discomfort or are thought to prevent a dreaded event. Compulsive behaviour may be overt, such as washing, or covert mental acts, such as counting or repeating certain words or phrases to oneself.

There is some controversy regarding the classification of OCD as an anxiety disorder (Insel, Zahn & Murphy, 1985; Bolton, 1996), and some researchers have

proposed that OCD is fundamentally a neurological motor disorder, similar to Tourette's Disorder. However, the general definition of OCD and its inclusion as an anxiety disorder has remained relatively constant in the last three revisions of the DSM, and has been employed consistently by clinicians and researchers in the field.

The majority of children with OCD present with several obsessions and compulsions at the same time (Swedo, Rapoport, Leonard, Lenane & Cheslow, 1989; Hanna, 1995), although compulsions may appear before the obsessions can be articulated, particularly for the very early onset patients (Rettew, Swedo, Leonard, Lenane & Rapoport, 1992). This is not surprising given that the cognitive and abstract capacities of a young child may not allow for rational explanations of behaviours (Khanna & Srinath, 1988). Instances of "pure" obsessional disorder appear to be very rare in children and adolescents (Swedo, Rapoport, Leonard et al., 1989). OCD symptoms tend to change over time, often with no clear pattern of progression.

Historical and cross-cultural similarities in the content of obsessions and compulsions are striking (McGough, et al., 1993; Thomsen & Mikkelson, 1991; Thomsen, 1998). Common obsessions and compulsions seen in childhood OCD are presented in Appendix B. Washing rituals are the most common symptom, affecting over 85% of children with OCD at some point in their lives (Swedo, Leonard & Rapoport, 1992; Thomsen, 1991). Repeating rituals are also common, followed by ordering and checking behaviour. Common obsessions are thoughts of contamination, concerns of death, illness and harm, obsessional symmetry, order and exactness, aggressive or violent

images, scrupulosity, and somatic obsessions (Swedo et al., 1992; Riddle et al., 1990; Flament & Rapoport, 1984).

In a review of 61 children with OCD, Thomsen (1991) reported that over 40% of the children spent between one and four hours per day completing their compulsions. These results attest to the disabling nature of this disorder. The majority of individuals with OCD have a chronic waxing and waning course, with exacerbation of symptoms during periods of stress (APA, 1994; Rasmussen & Eisen, 1990). The content and severity of symptoms change over time; children may initially experience one persistent obsession for months or years, which then gives way to a new preoccupation (McGough et al., 1993).

1.3 Prevalence

Epidemiological studies suggest that the rates of OCD are higher in children and adolescents than previously believed. The first of these investigations, conducted by Flament et al. (1988) surveyed over 5, 500 high school students. The authors reported the prevalence for current and lifetime OCD in adolescents to be 1% and 2%, respectively. Additionally, Flament and colleagues reported a sizeable "sub-clinical OCD" group in which subjects acknowledged significant obsessive-compulsive symptoms but did not meet full diagnostic criteria for OCD.

More recently, Valleni-Basile and colleagues (1994) carried out an epidemiological study of depression and suicide in a community population of adolescents in Grades 7, 8, and 9. They also screened this group for other psychiatric

disorders, including OCD. These authors reported that the prevalence of OCD in this community sample of 3,283 adolescents was approximately 3%, while the prevalence of sub-clinical OCD was reportedly 19%. Prevalence estimates were similar for males and females, whites and blacks, across grade levels, and levels of socio-economic status. The prevalence of OCD in this recent study is higher than that reported in earlier studies. Valleni-Basile and colleagues suggest that the frequency of OCD has increased markedly in the last decade and this apparent increase in the prevalence of OCD may be strongly related to increased public and professional knowledge about the disorder.

1.4 Onset

The onset of obsessive-compulsive symptoms is reported to occur rather gradually (Hanna, 1995), although acute onset has been noted in some cases (Rapoport, 1986). Generally, no precipitating events are identified (Flament et al., 1988). The mean age of onset in various samples of children with OCD ranges from 9 to 14 years (Last & Strauss, 1989; Riddle et al., 1990; Allsopp & Verduyn, 1990; Swedo, Rapoport, Leonard et al., 1989), with symptoms appearing in children as young as two years of age (Rapoport, Leonard, Swedo & Lenane, 1993). As in many other childhood psychiatric conditions, males predominate in almost all paediatric samples of OCD (Swedo, Rapoport, Leonard et al., 1989) with a male to female ratio of nearly 2:1 (Thomsen, 1991; Toro et al., 1992; Flament & Rapoport, 1984). The gender difference in prevalence rates tends to diminish with age and equal numbers of male and female cases have been reported in adolescent and adult samples (Flament et al., 1988). Some studies have shown that compared to

their female counterparts, boys generally have an earlier age-at-onset, experience more severe symptoms, and are more likely to have a family member with OCD or Tourette's Disorder (Last & Strauss, 1989; Swedo, Rapoport, Leonard et al., 1989). However, other investigations failed to find significant differences between boys and girls in terms of age at onset or symptom severity (Hanna, 1995; Allsopp & Verduyn, 1990).

1.5 Associated Disorders

Approximately 75% of children with OCD display concurrent psychiatric disorders (Riddle et al., 1990; Swedo et al., 1992). There does not appear to be any significant differences between males and females in terms of the number of comorbid diagnoses (Geller, Biederman, Reed, Spencer & Wilens, 1995; Hanna, 1995). Anxiety disorders (most often panic disorder) and depression are the most common associated disorders, present in one-third to one-half of children with OCD (Leonard, Swedo et al., 1993; Thomsen, 1994; Toro et al., 1992). Other DSM-IV Axis I (i.e., clinical disorders) and Axis II (i.e., personality disorders and mental retardation) disorders which occur with relative frequency are: tic disorders, conduct disorder, specific learning disabilities, mental retardation, psychosis, adjustment reaction disorder, eating disorders, sleeping disorders, attention-deficit/hyperactivity disorder, oppositional defiant disorder, dysmorphobia, trichotillomania, and obsessive compulsive personality disorder (Johnson, 1993; Rasmussen & Eisen, 1990; Swedo & Rapoport, 1989; Toro et al., 1992; Swedo, Rapoport, Leonard et al., 1989; George, 1991).

The strongest association with OCD appears in Tourette's Disorder (TD). Estimates of the incidence of OCD in individuals with TD range from 35% to 50% (APA, 1994). The incidence of TD in individuals with OCD is lower, with estimates ranging between 5% and 7%, while between 20% and 30% of individuals with OCD report current or past tics (APA, 1994). There are many similarities between OCD and TD; for example, symptoms of both disorders are typically manifested in childhood or adolescence, have a fluctuating course, male domination, worsening of symptoms with stress, partial voluntary control of symptoms, and involve a preoccupation with unacceptable aggressive and sexual impulses (Wand et al., 1993).

Males with early onset of OCD and comorbid motor tics are the most likely to develop TD within a few years (Rapoport et al., 1993). Obsessive-compulsive symptoms may completely replace the tics as the condition progresses and may become the most disabling feature of TD (Robertson, Trimble & Lees 1988). In fact, it is often difficult to distinguish the compulsive rituals of OCD from complex tics seen in TD. The apparent close association between these disorders has been supported by recent familial studies of individuals with both TD and OCD which indicate that these disorders are different expressions of the same underlying genotypic abnormality (Pauls, Towbin, Leckman, Zahner & Cohen, 1986). Furthermore, the expression of OCD and/or TD appears to be gender-related. The rate of OCD alone (without TD or tics) is higher in female relatives than male relatives of children with OCD, while the rate of TD and tics is higher in male relatives (Pauls et al., 1995).

Recent evidence suggests that a distinction can be made between children with OCD who have a personal or family history of tics (e.g., "tic-related OCD") and children with OCD who do not have such a history (e.g., "non-tic-related OCD"). Tic-related OCD is seen more frequently in boys than girls and is associated with an earlier age of onset (Leonard et al., 1992, Pauls et al., 1995). The nature of the OCD symptoms may vary according to the subtype; children with tic-related OCD engage in more compulsive touching, rubbing, blinking and staring than those with non-tic-related OCD. As well, tic-related OCD also appears to be related to obsessive worrying regarding symmetry and exactness, a sense of incompleteness, and intrusive aggressive images (Holzer et al., 1994, Leckman et al., 1995, Zohar et al., 1997). Conversely, children with non-tic-related OCD are more likely to display contamination obsessions and cleaning compulsions. Children with tic-related OCD often describe urges to perform a compulsive behaviour until it is "just right" (Leckman, Walker, Goodman, Pauls & Cohen, 1994; Leckman et al., 1995), while those with non-tic-related OCD more commonly indicate that their compulsions and rituals are driven by obsessive worries and anxiety (George, Trimble, Ring, Sallee & Robertson, 1993; Miguel et al., 1995). Finally, children with tic-related OCD are less likely than children with non-tic-related OCD to respond to serotonin re-uptake inhibitors (SRI's) and are more likely to have a positive response when an SRI is augmented with a low-dose neuroleptic (McDougle, Goodman, Leckman et al., 1993; McDougle, Goodman, Leckman et al., 1994).

1.6 Family Characteristics of Children with OCD

The prevalence of psychopathology in the first degree relatives of children affected with OCD is much higher than in the general population. Toro and colleagues (1992) found psychiatric diagnoses present in 57% of first degree relatives of a group of 72 children and adolescents with OCD. Depression, followed by anxiety disorders, were the most frequent diagnoses (present in 24% and 17%, respectively). Estimates of the prevalence of OCD in first degree relatives of afflicted children range from 7.7% (Last & Strauss, 1989) to as high as 30% (Lenane et al., 1990). Lenane et. al (1990) studied 145 first-degree relatives of 46 children and adolescents with severe primary OCD. Twenty-five percent of the fathers and 9% of the mothers had OCD. Father-son pairs have been found to predominate (Swedo, Rapoport, Leonard et al., 1989). It should be noted that the symptom patterns in affected children and parents were often different, providing no evidence that parents provided a model for their child's ritualistic behaviours or that familial subtypes of OCD exist (Swedo, Rapoport, Leonard et al., 1989).

1.7 Long-Term Outcome

In one of the first systematic prospective follow-up studies of children and adolescents with OCD, Flament and colleagues (1990) reported on 25 clinically-referred youth between 2 to 7 years following their initial evaluation and treatment. Sixty-eight percent of this group still met criteria for OCD and only 28% were considered completely asymptomatic. No baseline variables were predictive of outcome. Comorbid conditions

were common, and over half of this cohort met criteria for another Axis I disorder, most commonly an anxiety or mood disorder.

In the largest systematic follow-up study of children with OCD, 54 children and adolescents who were consecutive participants in clomipramine treatment studies were re-evaluated between 2 and 7 years following diagnosis (Leonard, Swedo et al., 1993). At follow-up, 43% still met diagnostic criteria for OCD, 18% had sub-clinical OCD (i.e., symptoms did not cause marked distress or significantly interfere with functioning), and 28% had "obsessive-compulsive features"; only 11% were totally asymptomatic. It should be noted that 70% of this sample were still taking psychoactive medication for their OCD at the time of follow-up. Comorbid psychiatric diagnoses were common at follow-up; only 4% of the subjects had no current comorbid diagnosis. Although these results may seem discouraging, the authors pointed out that 81% of these patients showed improvement in their symptoms compared with their status at initial contact.

In the search for predictive factors of outcome following a diagnosis of OCD in childhood, Leonard, Swedo et al. (1993) found some indication that the presence of tics in childhood, parental psychopathology, and more severe OCD symptoms at baseline predicted a poorer prognosis, while a positive response to medication was indicative of a better outcome.

1.8 OCD as a Neuropsychiatric Disorder

Biological data have implicated neurophysiological, neuroanatomical, neuroimmunological, and genetic factors in the aetiology of OCD. Successful treatment

of OCD with serotonin re-uptake inhibitors (SRIs) initially led to the "serotonin hypothesis" of OCD (Barr, Goodman, Price, McDougle & Charney, 1992; Insel, Mueller, Altermann, Linnoila & Murphy, 1985). Potent serotonin re-uptake inhibitors such as clomipramine, fluoxetine, and fluvoxamine have been reported to be effective pharmacological treatments for childhood and adult OCD. The high selectivity in drug response of OCD has led to speculations that this disorder arises from an oversensitivity or overreactivity of specific CNS serotonergic pathways. However, other researchers have questioned the serotonergic hypothesis of OCD based on the grounds that although serotonin re-uptake inhibition occurs within a few minutes of drug intake, the anti-obsessional effects of these drugs develop only after several weeks of treatment (Goodman, McDougle & Price, 1992; Goodman et al., 1989), suggesting that a simple serotonergic uptake mechanism may not be the only factor involved.

There has also been speculation that alterations in dopamine neurotransmission may play a role in the aetiology of OCD (Swedo & Rapoport, 1990; Goodman et al., 1990). This hypothesis is based on the association of OCD and Tourette's Disorder (TD), a basal ganglia disorder which is treated with dopamine-blocking agents (Pauls et al., 1986), the worsening of OCD symptoms following stimulant medication (Borcherding, Keysor, Rapoport, Elia & Amass, 1990), and the use of dopamine-blocking agents such as haloperidol as an augmenting agent in the treatment of OCD (McDougle et al., 1990). However, these hypotheses remain unconfirmed.

Neuroanatomical studies of OCD have led to speculations about the association between this disorder and dysfunction of the frontal lobe and basal ganglia structures.

Specifically, there appears to be an increased rate of OCD in several illnesses of the basal ganglia, including TD (Pauls et al., 1986), postencephalitic Parkinson's Disease (von Economo, 1931), Huntington's chorea (Cummings & Cunningham, 1992), and Sydenham's chorea (Swedo, Rapoport, Cheslow, et al., 1989). Luxenberg et al. (1988) found smaller caudate volumes on computerised tomography (CT) scans in 10 male adult patients with childhood onset OCD when compared to controls. Rosenberg and colleagues (1997) found that children and adolescents with OCD who were medication-naive had significantly smaller striatal volumes and significantly larger third ventricles than controls, based on MRI investigations. There was no difference between the OCD group and controls in prefrontal, cortical, lateral ventricular, or intracranial volumes.

Studies utilising PET scans have generally reported an increased rate of glucose metabolism in the orbital frontal cortex and in the caudate nucleus of OCD patients (Baxter et al., 1988; Swedo, Schapiro et al., 1989). Furthermore, studies of brain metabolism following treatment (e.g., with clomipramine) have found a normalisation of brain functioning corresponding with a decrease in symptoms (Benkelfat, Nordahl & Semple, 1990; Martinot, Allilaire & Mazoyer, 1990). Following treatment, patients with hypermetabolism in the orbital frontal region and caudate nucleus were found to display decreases in metabolism toward more normal levels.

Other evidence supporting a neuroanatomical basis for OCD is the fact that otherwise intractable OCD symptoms often respond to psychosurgery, most commonly cingulotomy and "stereotaxic leukotomy", which refers to the transection of the tracts from the frontal cortex to subcortical sites such as the striatum and thalamus (Insel &

Winslow, 1992). An increased frequency of neurological soft signs in children with OCD are also suggestive of underlying structural abnormalities. Denckla (1989) reported that neurological examination of 54 paediatric OCD patients revealed positive "soft" neurological findings in over 80% of the sample.

Recent investigations have suggested that there exists a subtype of childhood-onset OCD which is related to infectious illness, particularly group A, β-hemolytic streptococcal infections (GABHS: Allen, Leonard & Swedo, 1995). It is hypothesised that antineuronal antibodies formed against the streptococcus cross-reacted to neuronal tissues, mainly basal ganglion, causing inflammatory changes and subsequent development of movement disorders and obsessive-compulsive symptoms (Swedo et al., 1993). Further investigations into these cases of paediatric, autoimmune neuropsychiatric disorders associated with streptococcal infections (PANDAS) will be required to compare this unique subtype of OCD with an obvious neurobiological aetiology with the general childhood OCD population.

Finally, twin studies (Rasmussen & Tsuang, 1986; Carey & Gottesman, 1981) have shown that the concordance rates for OCD ranged from 53% to 87% for monozygotic twins and from 22% to 47% for dizygotic twins, depending on the sample and the diagnostic criteria used. These results point to the genetic basis of OCD in some families, however, it is still unknown what percentage of childhood OCD patients have a genetic vulnerability.

1.9 Cognitive and Neuropsychological Evaluations of Childhood OCD

In general, children with OCD do not have gross or clinically impairing neurological or neuropsychological abnormalities. Psychometric intelligence is generally reported to be in the average to high average range for children with OCD, although in one study they scored significantly lower than controls on mean performance scores (PIQ) on the WISC-III (Leonard, et al., 1994). Neuropsychological investigations have resulted in contradictory results; some studies have suggested that children with OCD have deficits on measures of frontal lobe functioning, such as planning and organisation (Behar et al., 1984; Cox, Fedio & Rapoport, 1989). However, other researchers have observed no differences in tests of frontal lobe functioning among OCD and normal participants, but rather, have found deficits suggestive of visuospatial or memory deficits in OCD participants (Otto, 1992). Further research utilising appropriate control groups and larger sample sizes will be required to determine the neuropsychological profile of children with OCD.

1.10 Assessment of OCD in Children and Adolescents

The accurate assessment of obsessive-compulsive symptoms is crucial given findings that the main predicting factor of prognostic value is the duration of time between the first manifestation of symptoms and the start of an adequate psychiatric therapy (Zitterl, Mairhofer & Zapotoczky, 1990). However, when compared to matched clinical controls, children with OCD experience more time between the onset of their symptoms and referral for psychiatric services (Johnson, 1993). The reported delay of

approximately two years between the onset of obsessive-compulsive symptoms and referral (Last & Strauss, 1989; Allsopp & Verduyn, 1989), and seven to ten year delay between the onset of obsessive compulsive symptoms and referral for treatment of OCD symptoms in children with TD (Toro et al., 1992) provides clear evidence that this condition is under-recognised.

Further evidence of the underdiagnosis of OCD comes from diagnostic reviews of clinical patients. In a retrospective chart review of over 5556 children seen in a paediatric psychiatric hospital, Johnson (1993) found that only 22% of children who met the diagnostic criteria for OCD were correctly diagnosed. Thomsen and Mikkleson (1991) reported that in almost all of the 61 children with OCD identified by a chart review of all of the cases in a children's psychiatric hospital, the diagnosis had been missed by the referring psychiatrist or psychologist. Similarly, Flament and colleagues (1988) reported that very few adolescents with OCD receive the correct diagnosis and even fewer receive appropriate treatment.

What factors might explain the present underdiagnosis of obsessive-compulsive symptoms? First, at times it may be difficult to distinguish clinically significant obsessions and compulsions from normal behaviour. It is likely that there is a continuum of behaviour which features normal rituals or repetitive behaviour (such as bedtime rituals or counting and repetitive play) at one end and OCD at the other. Rituals and superstitions are not uncommon over the course of development (King & Tonge, 1991) and may actually be beneficial in advancing social development (Leonard, 1989). These age-appropriate rituals are likely to occur across a wide range of developmental phases,

and are generally transient (Khanna & Srinath, 1988). In general, obsessive-compulsive symptoms are distinguished from normal behaviour by their frequency, severity, and irrational and incapacitating nature (Wolff & Wolff, 1991; King & Tonge, 1991; Leonard, 1989).

Secondly, the assessment of obsessive-compulsive symptoms in children is hindered by the general lack of public and professional awareness of obsessive compulsive symptomatology. Routine mental status examinations fail to screen for these behaviours (Rasmussen & Eisen, 1992b). Flament and colleagues (1988) advocate that all psychiatric patients should be screened for symptoms of OCD, given the high rates of comorbidity between OCD and numerous other psychiatric conditions. It is also important for practitioners to be aware that OCD may occur in association with other psychiatric conditions, which presents complex problems in differential diagnosis.

Third, children and adolescents with OCD may have little insight into the nature or cause of their OCD symptoms. Current DSM diagnostic criteria for OCD explicitly state that children may lack insight into their symptoms (APA, 1994). With increasing age, improved cognitive and language skills may allow children to become more reliable reporters of their internal processes. Fourth, children and adolescents with OCD generally try to conceal their symptoms and go to great lengths to disguise, or otherwise hide, their bizarre thoughts and actions (Wolff & Wolff, 1991; Flament et al, 1988, Rapoport, et al., 1980; Clark & Bolton, 1985). As early as 1958, Sigmund Freud commented on the hidden nature of this disorder:

> sufferers from [OCD] are consequently able to treat their affliction as a private matter and keep it concealed for many years. And indeed, many more people suffer from these forms of obsessional neurosis than doctors hear of. For many sufferers too, concealment is made easier from the fact that they are quite well able to fulfil their social duties during a part of the day, once they have devoted a number of hours to their secret doings that are hidden from view (p.48).

Because compulsions are under partial voluntary control, children may resist performing rituals in public and "schedule" these behaviours for private time (Swedo, Rapoport, Leonard et al., 1989; Wand et al., 1993; McGough et al., 1993). Children may disguise hand washing and other cleaning rituals as more frequent voiding or concoct other excuses to complete their compulsions (Swedo, Rapoport, Leonard et al., 1989). As a result, others may be unaware of the problem and its pathological significance (Wolff & Wolff, 1991).

The reluctance of children to engage in compulsive behaviour in public or even report their symptoms, coupled with their limited understanding and expression of internal states (Edelbrock, Costello, Dulcan, Kalas & Conover, 1985), has led many clinicians to rely on parent's reports of their child's obsessive-compulsive behaviours to make a diagnosis (Swedo, Rapoport, Leonard et al., 1989; Wand et al., 1993). Parents may describe the onset, duration, and severity of symptoms in a more reliable manner than the child (McGough et al., 1993). In fact, parents are frequently incorporated into the child's rituals, in that the parent's presence may be required in order for the child to complete rituals to his or her satisfaction (Cooper, 1996; Wand et al., 1993). Furthermore, parents are usually familiar with the child's functioning over time and across many situations (Costello, 1989). Thus, it is reasonable to assume that parents not

only have intimate knowledge of their child's obsessive-compulsive behaviours (OCBs), but are more likely to report these behaviours than their children. However, no standardised parent-report measures of children's OCD symptoms currently exist.

1.11 Parent-Child Disagreement in Reports of Child Psychopathology

Although the reporting of OCD symptoms has rarely been specifically addressed, a vast literature exists on the differences between parent's and children's reports of other forms of child psychopathology. There invariably exists disagreement between parent and child informants as to the existence and severity of the symptoms queried and there are only low-to-moderate correlations between parent-completed and child-completed ratings of the presence and severity of children's psychological symptoms on a vast array of reliable and valid measures (Jensen, Traylor, Xenakis & Davis, 1988; Kashani, Orvaschel, Burk & Reid, 1985; Costello, 1989; Verhulst & van der Ende, 1992). In one of the few studies which addresses OCD symptoms, Cantwell and colleagues (1997) examined the agreement between parent and adolescent reports of major psychiatric disorders, including the core symptoms of OCD, in youth between 14 and 18 years of age. A total of 281 parent-adolescent pairs were separately interviewed with a structured diagnostic interview regarding psychopathology in the adolescent. Poor agreement was found for reports of obsessive-compulsive symptoms; adolescents reported more OCD behaviours than their parents. However, no effort was made to explore the factors underlying this discrepancy or to determine which informant's information was more "accurate".

The results of a meta-analysis of 119 studies of both clinical and normal samples of children reveal a mean correlation of .25 between parent and child reports of general childhood psychopathology (Achenbach, McConaughy and Howell, 1987). Across the various studies many conflicting results have been obtained, but it has been shown that the level of parent-child agreement is influenced by numerous factors, including the nature of the disorder. In general, agreement is better for externalising than internalising problems (Edelbrock, Costello, Dulcan, Conover & Kala, 1986), likely because externalising behaviours are more observable. It has also been shown that parent-child agreement is a function of the type of assessment technique used, the type of symptom evaluated, the sex of the parent, the presence of parental psychopathology, and the age and sex of the child (Jensen, Traylor et al., 1988).

The question of whom to believe in disagreements between parents and children in their reporting of symptomatology remains, at present, unresolved. In a sample of 132 14-year old international adoptees, Verhulst and van der Ende (1991) found a relatively low correlation between the youth's own report of problems and those reported by their parents (r=0.23). However, the correlation between the parent's ratings of their child's problems on the Child Behaviour Checklist (CBCL; Achenbach & Edelbrock, 1983) and a clinical severity rating made by a psychiatrist were higher than the correlation between the child's own ratings on the Youth Self Report (YSR; Achenbach & Edelbrock, 1987) and the psychiatric rating of severity (r = 0.63 and r = 0.50, respectively). Similarly, in a pilot study of 28 children with a psychiatrically ill parent, Weissman, Orvaschel and Padian (1980) report findings that the mother's ratings significantly differentiated

children with and without a psychiatric diagnosis, whereas the children's reports did not. These findings suggest that parents may be more sensitive informants about their children's psychopathology than the children themselves, when the information is derived from self-report scales.

Contradictory results have been reported by Reich and Earls (1987). They administered a structured diagnostic interview to 32 children and their parents who had been exposed to severe flooding in rural Missouri. The results revealed low levels of agreement between the informants for a range of psychiatric disorders, including attention-deficit/hyperactivity disorder, oppositional disorder, conduct disorder, alcohol/substance abuse, major depression/adjustment disorder with depressed mood, and separation anxiety/overanxious disorder. Based on these findings, these authors concluded that the children's reports are likely the most valid and even young children are able to accurately report emotional problems of which their parents appear to be unaware. It is unclear whether these contradictory findings are related to the utilisation of a lengthy diagnostic interview as opposed to the aforementioned investigations which employed rating scales. Other researchers have found that children tend to report more internalising behaviours (i.e., internal conflict and distress), while parents generally report higher levels of externalising behaviours (i.e., conflicts with other people and their expectations of the child; Edelbrock et al., 1985; Costello, 1989; Kashani et al., 1985). It has generally been shown that the reliability of children's reports tend to improve as they increase in age (Edelbrock et al., 1985).

Overall, the studies investigating the level of agreement between parent and child reports of children's problem behaviours have limited generalizability as they have covered only a limited range of problem behaviours, most often depression (Kazdin, French, Unis & Esveldt-Dawson, 1983; Kazdin, French & Unis, 1983). Secondly, very few of the existing studies utilised normal or clinical control groups. Finally, these investigations rarely measure the extent to which social desirability influenced the informants' responses, a factor which is known to affect the reliability of self-rated scales of symptomatology (Jensen, Xenakis, Davis & Degroot, 1988; Ledingham, Younger, Schwartzman & Bergeron, 1982; Edwards, 1957).

1.12 A Parent-Report Measure of Children's OCD Symptoms

In order to ameliorate some of the problems which presently exist in assessing children's obsessive-compulsive symptoms, an existing child self-report measure of OCD has been modified to allow parents to report their child's symptoms. The Leyton Obsessional Inventory - Child Version (LOI-CV; Berg, Rapoport & Flament, 1986) is a 44-item scale which has been systematically revised for use in children and adolescents between the ages of 10 and 18 years. It measures the number of endorsed obsessive-compulsive behaviours through true/false responses. It also evaluates the extent to which these symptoms interfere with daily activities. This scale has been shown to be a reliable measure and is sensitive to drug treatment in children with OCD (Berg et al., 1986). Retest reliabilties (5 week) were high, with intraclass correlations of .96, .97, and .94 for total obsessional scores, resistance scores, and interference scores, respectively (Berg et

al., 1986). The LOI-CV has successfully distinguished adolescents with OCD from both psychiatric and normal control groups matched on age and intelligence (Berg et al., 1986).

A 20-item survey form of this measure, known as the SLOI-CV, was developed for use in a large scale epidemiological study (see Appendix C; Berg et al., 1988) and has since been used in several major investigations of OCD in North American and Danish youth (Flament et al., 1988; Thomsen, 1993). It allows for ratings of the presence or absence of obsessive preoccupations and compulsive behaviours and each positive response is then rated on a scale of 0 (no interference) to 3 (interferes a lot) for the degree of interference in daily functioning. According to Flament et al (1988), the total "Interference Score " (e.g., sum of the ratings from 0-3 for each item) is a better measure of psychopathology than the total "Yes Score" (e.g., sum of the number of positively endorsed statements). The authors have provided evidence that the SLOI-CV also demonstrates good psychometric properties (see Berg et al., 1988). A recent investigation of the test-retest reliability of the SLOI-CV over a 2-week period was conducted with children of three age groups: 8-10 year-olds, 11-13 year-olds, and 14-16 year-olds (King, Inglis, Jenkins, Myerson & Ollendick, 1995). For the Total Obsessive score, the test-retest correlations for the three age groups were: .51, .75, and .83, respectively, suggesting that the temporal stability of this measure depends to some degree on the age of the respondent. The SLOI-CV inventory demonstrated high internal reliability with a Cronbach's alpha of 0.81 (Cronbach, 1951), with four factors (general obsessive, dirt-contamination, numbers-luck, and school) accounting for 47% of the

variance. The SLOI-CV has been demonstrated to be useful in a clinical assessment battery as a screener for obsessive-compulsive symptoms, and along with serving as a diagnostic screening instrument (Thomsen 1993), it has been used as a measure of symptom severity and change during treatment (Kim, Dysken & Kuskowski, 1990; Flament et al., 1985).

A large scale epidemiological study of obsessive-compulsive disorder in non-referred adolescents utilised the SLOI-CV as a screening measure (see Berg et al., 1988; Flament et al., 1988). The study population consisted of the entire Grade 9 to Grade 12 enrolment (5596 students) in a single semi-rural county in New Jersey. Using a cut-off of 25 or more for the Interference score, Flament and colleagues (1988) found the SLOI-CV to have a sensitivity of 75%, a specificity of 84%, and a predictive value of 18% as a screen for OCD. Adding an additional cut-off score of 15 or more on the "Yes score" along with the Interference score cut-off, the sensitivity increased to 88%, the specificity was 77% and the positive predictive value was 15%. Within this unselected sample, gender differences in ratings on the SLOI-CV were found; females positively endorsed significantly more items and obtained higher Interference scores than males (Berg et al., 1988). Given the restricted age range (e.g., Grade 9 to Grade 12), it is not surprising that no age effects were found on the SLOI-CV.

Thomsen (1993) administered the SLOI-CV to 1032 pupils in Denmark raging in age from 11 to 17 years. No sex differences were found in terms of total "Yes scores" or Interference scores. There were some age differences in terms of endorsement of SLOI-CV items; Grade 6 students obtained significantly lower scores than students from all

other grades, while Grade 7 and 8 students obtained lower scores than students in Grade 9. To date, there are no other studies that have considered how factors such as age or gender may affect the ratings of youth with OCD on the SLOI-CV.

A modified version of the SLOI-CV[1], the survey form of the Leyton Obsessional Inventory - Parent Version (SLOI-PV; Janzen, Sherman & Joschko, 1994) is an experimental measure which has been developed to evaluate parental report of children's obsessive-compulsive behaviours (see Appendix D). The 20 items of the SLOI-CV have been reworded to allow parents to report their child's symptoms. This measure was administered as part of a larger battery to 43 children between the ages of 7 and 15 (Janzen, et al., 1994). Of these, 25 children had TD and the remaining 18 children comprised the control group. Of the 25 children in the TD group, 8 children also had a comorbid attention-deficit/hyperactivity disorder (ADHD) diagnosis and 9 of the children were thought to display OCBs as judged by the referring psychiatrist or paediatric neurologist. Within this sample, the SLOI-PV demonstrated good internal reliability with a Cronbach's alpha of 0.94 (Cronbach, 1951). Factor analysis yielded four conceptually valid factors (Janzen et al., 1994): the first factor consisted of number-related behaviours (e.g., counting, repetition) while the three lesser factors consisted of cleaning compulsions, ordering compulsions, and obsessional guilt and uncertainty, respectively. Despite the fact that four factors were found, these results did not directly replicate the

[1] In a letter dated February 4, 1999, Dr. Judith Rapoport granted permission to modify the Survey Form of the Leyton Obsessional Inventory – Child Version to create the SLOI-PV.

factor structure of the SLOI-CV which was reported by Berg and colleagues (1988) in a sample of unselected high school students.

1.13. Summary and Goals of the Present Study

OCD is a chronic and potentially disabling condition which is more prevalent in children and adolescents than was previously thought (Berg et al., 1988). There exists considerable evidence that this disorder is underdiagnosed in child clinical populations, particularly when it occurs in the presence of other psychiatric conditions (Toro et al., 1992). Furthermore, it is known that obsessive-compulsive symptoms which occur comorbidly with other psychiatric conditions (i.e., Tourette's Disorder) may be more disabling to the individual than the originally diagnosed disorder. In light of evidence which points to a better outcome for individuals who are diagnosed soon after symptom onset (Zitterl, et al., 1990), it is necessary to improve current methods of diagnosing both clinical OCD and sub-clinical obsessive-compulsive symptomatology.

For a variety of reasons, including the secretiveness inherent in this disorder, youth may not provide reliable information concerning their obsessive-compulsive symptoms. There is considerable evidence which suggests that parents may be in the position to reliably report obsessive-compulsive symptoms experienced by their children; however, no standardised parent-report measure of children's OCD symptoms exist. Henin and Kendall (1997), in a comprehensive review of OCD in childhood and adolescence, recommended that research efforts be directed to developing parent questionnaires for childhood OCD. This study is in a unique position to fulfil that goal.

The primary goal of the present study was to examine the psychometric properties of the SLOI-PV, which is a modified version of the SLOI-CV to allow for parent-report, and to evaluate the efficacy of both the SLOI-CV and SLOI-PV in discriminating youth diagnosed with OCD or significant obsessive-compulsive behaviours (OCB) from: (1) other clinically referred youth without obsessive-compulsive behaviours, and (2) normal controls. Exploration of the level of agreement between youth and parent reports was also undertaken. A second goal of this study was to describe the clinical presentation of a group of youth diagnosed with OCD or OCB and to explore the behavioural dimensions along which these youth differ from other clinically-referred and normally-developing youth.

One obvious strength of this study is its employment of valid and reliable measures of obsessive-compulsive symptoms, as opposed to numerous other investigations which failed to use standardised measures specific to obsessive-compulsive symptomatology. Furthermore, as controlled studies of children with OCD are rare (Johnson, 1993), this investigation has the advantage of making comparisons to both clinical and normal control groups. Thirdly, this study includes other parent and child rated measures of child psychopathology, the Child Behaviour Checklist (CBCL; Achenbach & Edelbrock, 1983) and the Youth Self Report (YSR; Achenbach & Edelbrock, 1987) to allow for evaluation of the construct validity of the SLOI-PV and SLOI-CV. That is, the employment of the CBCL and YSR will also demonstrate whether the SLOI-PV and SLOI-CV are sensitive specifically to obsessive-compulsive symptoms or if they measure psychopathology in general. Finally, the present study will utilise a

measure of social desirability for both parent and child informants to investigate whether this factor affects the reliability of the informants' reports.

1.14 Hypotheses

1) In light of speculation that youth may not provide reliable information concerning their own obsessive-compulsive symptoms, it is hypothesized that the overall diagnostic accuracy of the parent-report measure (SLOI-PV) will be superior to that of the child-report measure (SLOI-CV) in correctly classifying OCD participants.

2) To address the issue of whether the additional information provided by measures of psychopathology and social desirability is useful in predicting group membership over and above the use of the measures of obsessive-compulsive symptoms, classification analyses will be conducted. It is hypothesized that the addition of the parent and child report measures of psychopathology and social desirability (YSR, CBCL, CSDQ-CV and CSDQ-PV) to the SLOI-CV and SLOI-PV will not significantly improve the accuracy of group classification.

3) Finally, this investigation will examine specific behavioral dimensions along which the OCD, clinical control, and normal control groups differ. Given that this aspect of the study is exploratory in nature, no specific hypotheses were formulated.

CHAPTER 2

Method

2.1 Participants

Participants were 72 youth-parent dyads. The youth (47 males and 25 females) ranged in age from 9 to 18 years. A lower age limit of 9 years was chosen because the Flesch Readability Formula (Flesch, 1948) and the Fry Readability Scale (Fry, 1968) suggested that a Grade 4 to Grade 5 reading level is required to read and comprehend the SLOI-CV. Youth who met the following criteria were eligible to participate in this study: 1) estimated to possess an average level of intelligence[2], 2) spoke English as a first language, 3) had a biological or adoptive parent who was also willing to participate in the study, and 4) did not have a mental or emotional disorder severe enough to preclude the testing procedures.

Participating youth belonged to one of the following three groups.

a) OCD Group

The OCD group was comprised of 31 youth who were referred by paediatric psychiatrists, paediatric psychologists or paediatricians. Seventy-seven percent (77%) of the youth in this group were diagnosed with current OCD according to DSM-IV criteria, while the remaining 23% were diagnosed with subclinical OCD, otherwise known as OCB[3].

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[2] This criteria was included in an attempt to ensure adequate comprehension of the self-report measures.
[3] Presence of either obsessions or compulsions that fail to meet Criteria C of the DSM-IV diagnostic criteria for OCD (i.e., obsessions or compulsions do not take more than one hour a day, do not cause marked distress or do not significantly impair the individual's daily functioning).

This group included 19 males and 12 females, with a male to female ratio of 1.58:1. Thirty-six percent (36%) of the youth in the OCD group participated in this study while receiving inpatient psychiatric treatment at the Jack Ledger Child/Adolescent Psychiatric Unit, Queen Alexandra Centre for Children's Health, Victoria, British Columbia. Fifty-eight percent (58%) of the youth in this group were diagnosed with at least one comorbid disorder (see Appendix E). Approximately 26% of this group (6 males, 2 females) had comorbid diagnoses of Tourette's Disorder or Chronic Motor or Vocal Tic Disorder.

Average age of onset of OCD symptoms was 9.6 years (*sd* = 3.9). There was no significant difference in average age of onset between males (9.8 years; *sd* = 4.2) and females (9.5 years, *sd* = 3.8). The most common obsessions amongst the youth at the time of their participation in the study were: need for order/symmetry, exactness, fear of germs or contamination, and obsessions of death or illness. The most common compulsions included: ordering/arranging/straightening, washing/cleaning, checking, compulsive avoidance, and touching rituals.

At the time of this study, the majority of the youth in the OCD group (68%) were taking prescription medication to control their OCD symptoms or comorbid disorders. Selective serotonin reuptake inhibitors, including fluoxetine, fluvoxamine, and paroxetine, were the most common medications, although a small proportion of youth were prescribed benzodiazepines (e.g., clonazepam), psychostimulants (e.g., dexedrine), and antipsychotics (e.g., risperidone). Of those youth currently prescribed medication, the majority (63%) had been taking the medication for less than one year. Previous trials

with other medications were common. Among those youth currently prescribed medication, estimates of the duration of time between symptom onset and initiation of pharmacological treatment ranged from 7 months to 10 years (m = 3.1 years, sd = 2.9 years)[4].

In addition to pharmacological treatment, 74% of the youth in the OCD group were currently receiving some form of psychological treatment. The most common therapies were supportive therapy, cognitive-behavioural therapy, and family therapy.

See Appendix F for a vignette describing a "typical" participant in the OCD group.

[4] This information was available for 18 of the 31 youth in the OCD group.

b) Clinical Control (CC) Group

This group consisted of 11 clinically-referred youth (9 males, 2 females) who had never met diagnostic criteria for OCD or displayed obsessions or compulsions, as judged by the referring paediatric psychiatrist, paediatric psychologist, or paediatrician. Eighteen percent (18%) of the youth in the CC group participated in this study while receiving inpatient psychiatric treatment at the Jack Ledger Child/Adolescent Psychiatric Unit, Queen Alexandra Centre for Children's Health, Victoria, British Columbia. Appendix G presents the primary diagnoses and comorbid conditions of youth in the CC group.

The average age of onset of the current difficulty was 5.7 years (*sd* = 3.2). There were no gender differences in terms of average age of symptom onset (males 5.8 years, *sd* = 3.3; females 5.5 years, *sd* = 3.5). At the time of this study, 36% of the youth in the CC group were prescribed psychoactive medications. Psychostimulants (e.g., ritalin) were the most commonly prescribed medications; other medications included anti-depressants (e.g., paroxetine and welbutrin), risperidone, and clonidine. All of the youth in this group who were receiving pharmacological treatment had been taking the medication for less than four months.

In addition to pharmacological treatments, all of the participants in this group were receiving some form of psychological therapy, most commonly a combination of individual supportive therapy, group therapy, and family therapy.

See Appendix F for a vignette describing a "typical" participant in the clinical control group.

c) Normal Control (NC) Group

This group consisted of 30 normally-developing youth (19 males, 11 females) who met the following criteria: 1) never been referred to a neurologist, psychologist, or psychiatrist, 2) never been diagnosed with a psychiatric disorder or learning disability, 3) never failed a grade, 4) never had a head injury resulting in loss of consciousness or hospitalisation.

2.2 Procedure

This study was approved by the Ethics Committee for Research Involving Human Participants at the University of Victoria and the Queen Alexandra Centre for Children's Health Research Committee. Paediatric psychiatrists, paediatric psychologists and paediatricians from Vancouver Island and Vancouver, B.C. were sent information about the purpose of the study and the procedure for referring youth for the OCD and CC groups (see Appendices H and I). Potential participants were asked whether the author might contact them at a later date, at which time they were free to accept or decline participation. Participants in the NC group were recruited through advertisements which were printed in community newsletters and posted in public buildings (i.e., recreation centres, libraries, hospitals, and the University of Victoria). Youth and their parents read and signed an informed consent form prior to participation (see Appendices J and K for Youth and Parent Consent Forms). The youth were then individually administered the assessment measures by the researcher. The order of administration of the measures was standardised (see Appendix L). The duration of the sessions was two to three hours and

youth were paid an honorarium of $10. Parents completed and returned the parent-report measures.

2.3 Measures

a) Youth Measures

Youth were administered the **Survey Form of the Leyton Obsessional Inventory – Child Version (SLOI-CV)** according to the standardised procedure (see Appendix M). Youth were asked to read each of the 20 statements and then indicate whether each statement was "true" or "false" by circling the appropriate response (i.e., Total Yes score is the number of "true" statements). For those statements which were endorsed as "true", youth were then asked to indicate the degree of interference associated with that symptom on a four-point scale, ranging from 0 to 4 (i.e., ratings for each item were summed to provide a total Interference score). For youth with suspected reading difficulties, the items of the SLOI-CV were read aloud by the examiner, and the youth were asked to respond verbally. Following the standardised administration, the examiner queried each statement endorsed as "true" and asked the youth to describe these particular thoughts or behaviours in order to provide clarity. In light of the recommendation by Flament et al (1988) that the Total Interference score is a more sensitive indicator of psychopathology than the Total Yes score, only the Total Interference score of the SLOI-CV was considered in the analyses.

Youth were asked to complete the **Youth Self Report (YSR)**, a standardised measure of problem behaviour in children and adolescents between the ages of 11 and 18

years. The YSR is essentially identical to the parent-rated Child Behaviour Checklist (CBCL) with the exception that it is a self-rated scale for youth and is worded in the first person (e.g., "I act too young for my age"). The first section of this measure contains items regarding activities and social competence which are used to derive scores on the Activity Competence, Social Competence and Total Competence scales. The second section contains 103 problem items and 16 socially desirable items which are rated on a scale from 0 to 3 (0 - not true, 1 – somewhat or sometimes true, 2 – very true or often true) from which the syndrome and total problem scales are derived. The eight syndrome scales are: *Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behaviour, and Aggressive Behaviour*. The Withdrawn, Somatic Complaints and Anxious/Depressed syndrome scales contribute to the overall Internalising score, while the Delinquent Behaviour and Aggressive Behaviour syndrome scales contribute to the overall Externalising score. The Total Problem score is a summation of the scores on all of the problem items except the 16 socially desirable items. For the purposes of this study, the Internalising, Externalising and Total Problem scores were primarily utilised in the analyses, although two of the syndrome scales (e.g., Anxious/Depressed and Thought Problems) were included in select analyses.

The YSR has been shown by the authors to possess good psychometric properties (Achenbach & Edelbrock, 1987). One week test-retest reliabilities for the Internalising, Externalising, and Total Problem scores were .80, .81, and .79, respectively. Cronbach's alphas were derived separately for males and females; for the Internalising score, they

were .89 for males and .91 for females, alphas for the Externalising score were .89 for both males and females, and alphas for the Total Problem score were .95 for both genders. According to the authors (Achenbach & Edelbrock, 1987), the content validity of the YSR is supported by the ability of most items to discriminate significantly between demographically-matched referred and non-referred youth. Criterion-related validity is supported by the ability of the YSR's quantitative scale scores to discriminate between referred and non-referred youth after demographic effects were partialled out.

The **Children's Social Desirability Questionnaire (CSDQ**; Crandall, Crandall & Katkovsky, 1965), which continues to be the most commonly used measure of social desirability in children and adolescents, was administered to participants to determine the extent to which social desirability influences reports on the SLOI-CV and YSR. This measure consists of 28-items (see Appendix N) which are read by the youth and require a true/false response (e.g., "When you make a mistake, do you always say that you are wrong?", "Do you always listen to your parents?", "Have you ever borrowed something without asking first?"). Separate norms for boys and girls are available for children from grade three to grade 12. Crandall and colleagues (1965) reported that the uncorrected split-half (odd-even) reliability coefficients ranged from .69 to .90 for males and females at various grade levels. One-month test-retest reliability was .90. Girls obtained higher overall scores on the CSDQ than boys and there was a general tendency for socially desirable responses to decrease with age for both sexes.

The Full Scale Intelligence Quotient (FSIQ) of the **Wechsler Intelligence Scale for Children - Third Edition (WISC-III;** Wechsler, 1991), **Wechsler Adult**

Intelligence Scale – Revised (WAIS-R; Wechsler, 1981), or **Wechsler Adult Intelligence Scale-Third Edition (WAIS-III**, Wechsler, 1997) was used as an estimate of psychometric intelligence[5]. The WISC-III is appropriate for children aged 6 to 16 years, while the WAIS-R and its revision, the WAIS-III, provides norms for adults aged 16 years and older. The FSIQ is a norm-derived standard score (i.e., mean of 100, standard deviation of 15) reflecting the average score across individual subtests. Based on theoretical grounds, the subtests are used to form two composite subscales: the verbal intellectual quotient (VIQ) and the performance intellectual quotient (PIQ). Additional factor scores are provided for the WISC-III and WAIS-III. The psychometric properties of the Wechsler scales have been widely researched, and are comprehensively reported in the test manuals (Wechsler, 1981, 1991, 1997).

b) Parent Measures

Parents were administered the **Survey Form of the Leyton Obsessional Inventory – Parent Version (SLOI-PV)** according to the same procedure outlined for the SLOI-CV (see Appendix M). Previous research with the SLOI-PV demonstrated that this measure possesses high internal reliability, with a Cronbach's alpha of 0.94 (Janzen, et al., 1994). As with the child version of this scale, only the total Interference scores were utilised in the analyses.

[5] The version of the Wechsler Intelligence Scale administered was dependant on the age of the youth and the date of participation in the study. The majority of the youth (93%) were administered the WISC-III.

The **Child Behaviour Checklist (CBCL)** is the most frequently cited measure in studies of child psychopathology (Spreen & Strauss, 1998). In this study, parents completed the version of the CBCL appropriate for rating the problem behaviours of children aged 4 to 18 years (CBCL/4-18; Achenbach, 1991a). This measure, which corresponds with the YSR, consists of 113 problem items assessed over the last 6 months. Each item is rated on a three-point scale (0 – not true, 1 – somewhat or sometimes true, 2 – very true or often true). The CBCL syndrome scales are the same as the YSR, and include: *Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems Attention Problems, Delinquent Behaviour and Aggressive Behaviour.* Also similar to the YSR, the syndrome scales are grouped into two broad-band factors: Internalising (Withdrawn, Somatic Complaints, and Anxious/Depressed) and Externalising (Delinquent Behaviour and Aggressive Behaviour). A Total Problem score may also be derived. In addition, the CBCL contains three Competency Scales, allowing for the calculation of Activities, Social and Academic Competency scores. For the purposes of this study, the Internalising, Externalising and Total Problem scores were primarily utilised in the analyses, and two of the syndrome scales (e.g., Anxious/Depressed and Thought Problems) were used in select analyses.

The authors have established that the CBCL displays adequate reliability and validity (Achenbach & Edelbrock, 1983). One-week retest reliability for the CBCL/4-18 was .90 for males and .88 for females, with minimal variability of correlations across scales. One-year and two-year stabilities were high (mean r = .72 and .71, respectively). Validity for the CBCL is demonstrated by the factor-analytic scale construction and is

generally good, especially for the externalising-internalising dimension. Concurrent validity was established by comparing CBCL scores with similar scales on the Conners Parent Questionnaire and the Quay-Peterson Revised Behaviour Problem Checklist; correlations between these measures range from .67 to .88.

Parents also completed a parent version of the **Children's Social Desirability Questionnaire (CSDQ-PV**; Crandall et al., 1965) in which the items were reworded for administration to parents (see Appendix O). This measure consists of 28 items which are read by the parents and they are asked to indicate whether each statement is true or false for their child (e.g., "When my child makes a mistake, s/he always says that s/he's wrong", "My child never borrows something without asking first"). Because the parent-report version of this measure is experimental, there is no available psychometric data.

Finally, parents completed a **brief questionnaire** designed specifically for this study concerning family history of emotional, psychological and psychiatric problems, as well as the parents' occupations (see Appendix P). Parent occupations were used to determine socio-economic status using the Hollingshead Occupational Scale (Hollingshead, 1975).

CHAPTER 3

Results

The following chapter is divided into two sections. The first section provides descriptive data regarding the demographic variables and measures for the entire sample, including the psychometric properties of the SLOI-CV and SLOI-PV. The second section is comprised of the results of the statistical analyses pertaining to the central hypotheses. This entails a reiteration of each hypothesis, a description of the statistical analyses used to test the hypothesis, and the relevant results.

To adjust for experiment-wise error (i.e., adjustment for multiple comparisons), the *p* value for determining statistical significance was set at .01. The significance for post-hoc tests, specifically Tukey's Honestly Significant Difference (HSD) test was maintained at the conventional level of .05. Correlational effect size was defined according to Cohen's (1988) criteria: $r = .10$, $r = .30$, and $r = .50$ are considered small, medium, and large correlations, respectively. Statistics were conducted using SPSS for Windows Version 8.0. Given that there was minimal missing data and the pattern of missing data points was random, no special procedures were implemented to handle missing data.

3.1 Descriptive Data for the Entire Sample

3.1.1 Demographic Variables

Table 1 presents the demographic data for the entire sample. Youth included in the CC and NC groups were matched on a case-by-case basis with youth in the OCD

group for age, gender, gender of participating parent, and family socioeconomic status. Socioeconomic status was coded according to the Hollingshead Occupational Scale (Hollingshead, 1975)[6]. There were no significant group differences on these demographic variables. However, one-way ANOVA results indicated that the groups differed in terms of overall level of intelligence as assessed by the Wechsler Scales of Intelligence (i.e., WISC-III, WAIS-R, or WAIS-III). More specifically, significant group differences were found for FSIQ [$F(2,69) = 12.9$, $p < .001$], PIQ [$F(2,69) = 12.9$, $p < .001$] and VIQ [$F(2,69) = 7.48$, $p \leq .001$). Post-hoc analyses (Tukey's HSD) demonstrated that the OCD group obtained significantly lower VIQ, PIQ and FSIQ scores than the NC Group. The OCD group also obtained significantly lower scores than the CC Group on PIQ and FSIQ, but the two groups did not differ on VIQ.

Of the total sample, 90% of the participating parents were mothers. Chi-square analyses revealed that the groups did not differ in terms of the ratio of mothers to fathers as respondents [x^2 (2, $N = 72$) = .829, $p = .661$]. There were no significant differences between mother and father informants in ratings of the youth's obsessive-compulsive symptoms (SLOI-PV Interference Score), general psychopathology (CBCL Total, Internalizing, and Externalizing scores) or social desirability (CSDQ-PV). Therefore, the

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[6] This scale ranks various occupations from 1 to 9. Examples of specific occupations and their rankings according to the Hollingshead Occupational Scale are provided in Appendix Q. When the occupations of both parents were provided, an average Hollingshead score was coded. For the total sample, Hollingshead scores ranged from 2 to 8, with a median score of 6 (i.e., Technicians, Semi-Professionals, Small Business Owners). Twenty-eight (39%) of the parents were not gainfully employed at the time of the study: 17 were homemakers, six were students, two were receiving disability benefits, two were unemployed, and one parent was a volunteer worker. Four parents were described as "self-employed", but not enough information was provided to assign a Hollingshead score.

ratings provided by mothers and fathers were not separately analyzed in the subsequent analyses.

Table 1 - Demographic Characteristics of the Total Sample

	OCD Group (n = 31)	Clinical Control Group (n = 11)	Normal Control Group (n = 30)
Youth Age (in years)			
Mean	12.8	12.8	12.8
SD	2.4	2.6	2.3
Youth Gender			
Male	19	9	18
Female	12	2	12
Wechsler Scale FSIQ			
Mean	94.9	107.0	111.1
SD	11.8	16.1	12.3
Wechsler Scale PIQ			
Mean	94.1	106.7	110.1
SD	12.4	12.7	12.9
Wechsler Scale VIQ			
Mean	96.7	106.2	110.5
SD	13.6	17.8	13.0
Participating Parent			
Mother	29	10	26
Father	2	1	4
Parent Psychological/ Psychiatric/Emotional Problem (Percentage)	77.4	72.7	53.3
Socioeconomic Status			
Mean	5.6	5.8	6.3
SD	2.1	2.4	1.4

Participating parents were asked to indicate whether they themselves or their child's other parent had ever experienced an emotional, psychological, or psychiatric problem for which professional help was sought. A total of 41 (57%) of the mothers and 27 (38%) of the fathers reportedly sought professional help for emotional, psychological or psychiatric problems. Amongst both the mothers and fathers, the most common problems were depression and marital/relationship difficulties. Less commonly reported problems were obsessive-compulsive disorder, other anxiety disorders, occupational stress, and substance abuse. Of note is the fact that three of the mothers (10%) and two of the fathers (6%) of youth in the OCD group reportedly sought professional help due to their own OCD symptoms, while none of the parents in the CC or NC groups reported seeking help for this disorder.

3.1.2 Assessment Measures

Table 2 presents the descriptive information for the psychometric measures. Table 3 presents the intercorrelations of the psychometric measures.

Table 2 - Descriptive Information For Psychometric Measures

	OCD M (SD)	CC M (SD)	NC M (SD)	Total M (SD)
Wechsler Scale VIQ	96.7 (13.6)	106.2 (17.8)	110.5 (12.6)	103.9 (15.2)
Wechsler Scale PIQ	94.1 (12.4)	106.7 (12.7)	110.1 (12.9)	102.7 (14.6)
Wechsler Scale FSIQ	94.9 (11.8)	107.0 (16.1)	111.1 (12.3)	103.5 (14.7)
SLOI-CV Interference	13.1 (10.8)	10.5 (9.0)	6.8 (4.9)	11.0 (12.6)
YSR Activities	46.0 (9.4)	43.3 (10.3)	48.5 (7.7)	46.7 (8.9)
YSR Social Competence	42.9 (9.7)	42.3 (9.2)	49.2 (7.8)	45.7 (9.2)
YSR Withdrawn	56.7 (9.5)	57.1 (9.1)	52.2 (5.2)	45.7 (9.2)
YSR Somatic Complaints	59.7 (10.2)	59.3 (11.3)	54.2 (5.6)	57.3 (9.1)
YSR Anxious/Depressed	60.7 (10.3)	58.1 (9.3)	52.1 (5.4)	56.7 (9.2)
YSR Social Problems	59.8 (9.5)	57.9 (9.6)	52.5 (4.7)	56.5 (8.5)
YSR Thought Problems	59.6 (9.0)	57.1 (8.0)	53.0 (6.0)	56.5 (8.2)
YSR Attention Problems	58.0 (9.8)	58.5 (9.2)	52.3 (3.9)	55.7 (8.2)
YSR Delinquent Behavior	55.4 (7.4)	55.5 (4.8)	52.3 (4.8)	54.2 (6.2)
YSR Aggressive Behavior	56.7 (8.1)	58.9 (5.6)	51.7 (3.9)	55.0 (6.8)
YSR Total	56.2 (15.3)	58.5 (13.4)	43.9 (11.4)	51.5 (14.8)
YSR Internalizing	57.5 (14.4)	54.1 (15.9)	45.8 (11.2)	52.1 (14.3)
YSR Externalizing	51.1 (14.3)	57.3 (5.7)	44.0 (9.6)	49.1 (12.3)
CSDQ-CV Total	8.7 (5.8)	7.9 (3.4)	11.8 (4.5)	9.9 (5.2)
SLOI-PV Interference	20.4 (13.5)	9.2 (7.3)	2.0 (2.4)	11.0 (12.6)
CBCL Activities	45.6 (8.7)	48.0 (8.9)	51.0 (5.0)	48.3 (7.6)
CBCL Social Competence	35.6 (11.3)	33.7 (10.9)	50.5 (4.8)	41.8 (11.7)
CBCL Academic Competence	39.5 (8.6)	36.1 (7.5)	49.7 (5.5)	43.6 (9.1)
CBCL Withdrawn	64.0 (9.9)	71.9 (17.4)	52.9 (7.2)	60.6 (12.5)
CBCL Somatic Complaints	65.3 (9.4)	66.4 (13.3)	53.8 (4.6)	60.7 (10.3)

Table 2 (cont'd) - Descriptive Information For Psychometric Measures

	OCD M (SD)	CC M (SD)	NC M (SD)	Total M (SD)
CBCL Anxious/Depressed	74.4 (11.8)	71.7 (15.8)	52.9 (6.4)	65.0 (14.8)
CBCL Social Problems	66.8 (11.7)	70.9 (9.8)	51.7 (3.8)	61.2 (12.0)
CBCL Thought Problems	73.2 (9.7)	70.5 (11.4)	52.5 (5.7)	64.2 (13.1)
CBCL Attention Problems	70.6 (10.9)	75.7 (12.5)	52.1 (4.5)	63.7 (13.4)
CBCL Delinquent Behavior	60.5 (10.1)	66.1 (13.6)	53.0 (5.5)	58.2 (10.2)
CBCL Aggressive Behavior	65.8 (10.2)	69.8 (12.8)	51.9 (3.6)	60.6 (11.3)
CBCL Total	71.9 (7.5)	73.5 (13.1)	45.0 (10.2)	60.9 (16.5)
CBCL Internalizing	71.2 (8.9)	70.9 (15.4)	46.7 (10.9)	60.9 (16.2)
CBCL Externalizing	63.8 (8.5)	67.9 (12.5)	45.1 (9.7)	56.7 (13.8)
CSDQ-PV Total	3.9 (2.9)	2.6 (2.4)	7.8 (4.9)	5.3 (4.3)

Table 3 - Intercorrelations Of Psychometric Measures

	VIQ	PIQ	FSIQ	SLOI-CV	YSR-TOT	CSDQ-CV	SLOI-PV	CBCL-TOT	CSDQ-PV
VIQ		.61**	.91**	-.15	-.15	-.05	-.27*	-.30**	.14
PIQ			.88**	-.04	-.10	.01	-.29*	-.32**	.19
FSIQ				-.11	-.14	-.03	-.31**	-.35**	.18
SLOI-CV					.59**	-.43**	.55**	.37**	02
YSR TOT						-.75**	.42**	.53**	-.18
CSDQ-CV							-.39**	-.47**	.27*
SLOI-PV								.63**	-.26*
CBCL-TOT									-.66**
CSDQ-PV									

* $p < .05$

** $p < .01$

3.1.2 a) Psychometric Properties of the SLOI-CV and SLOI-PV

SLOI-CV

First, the relationships between the SLOI-CV and demographic variables were explored utilizing *t*-tests and Pearson product moment correlations. Across all three groups, there were no gender differences in ratings on the SLOI-CV (t (70) = -.782, p = .437). Chronological age was not significantly correlated with scores on the SLOI-CV (r = .133). Correlations between SLOI-CV scores and Wechsler FSIQ (r = -.108, p = .368) and average family socioeconomic status (r = .057, p = .660) were non-significant.

To further assess the influence of demographic factors on the SLOI-CV ratings of the OCD group alone, zero-order correlations were analyzed to determine whether there was a simple relationship between SLOI-CV Interference scores, age, and Wechsler Full Scale Intelligence Quotient (FSIQ). The results for the OCD group were consistent with those from the entire sample; SLOI-CV scores were not significantly related to age (r = .129, p = .489) or Wechsler FSIQ (r = .271, p = .140). There were no gender differences in ratings on the SLOI-CV [t (29) = -.771, p = .447) within the OCD group.

Next, a simultaneous multiple regression was performed to determine if age, gender and intelligence combined could predict SLOI-CV Interference scores for the OCD group and to investigate their unique predictive contributions. The dependant variable, SLOI-CV, was simultaneously regressed on age, gender and intelligence. The resulting model was non-significant (r^2 = .093, p = .442), indicating that only 9% of the variance in SLOI-CV Interference scores was predicted by these demographic variables.

Second, the relationships between SLOI-CV scores and OCD-illness variables were analyzed for the OCD group utilizing *t*-tests and Pearson product moment correlations. There was no significant difference in SLOI-CV scores between the youth in this group diagnosed with OCD and those with OCB (t (29) = -.694, p = .493). A significant relationship (r = .68, p < .01) was found between SLOI-CV scores and the total number of obsessive and compulsive symptoms rated positively by the referring professional (i.e., paediatric psychiatrist, paediatric psychologist or paediatrician). Youth in the OCD group who were currently prescribed medication (n = 21) were then compared with those who were not presently taking medication (n = 9); there was no difference in SLOI-CV scores between youth who were and were not taking medication (t(28) = -1.182, p = .247).

Third, principal components factor analysis of the SLOI-CV was performed to determine the underlying factor structure of this measure. The results revealed a single factor solution, thus, failing to replicate the four-factor solution reported by Berg et al (1988).

Fourth, in an effort to assess the construct validity of this scale, the relationships between the SLOI-CV and measures of depression, anxiety and thought disturbance were analyzed. Highly significant correlations of .627 (p <.001) and .701 (p<.001) were found between the SLOI-CV and the Youth Self Report Anxious/Depressed and Thought Problems subscales, respectively. These findings appear to support the construct validity of this scale.

Finally, the pattern of endorsement of SLOI-CV items across all three groups was analyzed to determine whether some items were particularly likely to be endorsed by youth in each of the three groups. Table 4 shows that the OCD group most commonly endorsed items related to feeling compelled to perform certain acts, repeating behaviors, experiencing repetitive or obsessive thoughts, and difficulties with decision making. The CC group most commonly endorsed items related to experiencing repetitive thoughts, getting angry at other students, and having trouble with decision making. The item most commonly endorsed by the NC group related to difficulties making decisions. The SLOI-CV Interference score demonstrated high internal consistency with a Cronbach's alpha of 0.84 (Cronbach, 1951).

Table 4 - Endorsement of SLOI-CV Items By Group

	Mean SLOI-CV Interference score (0-4)		
	OCD	CC	NC
SLOI-CV Items			
1. Do certain things (have to)	1.35	.64	.47
2. Repeated thoughts or words	.97	1.36	.87
3. Check several times (have to)	.77	.45	.20
4. Hate dirt and contamination	.61	.27	.43
5. Something touched is spoiled	.61	.73	.07
6. Worry about being clean enough	.58	.45	.27
7. Fussy about hands	.48	.00	.10
8. At night, put away things just so	.32	.09	.17
9. Angry if someone messes desk	.39	2.00	.47
10. Spending extra time on homework	.32	.09	.38
11. Repetition until correct	1.16	.64	.37
12. Need to count several times	.48	.55	.60
13. Trouble finishing schoolwork	1.10	.64	.27
14. Favorite or special number	.55	.36	.20
15. A bad conscience but no one else	.48	1.00	.17
16. Doing things in an exact manner	.87	.27	.43
17. Indecisive (a frequent problem)	.97	1.09	.90
18. Lack of confidence (repetition)	.61	.45	.20
19. Talk or move to avoid bad luck	.23	.00	.10
20. Special number or word to avoid	.23	.36	.13

SLOI-PV

Following the same sequence of analyses that were conducted with the SLOI-CV, the relationships between the SLOI-PV and demographic variables were initially explored utilizing *t*-tests and Pearson product moment correlations. For the entire sample, parent-ratings on the SLOI-PV were not significantly different for male or female youth (t (70) = -.708, p = .481). Youth's chronological age was not significantly correlated with parent-rated scores on the SLOI-PV (r = .20). Similarly, average family socioeconomic status was unrelated to SLOI-PV scores (r = -.115, p = .375). However, there was a moderate inverse relationship between scores on the SLOI-PV and the youth's Wechsler FSIQ (r = -.312, p <.01), suggesting that youth with higher intellectual ability received lower ratings on the SLOI-PV and those with lower intellectual abilities received higher SLOI-PV ratings.

To further assess the influence of demographic variables on SLOI-PV ratings for the OCD group, zero-order correlations were analyzed to assess whether there was a simple relationship between SLOI-PV scores and the youth's age and Wechsler Full Scale Intelligence Quotient (FSIQ). The results for the OCD group indicated that SLOI-PV scores were not significantly related to the youth's age (r = .225, p = .223). In contrast to the significant relationship found between the SLOI-PV and youth's intellectual abilities in the total sample, the relationship between the SLOI-PV and Wechsler FSIQ was not significant when the OCD group was considered alone (r = .126,

$p = .500$). There were no differences between parent ratings on the SLOI-PV for male or female youth with OCD (t (29) = -1.013, $p = .320$).

Next, a simultaneous multiple regression was performed to determine if the youth's age, gender and intelligence combined could predict SLOI-PV scores for the OCD group and to investigate their unique predictive contributions. The dependent variable, SLOI-PV, was simultaneously regressed on the youth's age, gender and intelligence. The resulting model was non-significant ($r^2 = .077$, $p = .529$), indicating that approximately 8% of the variance in SLOI-PV scores was predicted by the youth's demographic variables (i.e., age, intelligence and gender).

Second, the relationships between SLOI-PV scores and OCD-illness variables were analyzed for the OCD group utilizing t-tests and Pearson product moment correlations. SLOI-PV scores did not differ for the youth in this group who were diagnosed with OCD and those diagnosed with OCB (t (29) = .128, $p = .899$). Consistent with the findings utilizing the SLOI-CV, a significant relationship ($r = .57$, $p < .01$) was found between the parent-rated SLOI-PV and the youth's total number of obsessive-compulsive symptoms as rated by the referring professional. Within the OCD group, there was no difference in SLOI-PV scores for youth who were prescribed medication for their symptoms and those who were not prescribed medication (t (28) = -1.025, $p = .314$).

Third, exploratory factor analysis of the SLOI-PV was performed to evaluate the underlying factor structure of this measure and in an attempt to replicate the findings of Janzen et al. (1994) in documenting four conceptually valid SLOI-PV factors in youth with Tourette's syndrome and matched normal controls. The results of the present

analyses suggested a single factor solution, thus failing to replicate the findings of Janzen et al (1994).

Fourth, high Pearson product moment correlations between the SLOI-PV and the CBCL Anxious/Depressed (r = .381, p = .001) and Thought Disorder syndrome scales (r = .468, p <.001) support the construct validity of the SLOI-PV.

Finally, endorsement of individual SLOI-PV items were analyzed for all three groups to explore group-specific trends in the ratings. As shown in Table 5, parents of the OCD group most commonly endorsed items related to the youth feeling compelled to perform certain acts, experiencing obsessive thoughts, checking and counting rituals, dislike of dirt and dirty things, feeling guilty, repetitive behaviors, and difficulties with decision making. The parents of the CC group most commonly endorsed items related to youth experiences of repetitive thoughts, feeling that something is spoiled if touched or used by another, feeling compelled to perform certain behaviors, and having trouble with decision making. None of the items were commonly endorsed by parents of the NC group. The Cronbach's alpha (Cronbach, 1951) based on all of the SLOI-PV items was 0.94, suggesting that this measure possesses high internal consistency.

Table 5 - Endorsement of SLOI-PV Items By Group

	Mean SLOI-PV Interference score (0-4)		
	OCD	CC	NC
SLOI-PV Items			
1. Do certain things (have to)	1.45	1.00	.17
2. Repeated thoughts or words	1.80	1.18	.07
3. Check several times (have to)	1.10	.64	.07
4. Hate dirt and contamination	1.10	.18	.17
5. Something touched is spoiled	1.27	1.09	.17
6. Worry about being clean enough	.84	.00	.06
7. Fussy about hands	1.03	.18	.03
8. At night, put away things just so	1.00	.27	.03
9. Angry if someone messes desk	.90	.91	.31
10. Spending extra time on homework	.54	.00	.10
11. Repetition until correct	1.26	.09	.03
12. Need to count several times	.83	.19	.00
13. Trouble finishing schoolwork	1.23	.73	.03
14. Favorite or special number	.60	.00	.00
15. A bad conscience but no one else	1.06	.64	.13
16. Doing things in an exact manner	1.35	.82	.23
17. Indecisive (a frequent problem)	1.29	1.00	.28
18. Lack of confidence (repetition)	.68	.27	.07
19. Talk or move to avoid bad luck	.64	.00	.03
20. Special number or word to avoid	.55	.00	.03

3.1.2 b) Group Differences for Youth- and Parent-Report Measures

Youth-Report Measures

This section considers group differences on the youth-report measures, specifically, the SLOI-CV, YSR, and the CSDQ-CV. Table 6 details the group means and standard deviations for these youth–completed measures. Group differences were analyzed using one-way ANOVA and Tukey's HSD test for post-hoc analyses. The results revealed group differences approaching significance on the SLOI-CV Interference score ($F(2, 69) = 4.16$, $p = .02$): the OCD group obtained significantly higher scores than the NC group ($p = 0.15$), whereas the CC group's mean score did not differ significantly from the means of the other two groups.

Significant group differences were evident on YSR Total scores ($F(2, 69) = 8.11$, $p < .01$), Internalizing scores ($F(2, 69) = 5.92$, $p < .01$), and Externalizing scores ($F(2, 69) = 6.14$, $p < .01$). Post-hoc analyses revealed that the NC group scored significantly lower than the OCD group on each of these three scales ($p \leq .05$). The NC group obtained significantly lower YSR Total scores ($p < .01$) and Externalizing scores relative to the CC group ($p < .01$), but the groups did not differ significantly in terms of Internalizing scores. There was no significant difference between the OCD and CC groups on these YSR variables.

Overall group differences on the CSDQ-CV approached significance ($F(2, 69) = 4.01$, $p = .023$); the NC youth scored significantly higher than the OCD group ($p < .05$)

whereas the CC group mean did not differ significantly from the means of the other two groups.

Table 6 - Group Means and Standard Deviations on Youth-Report Measures

	OCD Group		CC Group		NC Group	
	M	*SD*	*M*	*SD*	*M*	*SD*
SLOI-CV	13.16	11.08	10.55	8.99	6.77	4.92
YSR Total	56.23	15.32	58.55	13.41	43.93	11.35
YSR Internalizing	57.45	14.37	54.10	15.90	45.80	11.22
YSR Externalizing	51.06	14.32	57.27	5.70	44.03	9.56
CSDQ-CV	8.71	5.78	7.91	3.45	11.83	4.54

Parent-Report Measures

As an accompaniment to the previous section, this section describes group differences on the parent-report measures (i.e., SLOI-PV, CBCL, and CSDQ-PV. Table 7 provides the group means and standard deviations for the parent-report measures. Group differences were analyzed using one-way ANOVA and post-hoc analyses were conducted with Tukey's HSD test. The results revealed significant group differences on the SLOI-PV ($F(2,69) = 29.4$, $p < .001$); parents of the OCD group provided higher ratings on this scale than the parents of youth in the other two groups ($p < .01$ for both). There was no meaningful difference between the SLOI-PV scores for the CC and NC groups.

Significant group differences were found for the CBCL Total score ($F(2,69) = 70.3$, $p < .001$), Internalizing score ($F(2,69) = 43.7$, $p < .001$) and Externalizing score ($F(2,69) = 36.9$, $p < .001$). For each of these scales, the NC group obtained significantly lower scores relative to the OCD and CC groups ($p < .01$ for both). There was no difference between the OCD and CC groups for Total, Internalizing or Externalizing total scores.

A significant group difference was found on the CSDQ-PV ($F(2,69) = 11.11$, $p < .001$). The NC group obtained significantly higher scores than the other two groups ($p < .01$), whereas there was no difference in CSDQ-PV scores between the OCD and CC groups.

Table 7 - Group Means and Standard Deviations on Parent-Report Measures

	OCD Group		CC Group		NC Group	
	M	*SD*	*M*	*SD*	*M*	*SD*
SLOI-PV	20.42	13.47	9.18	7.25	2.00	2.38
CBCL Total	71.87	7.47	73.45	13.11	45.03	10.17
CBCL Internalizing	71.16	8.90	70.91	15.36	46.73	10.93
CBCL Externalizing	63.81	8.55	67.91	12.51	45.13	9.73
CSDQ-PV	3.94	2.86	2.64	2.42	7.80	4.91

3.1.2 c) Agreement Between Youth-Report and Parent-Report

To test the level of agreement between youth self-report and parent-report, as well as the effects of youth gender and age on informant agreement, Pearson product moment correlations were computed for the obsessive-compulsive, general psychopathology, and social desirability scales. The SLOI-CV and SLOI-PV Interference scores were highly correlated (r = .549, p <.001). A significant correlation was also found between the YSR and CBCL Total scores (r = .529, p <.001). The relationship between the CSDQ-CV and CSDV-PV scores approached statistical significance (r = .270, p = .022).

As shown in Table 8, correlations between youth self-report and parent-report scales were higher for females than males in all three domains (i.e., obsessive-compulsive symptoms, general psychopathology, and social desirability), although the difference in correspondence between youth and parent ratings was statistically significant only for the social desirability scale (females: r = .74; males: r = .15).

In order to explore the influence of the youth's age on informant agreement, youth were dichotomized into two groups using the median chronological age as a cut-off point (e.g., 12 years or younger versus older than 12 years). As shown in Table 9, there were no age differences in agreement on measures of obsessive-compulsive symptoms. Agreement between youth and parent ratings was better for youth over age 12 years (i.e., Older Youth) than for youth under 12 years (i.e., Younger Youth) on measures of social desirability. A trend in the opposite direction was found for ratings on the general psychopathology scale, although this difference was not statistically significant.

Table 8 – Correlations Between Parent and Child Measures: By Gender

	Males	Females
SLOI-CV & SLOI-PV	.51	.64
YSR & CBCL	.51	.65
CSDQ-CV & CSDQ-PV	.15*	.74*

* Difference between correlations is statistically significant ($p < .05$)

Table 9 – Correlations Between Parent and Child Measures: By Age

	Younger (≤ 12 years)	Older (>12 years)
SLOI-CV & SLOI-PV	.51	.55
YSR & CBCL	.62	.45
CSDQ-CV & CSDQ-PV	.19*	.47*

* Difference between correlations is statistically significant ($p < .05$)

3.2 Analyses Pertaining to the Central Hypotheses

Hypothesis #1 – The overall diagnostic accuracy of the SLOI-PV will be superior to that of the SLOI-CV in correctly classifying OCD participants.

Effective classification by a test involves standard measures of sensitivity, specificity, the predictive power of a positive test, the predictive power of a negative test, and the overall efficiency or "hit rate" (Baldessarini, Finkelstein & Arana, 1983; Gerardi, Keane, & Penk, 1989). Estimating these parameters first involves establishing an optimal cut-off score. For the entire sample, the range of scores on the SLOI-CV was 0 to 50, and the distributions for each group were overlapping (i.e., range for the OCD group was 0-50, range for CC group was 1-26, and range for the NC group was 0-17). The range of SLOI-PV scores across all participants was 0-52, and again, the distribution of scores for the groups were overlapping (i.e., range for the OCD group was 0-52, range for the CC group was 0-23, and range for the NC group was 0-10). Using the clinical cut-off score of 25 on the SLOI-CV, which was suggested by Flament et al (1988), 57% of the youth were correctly classified; the sensitivity of the instrument for OCD was 7%, the specificity 95%, its positive predictive power 50%, and its negative predictive power 57%. Given that the overall hit-rate using a SLOI-CV cut-off score of 25 was unacceptably low (e.g., only 57% of youth were accurately classified), the data was further examined to determine if the hit-rate could be improved by using a different cut-off score. Calculations for hit-rate, sensitivity, specificity, positive predictive value and negative predictive value were performed using various SLOI-CV cut-off scores and the results indicate that a SLOI-CV cut-off score of 15 optimises the overall classification

accuracy. Using the cut-off score of 15, the accuracy of classification rose to 68%; the sensitivity of the instrument for OCD was 39%, the specificity 90%, its positive predictive power 75%, and negative predictive power 66% (see Appendix R)

Hit-rate, sensitivity, specificity, positive predictive power and negative predictive power calculations were performed for a variety of cut-off scores on the SLOI-PV, and the optimal cut-off score (i.e., highest hit-rate) was found to be 15. Utilising this cut-off score, 81% of youth were correctly classified; the sensitivity of the instrument for OCD was 61%, the specificity 95%, its positive predictive power 91% and it's negative predictive power 77% (see Appendix R).

When the classification criteria was changed to scores of 15 or more on *either* the SLOI-CV or the SLOI-PV, 79% of youth were correctly classified. When the classification criteria was changed to scores of 15 or more on *both* the SLOI-CV and SLOI-PV, 71% were correctly classified.

To summarize, the first hypothesis was supported; the diagnostic accuracy of the SLOI-PV (hit rate of 81%), in terms of overall accuracy in classification, is higher than that of the SLOI-CV alone (hit rate of 68%) or both measures used in combination (hit rate of 71%). That is, the SLOI-PV is more accurate than the SLOI-CV in distinguishing youth with OCD from normally-developing youth and those with other psychological or psychiatric problems.

Hypothesis #2 – The addition of measures of general psychopathology (e.g., YSR and CBCL) and social desirability (e.g., CSDQ-CV and CSDQ-PV) to the SLOI-CV and SLOI-PV will not significantly improve the accuracy of group classification.

Classification procedures were utilised to determine whether the addition of measures of general psychopathology (e.g., YSR and CBCL) and social desirability (e.g., CSDQ-CV and CSDQ-PV) would improve group classification relative to the use of the obsessive-compulsive measures alone (e.g., SLOI-CV and SLOI-PV). A priori adjustments were made for unequal group sizes and initial analyses revealed that 38% of the total sample would be correctly classified into the OCD, CC or NC groups by chance alone. For the total sample of 72 participants, 50 (69.4%) were classified correctly by the SLOI-CV and SLOI-PV alone relative to correct classification of 58 participants (80.6%) by all of the predictor variables (e.g., SLOI-CV, SLOI-PV, YSR, CBCL, CSDQ-CV, and CSDQ-PV). Results of McNemar's repeated-measures chi-square analysis indicated that the improvement in classification with the addition of the measures of general psychopathology and social desirability was not statistically significant [x^2 (1, N = 72) = 3.5, $p > .05$)[7]. Therefore, the addition of the YSR, CBCL, CSDQ-CV and CSDQ-PV does not add substantially to the classification accuracy of the SLOI-CV and SLOI-PV in differentiating OCD youth from clinical and normal controls[8].

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[7] See Tabachnick & Fidell (1989), p. 546. The critical value of x^2 with 1 df at $\alpha = .05$ is 3.84. The obtained value does not exceed the critical value.

[8] As an exploratory analysis, this same analysis was conducted in the opposite direction to determine whether the addition of the SLOI-CV and SLOI-PV improved the overall classification accuracy of the YSR, CBCL, CSDQ-CV and CSDQ-PV. Results of McNemar's repeated measures chi-square analysis indicated that improvement in classification with the addition of the SLOI-CV and SLOI-PV was not statistically significant (x^2 (1, N = 72) = 1.33, $p > .05$). When the three groups were considered individually, the addition of the obsessive-compulsive measures resulted in more accurate classification of the CC group only (from 0% to 45% accuracy).

The classification accuracy of the obsessive-compulsive measures alone (i.e., SLOI-CV and SLOI-PV) was then compared with the classification accuracy of all six predictor variables (SLOI-CV, SLOI-PV, YSR, CBCL, CSDQ-CV, CSDQ-PV) for each of the three groups individually. The results revealed that 20 of the 31 youth in the OCD group (65%) were correctly classified, and when misclassifications occurred, these youth were most frequently assigned to the NC group. When utilising all six predictor variables, 26 of the 31 youth in the OCD group (84%) were correctly classified; misclassifications most commonly involved assignment to the CC group. Accuracy in classifying the CC group was poor (0%) when using only the obsessive-compulsive measures, but improved with the addition of the measures of general psychopathology and social desirability (46% accurately classified). The likelihood of the CC group being misclassified into the OCD or NC groups was approximately equal. Utilisation of the SLOI-CV and SLOI-PV alone resulted in correct classification of 100% of the NC group, whereas the addition of the general psychopathology and social desirability measures reduced the classification accuracy for this group to 90%, with the majority of the misclassifications resulting in assignment of the NC youth to the CC group.

In summary, the addition of the YSR, CBCL, CSDQ-CV and CSDQ-PV to the SLOI-CV and SLOI-PV did not significantly improve the accuracy in correctly assigning youth to one of the three groups (i.e., OCD, NC, or CC). These findings would suggest that the addition of the measures of general psychopathology and social desirability adds minimally to the classification accuracy of the obsessive-compulsive measures in categorising an unselected sample of youth. However, when the classification accuracy

for each of the three groups was considered, the addition of the other measures to the SLOI-CV and SLOI-PV substantially improved the categorisation of CC youth and minimally improved the categorisation of the OCD youth. The addition of measures of general psychopathology and social desirability to the obsessive-compulsive measures actually reduced the accuracy in identifying NC youth

3) Exploratory analyses of the specific behavioral dimensions along which the OCD, CC, and NC groups differ.

Following from the analyses of classification accuracy, the intent of this analysis was to find the behavioural dimensions along which the three groups can be differentiated from one another. A direct discriminant function analysis was performed using the variables SLOI-CV, SLOI-PV, YSR, CBCL, CSDQ-CV, and CSDQ-PV as predictors of membership in the three groups (i.e., OCD, CC and NC). Of the 72 total cases, two cases contained extreme outliers on at least one of the predictor variables (i.e., one case contained an extreme SLOI-CV score and the other case contained an extreme SLOI-PV score). As recommended by Tabachnick and Fidell (1989), efforts were made to reduce the influence of the outliers by changing the two outlying raw scores to one unit larger then the next highest score in the distribution (e.g., outlying SLOI-CV score of 50 was changed to 34 because the next highest score was 33). Only the discriminant function analyses were conducted using these transformed scores, given the known sensitivity of this form of analysis to outliers (Tabachnick & Fidell, 1989).

Two discriminant functions were calculated, with a combined x^2 (12) = 95.0, p <.001. After removal of the first function, there was still a strong association between groups and predictors, x^2 (5), p < .02. The two discriminant functions accounted for 91% and 9%, respectively, of the between-group variability. As shown in Figure 1, the first discriminant function maximally separates the NC group from the OCD and CC groups. The second discriminant function discriminates the CC group from the other two groups.

The loading matrix of correlations between predictors and discriminant functions, as seen in Table 8, suggests that the best predictors for distinguishing the NC group from the OCD and CC groups (first function) are CBCL Total score (parent-rated child psychopathology) and SLOI-PV Interference score (parent-rated OCD symptoms in youth). The NC group had lower Total scores on the CBCL (mean = 45.0) than the OCD group (*mean* = 71.9) and the CC group (*mean* = 73.5), and lower Interference scores on the SLOI-PV (*mean* = 2.0) than the OCD group (*mean* = 20.1) and CC group (*mean* = 9.2). Loadings less than .50 were not interpreted.

Figure 1 – Canonical Discriminant Functions

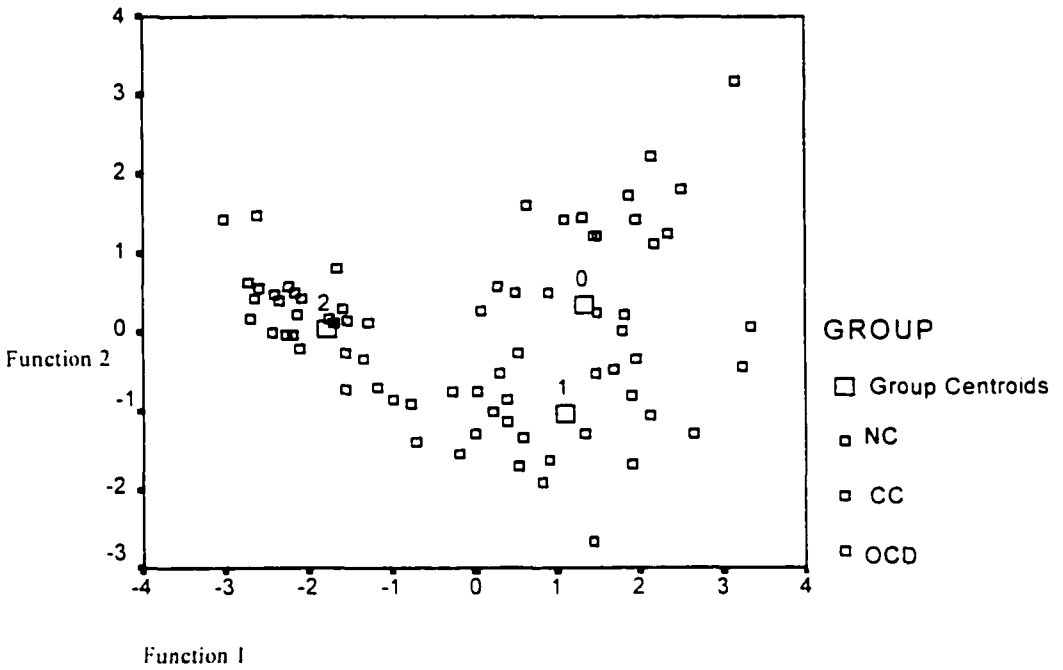

Table 10 - Results of Discriminant Function Analysis

	Correlations of predictor variables with discriminant functions		Pooled within-group correlations among predictors				
Predictor Variable	1	2	SLOI-PV	YSR	CBCL	CSDQ-CV	CSDQ-PV
SLOI-CV	.226	.140	.482	.574	.231	-.382	.191
SLOI-PV	.568	.744		.282	.343	-.303	.022
YSR	.308	-.188			.334	-.720	.040
CBCL	.919	-.311				-.386	-.518
CSDQ-CV	-.215	.160					.135
CSDQ-PV	-.354	.318					

One predictor, SLOI-PV Interference scores, had a loading in excess of .50 on the second discriminant function, which separates the CC group from the NC and OCD groups. Investigation of the standardised canonical discriminant function coefficients for SLOI-PV (r = 1.064) and CBCL Total scores (r = -.536) suggest that it is the difference between these two scores that differentiates the CC group from the other two groups.

To summarise, these findings indicate that the combination of the parent-rated scale of psychopathology (CBCL Total score) and the parent-rated scale of obsessive symptoms (SLOI-PV) were the strongest predictors for distinguishing between the groups. The OCD and CC groups were distinguished from the NC group by higher scores on the CBCL and the SLOI-PV, while the CC group was differentiated from the OCD and NC groups by their discrepancy between high CBCL scores and low SLOI-PV scores.

Chapter 4

Discussion

4.1 Summary and Discussion of Findings

Many youth with OCD do not come to clinical attention due to their secretiveness about their symptoms or lack of awareness about the disorder (King, Leonard & March, 1998; Rapoport et al., 1981). Parents may be able to reliably report their child's obsessive-compulsive symptoms, however, standardised parent-report measures of childhood OCD are sorely lacking (Henin & Kendall, 1997). The present study investigated the efficacy of the SLOI-PV, a parent-report measure of childhood OCD, and the SLOI-CV in discriminating youth with OCD from clinical controls and normal controls. A secondary goal of this study was to describe the clinical presentation of youth with OCD/OCB and compare them with clinical and normal controls on various cognitive, emotional and behavioural variables.

4.1.1 Psychometric Properties of the SLOI-CV and SLOI-PV

The SLOI-CV and SLOI-PV showed good psychometric properties overall. Items on both scales were internally consistent, as demonstrated by the high Cronbach's alphas.

With the exception of a moderate inverse relationship between the SLOI-PV and the youth's Wechsler FSIQ in the total sample, scores on the SLOI-CV and SLOI-PV were not related to demographic variables such as the youth's gender, chronological age, level of intelligence or family socioeconomic status. Epidemiological studies which have involved administration of the SLOI-CV to unselected samples of youth have yielded

mixed results in terms of the influence of demographic variables on SLOI-CV ratings. Berg et al (1988) failed to find any age effects in SLOI-CV ratings but did report that females obtained significantly higher SLOI-CV scores than males in their sample of 5108 non-referred youth between 13 and 18 years of age. In contrast, Thomsen (1993) reported on SLOI-CV ratings in an unselected Danish community sample of 1032 youth between 11 and 17 years of age; no gender differences were found, although a significant age effect was reported in which younger children obtained lower scores relative to older children. Thus, the current finding support the limited previous research in suggesting that demographic factors have a minimal or inconsistent influence on SLOI-CV and SLOI-PV ratings when used with older children and adolescents, and suggest that these scales may be utilised with a wide range of youth and their parents. Further, these results imply that age- or gender- corrected scores are unnecessary when these measures are administered to youth (or the parents of youth) between the ages of 9 and 18 years.

The construct validity of both the SLOI-CV and SLOI-PV was supported by moderate to high correlations between these scales and the Anxious/Depressed and Thought Problems syndrome scales of the YSR and CBCL. Additionally, within the OCD group, high correlations were found between SLOI-CV and SLOI-PV scores and the total number of youth obsessive-compulsive symptoms positively endorsed by the referring professional, which may be considered an indirect measure of symptom severity. Together, these findings support the sensitivity of the SLOI-CV and SLOI-PV in assessing obsessive-compulsive symptomatology.

Sample differences may account for the present study's failure to replicate previous factor analytic studies of the SLOI-CV and SLOI-PV. In their large unselected sample of a county-wide population of high school students, Berg et al (1988) found that four factors accounted for 47% of the total variance of the SLOI-CV, while Janzen et al (1994) found that four factors accounted for 69% of the total variance in SLOI-PV scores in a small sample of children with Tourette's Disorder (a subset of this group displayed OCD symptoms) and matched normal controls. However, it should be noted that there were substantial differences between the Berg et al (1988) and Janzen et al (1994) findings in terms of the items which constituted the individual factors. These results suggest that different factor structures may underlie the SLOI-CV and SLOI-PV, or that the factor structure of these measures is unreliable and highly influenced by the population under examination. Further research with a larger sample of youth diagnosed with OCD is necessary to resolve this issue.

Some SLOI-CV and SLOI-PV items were frequently endorsed by youth and the parents of youth in the OCD group, but infrequently endorsed by youth (and their parents) in the other two groups. For example, endorsement of items pertaining to feeling compelled to perform certain actions, repetition compulsions, need for exactness, checking behaviors, and need for cleanliness were highly specific to the OCD group. Other items seemed to be less specifically related to obsessive-compulsive symptoms. For example, youth in the CC group and their parents were the most likely to positively endorse "getting angry if other students mess up one's desk", and it is possible that social problems or anger control difficulties, rather than obsessional features, may underlie this

reaction. Another item, "difficulty making decisions", was commonly endorsed for all three groups, suggesting that this is a general adolescent concern, rather than a specific OCD symptom. These results suggest that positive endorsement of certain SLOI-CV and SLOI-PV items may be more clinically predictive than others and may been seen as "red flags" for OCD symptomatology. However, it is also necessary to consider that obsessive-compulsive behaviors lie on a continuum and there is likely to be some degree of overlap in the behavior of youth with OCD and the behavior of the general adolescent population.

4.1.2 Diagnostic Accuracy of the SLOI-CV and SLOI-PV

The results of this study suggest that the SLOI-PV was more accurate than the SLOI-CV in terms of overall hit-rates in classifying youth into the three groups. The SLOI-PV also showed higher sensitivity for OCD relative to the SLOI-CV, which is an important consideration when using a measure as a screening instrument. It is commonly acknowledged that a major difficulty in designing a self-report survey instrument for youth with OCD is the secretiveness inherent in the disorder (Berg et al., 1988; Berg et al., 1986; Clark & Bolton, 1985). The higher sensitivity of the SLOI-PV relative to the SLOI-CV may be due in part to this reluctance of the youth to acknowledge their symptoms. Parents may be more accurate reporters of their children's OCD behaviour because they are generally aware of their child's OCD symptoms and are frequently incorporated into the child's compulsive routines (Wand et al., 1993; Swedo et al., 1989; Cooper 1996). These results speak to the importance of utilising information obtained

from parent report, via a standardised rating scale such as the SLOI-PV or a comprehensive interview, in assessing youth for obsessive-compulsive symptoms.

The finding that SLOI-CV and SLOI-PV Interference scores of 15 or higher optimally differentiated the youth with OCD from youth in the other two groups is somewhat inconsistent with the results of Flament et al. (1988), who utilised combined cut-off scores of 25 on the SLOI-CV Interference scale and 15 on the "Yes Score" in identifying possible OCD cases in their epidemiological study of non-referred adolescents. Differences in the base-rate of obsessive-compulsive symptoms in the samples may explain the discrepancy between the current findings and the results of Flament et al. (1988). The sample utilised in the Flament et al (1988) study was a large (n = 468) unselected group of high school students within which only 18 of the students met diagnostic criteria for OCD, whereas in the present study, 31 of the 72 youth displayed OCD or significant OCBs. Further research is required to determine optimal cut-off scores on the SLOI-CV and SLOI-PV when these measures are used as screening instruments for other populations of adolescents (i.e., youth presenting to mental health centres, their family physicians or to high school guidance counsellors).

When considering the total sample and the OCD group isolation, the addition of the measures of psychopathology and social desirability did not significantly improve the accuracy of group classification relative to the use of the obsessive-compulsive measures alone. Identification of the clinical control participants was aided by the addition of the general psychopathology and social desirability measures, but their use actually reduced the classification accuracy of the normal control participants. Two relevant issues arise

from these findings: first, the usefulness of screening instruments depend in part on their brevity and ease of administration. If the intent is to use the SLOI-CV and SLOI-PV as tools for screening unselected groups of youth for obsessive-compulsive symptoms, there is limited benefit to supplementing these scales with other measures if they add little in terms of clinical prediction and increase the administration time. Secondly, it is important to consider the relatively low base-rate of OCD or other forms of psychopathology in unselected samples of youth. The increased misclassification of the normal controls by the addition of the measures of general psychopathology and social desirability make them less ideal as screening tools for use in unselected populations.

4.1.3 Agreement between Youth and Parent Report

Parent-child agreement in reporting children's obsessive-compulsive symptoms has not been systematically investigated, although a vast literature exists on inter-rater agreement for other forms of psychopathology. The current results revealed high levels of agreement between parent- and child- report on measures of obsessive-compulsive symptoms and general psychopathology, while the inter-rater correlation was in the small to medium range for the social desirability measures. The levels of agreement found in the present study are somewhat higher than those reported by other researchers who have documented only low-to-moderate correlations between parent-ratings and child self-ratings across various measures of child psychopathology in clinical and general population samples (Achenbach et al., 1987; Verlhurst & van der Ende, 1992). The current findings of relatively high correlations between the SLOI-CV and SLOI-PV are

somewhat surprising given the OCD is an internalising disorder and in general, there is higher inter-rater agreement for externalising than internalising problems (Edelbrock et al., 1986; Jensen, Traylor, et al., 1988a; Cantwell, Lewinsohn, Rohde & Seeley, 1997). The results suggested slightly better agreement between parent and child report for females than males, although this finding was statistically significant only for the social desirability scales. These results are generally consistent with the literature on inter-rater agreement for symptoms of childhood depression (Kazdin, French & Unis, 1983). An interesting pattern emerged in present study in which parent-child agreement on the social desirability measures was higher for older than younger youth, but there was a trend towards better agreement for younger than older children on the general psychopathology scales (i.e., YSR and CBCL). Some researchers have reported higher rates of parent-child agreement for older children than younger children when assessing child psychopathological symptoms in clinical samples (Edelbrock, et al. 1986). However, it is appears that a simple linear relationship between the age of the child and parent-child agreement may not exist, and that other factors, such as child and parent gender, the nature of the symptoms, and symptoms severity may complicate this relationship (Rey et al., 1992; Cantwell et al., 1997).

Despite the fact that this study has demonstrated that a parent-rated measure of obsessive-compulsive symptoms was more accurate in diagnostic classification relative to the youth self-rated measure, it is important to note that there are both advantages and disadvantages to reliance on parental report over child self-report. The potential benefits of reliance on parent-report assessment measures include: 1) reduced need to obtain the

child's co-operation and effort, which may be difficult to elicit during a brief visit to a psychiatrist or doctor's office, and 2) more flexible administration methods, and may be taken home by parents and completed prior to a subsequent appointment. However, a shortcoming of sole reliance on parent-report for assessing children's psychopathology is that there is no way to account for parental psychiatric disturbance (Marks, 1961). For example, Friedlander et al. (1986) found significant correlations between mothers' level of depression and her ratings of childhood depression. The same issue may be relevant in parent ratings of childhood OCD, particularly in light of high levels of psychopathology in the first degree relative of children with OCD (Toro et al., 1992, Last & Strauss, 1989, Lenane et al., 1990; Swedo, Rapoport, Leonard et al., 1989).

4.1.4 Characteristics of the OCD Group

The participants in the OCD group were typical of those included in other studies of youth with OCD. First, the youth included in the OCD group were diagnosed with OCD or OCB according to DSM-IV criteria, and the high rate of comorbid conditions in this sample (58%) is consistent with other studies which have reported comorbid diagnoses in between 60% and 84% of youth with OCD (Riddle et al, 1990; Hanna, 1995; Toro et al., 1992; Swedo, Rapoport, Leonard et al., 1989; Last & Strauss, 1989). Second, the nature of the comorbid conditions, most commonly Tourette's or tic disorders, ADHD, learning disability, and other anxiety disorders, are consistent with those reported in the literature (Flament et al., 1988; Hanna, 1995; Riddle et al., 1990; Swedo, Rapoport, Leonard et al., 1989; Valleni-Basile et al., 1994). Third, the male to female ratio in this

sample of 1.6:1 is consistent with the findings of other studies documenting male to female ratios of 2:1 or 3:2 (Toro et al., 1992; Flament et al., 1985; Hanna, 1995; Swedo, Rapoport & Leonard, 1988). Fourth, the average age of symptom onset, nature of the symptoms, and treatment history were typical of youth with OCD in similar studies.

One subtle difference between this sample and youth with OCD reported in other studies was level of intelligence. The mean IQ of this group was 96.7 (*sd* = 13.6), which is average, but slightly below that reported in other samples. For example, Rapoport, et al. (1981) reported a mean IQ of 111 (*sd* = 14) in a sample of 9 adolescents with primary OCD, while Behar et al. (1984) reported a mean IQ of 108 (*sd* = 13.5) in 16 adolescents with OCD. Similarly, the mean IQ of a group of 70 children and adolescents reported by Swedo, Rapoport and Leonard et al (1989) was 107 (*sd* = 12) and Flament et al (1990) reported that the mean IQ of 27 youth with OCD was 106 (*sd* = 11.8). Although an inclusion criteria for this study was estimated intelligence in the average range, four (12.9%) of the youth with OCD displayed borderline intellectual abilities (i.e., IQ 70-79) upon testing, and an additional five (16%) of the youth in this group scored in the low average range of intelligence (i.e., IQ 80-89). One explanation for this apparent difference is that the previous findings of higher IQs in samples of youth with OCD came from studies utilising the WISC-R, whereas the majority of the OCD group in this study were administered the WISC-III. Full scale IQs on the WISC-III are typically 5 to 6 points lower than those on the WISC-R (Wechsler, 1991).

Although there are several references to youth with "subclinical OCD" or "obsessive-compulsive behaviours (OCBs)" in the literature (Flament et al., 1988; Zohar

et al., 1992; Valleni-Basile et al., 1994), little is known about this group. Typically this group consists of youth with ego-dystonic obsessions and compulsions, who do not meet diagnostic criteria for OCD because their symptoms do not take more than one hour a day, do not cause marked distress, or do not significantly impair the individual's daily functioning (see Criteria C of DSM-IV diagnostic criteria for OCD). The findings of the current study suggest that, according to youth self-report on the SLOI-CV, there was no difference between youth with OCB and OCD in terms of the degree their symptoms interfered with daily activities. Additional analyses were conducted to more fully explore the severity of symptoms in the youth with OCB. Results of a *t*-test analysis indicated that the OCD and OCB youth did not differ in terms of the total number of symptoms rated by the referring professional (t (29) = -1.310, p = .201), which is also suggestive of equivalence in symptom severity. As well, three of the seven (43%) of the youth with OCB were prescribed medications (SRI's) for treatment of their symptoms. Although the efficacy of this treatment was not evaluated, this suggests that the referring professionals deemed the symptoms severe enough to warrant pharmaceutical treatment.

Presumably, if the OCB and OCD groups did not differ in terms of symptom severity, it is likely that the youth with OCB failed to meet full diagnostic criteria for OCD because their symptoms did not require more than one hour per day (see Criteria C for OCD in DSM-IV). The degree to which this "one hour per day" rule is relevant in diagnosing to childhood OCD requires further exploration and it is possible that different criteria should be applied for children than adults regarding the required length of time engaged in obsessions or compulsions per day. Longitudinal research is also necessary to

determine if OCB is a precursor to OCD; that is, whether youth with current OCB will go on to develop "full blown" OCD.

4.2 Limitations of the Study

The extent to which the findings of this study can be generalised to other groups of youth is limited by the study's relatively small sample size, particularly within the CC group. Thus, replication of these results with a larger sample is desirable. In addition, the sample size limited the power of some of the statistical analyses and more subtle effects could not be detected. Although efforts were made to limit experiment-wise error by adopting an alpha-level of .01, it is important to note that some significant findings may have been due to chance effect given the large number of analyses conducted in this study.

A second limitation of this study pertains to its reliance on the referring professional, most commonly paediatric psychiatrists, to accurately diagnose OCD in the youth referred to this study. Although the use of a psychiatric diagnosis has previously been considered the "gold standard" for classifying individuals with psychiatric disorders for research purposes, it is now obvious that the inter-rater reliability of psychiatric diagnoses is less than perfect. For example, the presence of comorbid condition(s) has been shown to decrease inter-rater diagnostic agreement, and symptom severity is inversely related to the accuracy of psychiatrist's diagnoses (Chorpita, Brown & Barlow, 1998). For the purposes of this study, each referring professional was provided with specific DSM-IV criteria for OCD and was asked to only refer participants who met the

specific inclusion criteria, however, efforts were not made to ascertain how the diagnosis of OCD was made. There may have been substantial variability amongst referring professionals in terms of methods used to gather information regarding the youth's symptoms, use of structured diagnostic interviews, and adherence to DSM-IV diagnostic criteria. Referrals for the OCD group came from 17 different referring professionals (10 paediatric psychiatrists, 5 paediatric psychologists and 2 paediatricians) across British Columbia, and inter-rater reliability was not calculated. However, each participant was questioned by the examiner about the items that were positively endorsed on the SLOI-CV; the accuracy of the OCD diagnosis is indirectly supported by the observation that most of the youth in the OCD group were able to describe in great detail their obsessive-compulsive symptoms.

Another limitation of the study pertains to the fact that the majority of youth in the OCD group had long-standing obsessive-compulsive symptoms, and the mean symptom duration was between three and four years at the time of participation in this study. The superiority of the SLOI-PV over the SLOI-CV in terms of diagnostic accuracy may not be found in the early stages of development of the disorder. In Swedo et. al's (1989) report on the clinical phenomenology of 70 consecutive cases of paediatric OCD, an estimated average of four to six months elapsed from the time child began performing the rituals until their parents became aware of the problem, suggesting that the youth-report may be more accurate than parent-report in the early stages of the disorder. Further research is required to delineate the relative accuracy of parent- and youth-report during each phase of the disorder.

4.3 Directions for Future Research

The findings of this study offer several suggestions for future research. Cross-validation of these procedures with large samples of community-living youth and their parents is necessary to further validate the use of the SLOI-PV as a screening instrument. Conducting structured diagnostic interviews with the potential OCD cases identified by the SLOI-PV would provide a better indication of the measure's diagnostic accuracy in the general population. It would also be necessary to validate the efficacy of the SLOI-PV and SLOI-CV in identifying specific subgroups of youth with OCD, for example youth with "pure OCD" (i.e., without comorbid conditions), tic-related OCD, or OCD related to infectious illness (i.e., PANDAS).

Longitudinal research designs are required to investigate the stage of the disorder in which parent's first become aware of the child's symptoms. As mentioned previously, the accuracy of parent reports of the youth's OCD symptoms may be related to duration of the symptoms, however, this issue has not been systematically investigated.

4.4 Conclusion

OCD is a severe and chronic neuropsychiatric disorder which is far more prevalent among children and adolescents than previously believed. Despite the fact that effective cognitive-behavioural and pharmaceutical treatments for this disorder exist, the secrecy and denial inherent in the disorder have hindered assessment of these symptoms and timely implementation of treatment. Clinical and research evidence suggest that

parents may provide more accurate reports of youth's OCD symptoms than the youth themselves, however, no standardised parent-report measure of childhood OCD currently exist.

The results of this study suggest that parents are able to reliably report obsessive-compulsive symptoms experienced by their children. The SLOI-PV, a parent-report measure of childhood obsessive-compulsive symptoms, significantly discriminated youth with OCD from clinically-referred and other forms of youth. This measure shows promise as an effective screening tool for identifying OCD in adolescent clinical and community populations.

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APPENDIX A

DSM-IV DIAGNOSTIC CRITERIA FOR OBSESSIVE-COMPULSIVE DISORDER

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 thoughts, 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 neutralise them with some other thought or action

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

B. At some point during the course of the disorder, the person has recognised 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 1 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 I disorder is present, the content of the obsession or compulsions is not restricted to it (e.g., preoccupation with food in the presence of an Eating Disorder; hair pulling in the presence of Trichotillomania; concern with appearance in the presence of Body Dysmorphic Disorder; preoccupation with having a serious illness in the presence of Hypochondriasis; preoccupation with sexual urges in the presence of a Paraphilia; or guilty ruminations in the presence of Major Depressive Disorder).

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

APPENDIX B

TYPICAL SYMPTOMS OF CHILDHOOD OBSESSIVE-COMPULSIVE DISORDER

Common Obsessions	Common Compulsions
Contamination themes (e.g., dirt, germs, illness)	Washing or cleaning
Harm to self or others	Repeating
Aggressive themes	Checking
Sexual themes	Touching
Scrupulosity/religion	Counting
Forbidden thoughts	Ordering/arranging
Symmetry urges/need for exactness	Hoarding/saving/collecting
Need to tell, ask, or confess	Praying
Hoarding/saving	Mental rituals
Magical (e.g., special numbers or words)	

Taken from: Swedo, Rapoport, Leonard, Lenane & Cheslow (1989), Hanna (1995), Last & Strauss (1989), March & Leonard (1996), and Toro, Cervera, Osejo & Salamero (1992).

APPENDIX C

SLOI-CV

Name: _____ **Date:** _____ **I.D. #** _____

Below are a number of habits that students your age sometimes have. Read each statement carefully and decide whether it is one of your everyday habits. If it is one of your everyday habits, circle **TRUE**, and if it is not one of your everyday habits, or not very true of you, circle **FALSE**. If you answer any statement **TRUE**, then decide how much that habit **STOPS YOU FROM DOING THINGS OR WASTES YOUR TIME (Not at all, a little, pretty much, or a lot).** There are no right or wrong answers, just your feelings about yourself and your everyday habits.

	CIRCLE ONE	**IF TRUE, HOW MUCH DOES IT INTERFERE?**			
		Not at all	**A little**	**Pretty Much**	**A lot**
1. I often feel like I have to do certain things even though I know I don't really have to.	False True	1	2	3	4
2. Thoughts or words sometimes keep going over and over in my mind.	**False True**	1	2	3	4
3. I have to check things several times.	False True	1	2	3	4
4. I hate dirt and dirty things.	**False True**	1	2	3	4
5. I sometimes feel that if something has been touched or used by someone else it is spoiled for me.	False True	1	2	3	4
6. I sometimes worry about being clean enough.	**False True**	1	2	3	4
7. I am fussy about keeping my hands clean.	False True	1	2	3	4
8. When I put things away at night they have to be put away just right.	**False True**	1	2	3	4
9. I get angry if other students mess up my desk.	False True	1	2	3	4
10. I spend a lot of extra time checking my homework to make sure it is just right.	**False True**	1	2	3	4
11. I sometimes have to do things over and over a certain number of times before they seem quite right.	False True	1	2	3	4
12. I sometimes have to count several times or go through numbers in my mind.	**False True**	1	2	3	4
13. I sometimes have trouble finishing my school work or chores because I have to do something over and over again.	False True	1	2	3	4
14. I have a favorite or special number that I like to count up to a lot or do things just that number of times.	**False True**	1	2	3	4
15. I often have a bad conscience because I've done something even though no one else thinks it is bad.	False True	1	2	3	4
16. I worry a lot if I've done something not exactly the way I like.	**False True**	1	2	3	4
17. I have trouble making up my mind.	False True	1	2	3	4
18. I have to go over things I've done a lot because I'm not sure that they were the right things to do.	**False True**	1	2	3	4
19. I move or talk in a special way in order to avoid bad luck.	False True	1	2	3	4
20. I have special numbers or words that I say, just because they keep bad luck or bad things away.	**False True**	1	2	3	4

APPENDIX D

SLOI-PV

Name: _____ Relationship to Child: _____ Date: _____ I.D. # _____

Below are a number of habits that children sometimes have. Read each statement carefully and decide whether it is one of your child's everyday habits. If it is one of your child's everyday habits, circle **TRUE**, and if it is not one of your child's everyday habits, or not very true of your child, circle **FALSE**. If you answer any statement **TRUE**, then decide how much that habit **STOPS YOUR CHILD FROM DOING THINGS OR WASTES HER/HIS TIME (Not at all, a little, pretty much, or a lot).** There are no right or wrong answers, just your feelings about your child and her/his everyday habits.

	CIRCLE ONE		**IF TRUE, HOW MUCH DOES IT INTERFERE?**			
			Not at all	**A little**	**Pretty Much**	**A lot**
1. Often feels like s/he has to do certain things even though s/he knows s/he doesn't really have to.	False	True	1	2	3	4
2. Thoughts or words sometimes keep going over and over in my child's mind.	False	True	1	2	3	4
3. Has to check things several times.	False	True	1	2	3	4
4. Hates dirt and dirty things.	False	True	1	2	3	4
5. Sometimes feels that if something has been touched or used by someone else it is spoiled for her/him.	False	True	1	2	3	4
6. Sometimes worries about being clean enough.	False	True	1	2	3	4
7. Is fussy about keeping her/his hands clean.	False	True	1	2	3	4
8. When s/he puts things away at night they have to be put away just right.	False	True	1	2	3	4
9. Gets angry if other students mess up her/his things.	False	True	1	2	3	4
10. Spends a lot of extra time checking her/his homework to make sure it is just right.	False	True	1	2	3	4
11. Sometimes has to do things over and over a certain number of times before they seem quite right.	False	True	1	2	3	4
12. Sometimes has to count several times or go through numbers in her/his mind.	False	True	1	2	3	4
13. Sometimes has trouble finishing her/his school work or chores because s/he has to do something over and over again.	False	True	1	2	3	4
14. Has a favorite or special number that s/he likes to count up to a lot or do things just that number of times.	False	True	1	2	3	4
15. Often has a bad conscience because s/he has done something even though no one else thinks it is bad.	False	True	1	2	3	4
16. Worries a lot if s/he has done something not exactly the way s/he likes.	False	True	1	2	3	4
17. Has trouble making up her/his mind.	False	True	1	2	3	4
18. Has to go over things s/he has done a lot because s/he is not sure that they were the right things to do.	False	True	1	2	3	4
19. Moves or talks in a special way in order to avoid bad luck.	False	True	1	2	3	4
20. Has special numbers or words that s/he says, just because they keep bad luck or bad things away.	False	True	1	2	3	4

APPENDIX E

OCD GROUP: DIAGNOSIS, COMORBID CONDITIONS AND PRESENTING SYMPTOMS

Age Sex	Diagnosis	Comorbid Conditions*	Presenting Symptoms **
12 yrs female	OCD	LD (NVLD)	**Obsessions**: contamination, death/illness, obsessional slowness, order/symmetry/exactness, other **Compulsions**: washing/cleaning, symmetry/exactness/order, avoiding
12 yrs male	OCD	None	**Obsessions**: contamination, death/illness, pathological doubt, obsessional slowness **Compulsions**: checking, need for assurance, counting, touching rituals, avoiding
13 yrs male	OCD	None	**Obsessions**: death/illness, order/symmetry/exactness, aggressive/horrific, pathological doubt, religious **Compulsions**: symmetry/exactness/order, scrupulosity, touching rituals, other
12 yrs male	OCD	TD, ODD, ADHD, LD	**Obsessions**: other **Compulsions**: touching rituals
9 yrs male	OCD	LD, CMVTD	**Obsessions**: contamination **Compulsions**: checking, other
18 yrs female	OCD	None	**Obsessions**: contamination, death/illness, pathological doubt **Compulsions**: washing/cleaning, need for assurance, avoiding
12 yrs male	OCD	TD, AD, P-CRP	**Obsessions**: order/symmetry/exactness, aggressive/horrific, pathological doubt, obsessional slowness
14 yrs female	OCD	LD, MDD	**Obsessions**: death/illness, somatic, sexual Compulsions: need for assurance, other
10 yrs male	OCD	TD, ADHD	**Obsessions**: somatic **Compulsions**: touching rituals, other
11 yrs male	OCB	None	**Obsessions**: sexual, aggressive/horrific **Compulsions**: symmetry/exactness/order
10 yrs male	OCB	ADHD	**Obsessions**: order/symmetry/exactness **Compulsions**: symmetry/exactness/order, other
15 yrs male	OCD	None	**Obsessions**: contamination, death/illness, sexual, pathological doubt, order/symmetry/exactness, obsessional slowness **Compulsions**: checking, washing/cleaning, need for assurance, symmetry/exactness/order, touching rituals, avoiding
14 yrs male	OCD	ADHD	**Compulsions**: need for assurance, touching rituals, symmetry/exactness/order
16 yrs female	OCD	None	**Compulsions**: washing/cleaning, symmetry/exactness/order, other
13 yrs female	OCD	GAD	**Obsessions**: contamination, somatic, order/symmetry/exactness Contamination: washing/cleaning, symmetry/exactness/order, avoiding

17 yrs male	OCD	None	**Obsessions**: contamination, order/symmetry/exactness **Compulsions**: checking, washing/cleaning
12 yrs male	OCB	None	**Obsessions**: contamination Compulsions: washing/cleaning
13 yrs female	OCB	CMVTD, ADHD, LD	**Obsessions**: contamination, order/symmetry/exactness **Compulsions**: checking, washing/cleaning, symmetry/exactness/order, touching rituals, other
13 yrs male	OCD	DD	**Obsessions**: contamination, death/illness, order/symmetry/exactness. Other **Compulsions**: checking, washing/cleaning
11 yrs male	OCD	TD	**Obsessions**: death/illness, somatic **Compulsions**: need for assurance, other
17 yrs male	OCD	PD/A	**Obsessions**: contamination, death/illness, somatic **Compulsions**: checking, washing/cleaning, avoiding
9 yrs female	OCB	LD, ADHD	**Obsessions**: contamination, order/symmetry/exactness **Compulsions**: washing/cleaning, symmetry/exactness/order, other
9 yrs male	OCB	None	**Obsessions**: contamination **Compulsions**: checking, need for assurance symmetry/exactness/order
9 yrs male	OCD	None	**Obsessions**: contamination, order/symmetry/exactness **Compulsions**: symmetry/exactness/order, counting
11 yrs female	OCD	ADHD, LD, TD	**Obsessions**: contamination, order/symmetry/exactness, obsessional slowness **Compulsions**: checking, washing/cleaning, need for assurance, symmetry/exactness/order, counting, touching rituals
12 yrs male	OCD	ODD	**Obsessions**: other **Compulsions**: checking, touching rituals, avoiding
15 yrs female	OCD	None	**Obsessions**: order/symmetry/exactness, pathological doubt, other **Compulsions**: need for assurance, need to confess, symmetry/exactness/order, scrupulosity, counting, avoiding
9 yrs female	OCD	None	**Obsessions**: order/symmetry/exactness, other **Compulsions**: washing/cleaning, symmetry/exactness/order
14 yrs female	OCD	GAD	**Obsessions**: death/illness, other **Compulsions**: counting, touching rituals avoiding
11 yrs female	OCD	None	**Obsessions**: death/illness, order/symmetry/exactness, other **Compulsions**: washing/cleaning, symmetry/exactness/order, counting, avoiding, other
12 yrs male	OCB	TD, SP	**Obsessions**: death/illness, order/symmetry/exactness **Compulsions**: checking, need for assurance, symmetry/exactness/order

Abbreviations: LD = Learning Disability; NVLD = Non-Verbal Learning Disability; TD = Tourette's Disorder; ODD = Oppositional Defiant Disorder; ADHD = Attention-Deficit/Hyperactivity Disorder; CMVTD = Chronic Motor or Vocal Tic Disorder; AD = Adjustment Disorder; MDD = Major Depressive Disorder; P-CRP = Parent-Child Relationship Problem; GAD = Generalized Anxiety Disorder; DD = Dysthymic Disorder; PD/A = Panic Disorder without Agoraphobia; SP = Social Phobia

** Symptoms reported by referral source

APPENDIX F

VIGNETTES OF YOUTH IN THE OCD AND CLINICAL CONTROL GROUPS

OCD Group Participant

DF is a 12 year, 4 month old boy who was receiving inpatient psychiatric treatment at the time that he participated in this study. He was diagnosed with OCD by a pediatric psychiatrist when he was 11 ½ years old, approximately 6 months prior to his participation in this study. Current pharmacological treatments included paxil and clonazepam; a previous trial of luvox was not effective. A comorbid diagnosis of Oppositional Defiant Disorder was also made. Family psychiatric history was positive for maternal depression.

DF reported that his predominant obsession was his fear of becoming like other people who he described as "bad" and "stupid or ugly". DF acknowledged that this fear was unreasonable and he was well aware that he could not assume another person's identity. Both DF and his mother reported that he engaged in numerous compulsive behaviors which were intended to keep him from becoming "bad, stupid or ugly". DF felt compelled to touch the corner of the door frame each time he passed through a doorway and he compulsively touched the corners and edges of tables, desks and countertops. He counted up to certain numbers (usually a number divisible by three) while performing various activities and would have to start over from the beginning if he experienced a "bad thought" while counting. He avoided other numbers which he considered to be unlucky. DF felt compelled to re-trace each number or letter that he wrote, sometimes up to 16 times. He refused to eat food or use eating utensils which may have been in contact with "bad, stupid or ugly people"; he preferred to eat only food that was prepared by his mother.

The nature of DF's obsessions and compulsions varied; at times, he was obsessively worried that his parents may become ill or injured. He reported that he

previously engaged in checking and ordering rituals, but these compulsions had subsided to some extent.

DF's school work was adversely affected by his OCD symptoms. He required an inordinate amount of time to produce written work and his productions were often smudged or illegible as a result of excessive re-tracing over each number or letter. His mother indicated that DF's academic abilities were above average prior to the onset of his OCD symptoms. When asked to describe the impact that OCD has had on DF's life, his mother responded "*He is a shadow of his former self. Much of his spark and energy for life has gone. His life has been reduced to performing one ritual after another and listening to an internal diatribe which we can not understand or be a part of. We are concerned that he has difficulty performing daily acts of living for himself, can no longer enjoy sports, enjoy learning, enjoy relationships as he used to. It is an effort for him to get out of a chair, move from room to room, to eat, dress, wash*".

Clinical Control Group Participant

DK is a 12 year, 4 month old boy who was receiving outpatient psychiatric treatment at the time that he participated in this study. He was diagnosed with Attention-Deficit/Hyperactivity Disorder by a paediatrician just after his 12th birthday. Secondary diagnoses included Learning Disability and Mixed Receptive-Expressive Language Disorder. At the time of his participation in this study, DK and his parents were receiving therapy to address DK's behavioural problems and parent-child conflict. He was not prescribed any medications. There is no family history of psychiatric illness.

According to his mother, DK's attentional and language-related difficulties were evident at the age of 3 years. His mother reported that DK's academic abilities were well below average and that he is "unable to function in a classroom setting". Significant behavioural problems were reported by DK's mother and she described her son as "anti-social". She expressed her concern that DK is "not able to achieve one-tenth of his potential". DK reported that his main difficulties involved "being unable to handle loud noises, problems getting along with friends, and difficulty with school work".

APPENDIX G

CC GROUP: PRIMARY DIAGNOSES AND COMORBID CONDITIONS

Age Sex	Primary Diagnosis (Reason for Seeking Treatment)	Comorbid Diagnoses
11 yrs female	Attention-Deficit/Hyperactivity Disorder	Learning Disorder
11 yrs male	Oppositional Defiant Disorder	Bereavement
13 yrs male	Conduct Disorder	Major Depressive Disorder
12 yrs male	Attention-Deficit/Hyperactivity Disorder	Learning Disability, Mixed Receptive-Expressive Language Disorder
9 yrs male	Oppositional Defiant Disorder	None
10 yrs male	Attention-Deficit/Hyperactivity Disorder	Learning Disorder, Physical Abuse of Child
14 yrs male	Attention-Deficit/Hyperactivity Disorder	Parent-Child Relational Problem,
13 yrs male	Conduct Disorder	Attention-Deficit/Hyperactivity Disorder, Learning Disorder
14 yrs female	Parent-Child Relational Problem	Academic Problem
17 yrs male	Oppositional Defiant Disorder	Parent-Child Relational Problem
9 yrs male	Attention-Deficit/Hyperactivity Disorder	None

APPENDIX H-1

LETTER TO REFERRING PROFESSIONAL – OCD GROUP

Dear Psychiatrist/Psychologist/Pediatrician,

We are conducting a study investigating the efficacy of youth and parent versions of a measure of obsessive-compulsive symptoms, the *Leyton Obsessional Inventory*, in identifying obsessive-compulsive behaviours (OCBs) in a heterogenous group of youth. If this measure is shown to discriminate OCBs from other childhood disorders and from developmentally normal behaviours, it may aid clinicians in the early diagnosis of these symptoms.

This project has been approved by the University of Victoria Ethics Committee and is supported and funded by the Queen Alexandra Centre for Children's Health.

All participating youth will be administered a standardized measure of intelligence (i.e., *Wechsler Intelligence Scale*), along with questionnaires about daily behaviours, beliefs and habits [i.e., the child version of the *Leyton Obsessional Inventory*; the *Youth Self Report (YSR)*, and the child version of the *Children's Social Desirability Questionnaire (CSDQ-CV)*. Parents will be asked to complete corresponding questionnaires about their children's daily behaviours, beliefs and habits. After taking part in the study, participating parents and youth will receive a summary report outlining the youth's performance on the measures administered. This report may be sent to the referral source as well, if approval granted by the by parent and/or youth. Along with this assessment service, participating youth will receive $10.00.

We are requesting your assistance in contacting youth who:

1) are between 9 and 18 years of age,

2) are estimated to possess an average level of intelligence,

3) speak English as a first language,

4) have a parent who is also willing to participate,

5) do not have a mental or emotional disorder severe enough to preclude the testing,

6) exhibit obsessive-compulsive disorder (OCD) or obsessive-compulsive behaviours (OCBs) alone or in association with another diagnosis (e.g., Tourette Syndrome, eating disorder).

a) The youth must have obsessions or compulsions that are known to be unreasonable and are not due to the direct physiological effects of a psychoactive substance or a general medical condition.

b) The obsessions and compulsions may or may not be severe enough to be time consuming

c) The obsessions and compulsions may or may not cause significant distress or functional impairment.

Any youth who meet the above criteria may be referred by asking the youth or his/her parent to sign the enclosed release form (yellow sheet) providing permission for us to contact them about the study and for you to provide us with some basic information about their reason for seeking your services. For youth being referred, we ask that you complete the attached brief checklist (blue sheet) regarding the youth's symptoms and return it to us in the enclosed self-addressed stamped envelope.

APPENDIX H-2

LETTER TO REFERRING PROFESSIONAL – CLINICAL CONTROL GROUP

Dear Psychiatrist/Psychologist/Paediatrician,

We are looking for clinical control subjects for our study on obsessive compulsive behaviors in youth. Youth who are receiving psychological or psychiatric treatment and who meet the following criteria are eligible to participate:

1) are between 10 and 18 years of age,

2) are estimated to possess an average level of intelligence,

3) speak English as a first language,

4) have a parent who is also willing to participate,

5) do not have obsessive-compulsive behaviors or obsessive-compulsive disorder.

Participation involves approximately 2 hours for the youth (for which they are paid $10.00) and about 30 minutes of the parent's time.

Participating youth will be administered a standardized measure of intelligence and asked to complete the Youth Self Report, a revised version of the Leyton Obsessional Inventory, and a measure of social desirability.

Parents will be asked to complete the Child Behavior Checklist (unless it has recently been completed at Jack Ledger House), a parent version of the Leyton Obsessional Inventory, a measure of social desirability, and a brief questionnaire about their family (i.e. the parents' occupations, family psychiatric history).

Participants will receive a brief written report outlining their assessment results and this report will be sent to their referral source (with the participant's permission).

Because we are looking for age and sex matches to the youth in our obsessive-compulsive group, we will be inviting both males and females of particular ages to participate at various times.

APPENDIX I-1

REFERRAL FORM FOR OBSESSIVE-COMPULSIVE DISORDER GROUP

Youth's Name: _____ Date of Birth: _____
(day/month/year)

Youth's Grade: _____

Name of Parent(s): _____ Phone #: _____

Referred By: _____

---

1. OBSESSIONS:

For the purposes of this study, obsessions will be defined as persistent ideas, thoughts, impulses or images that are experienced as intrusive and inappropriate and that cause anxiety or distress. These symptoms may range from mild to severe. They must be ego-dystonic but still recognized by the youth as being a product of his/her own mind.

Please read through the following list and mark (X) the obsessions experienced by this youth:

___ contamination obsessions
___ obsessions of death or illness
___ somatic obsessions
___ sexual obsessions
___ need for order/symmetry/exactness
___ aggressive/horrific obsessions
___ pathological doubt
___ obsessional slowness
___ religious obsessions
___ other (please describe)

2. COMPULSIONS

For the purposes of this study, compulsions will be defined as repetitive behaviours, or mental acts, the goal of which is to prevent or reduce anxiety or distress, not to provide pleasure or gratification. These acts are either clearly excessive or are not connected in a realistic way with what they are designed to neutralize or prevent. These symptoms may range from mild to severe.

Please read through the following list and mark (X) the compulsions experienced by this youth:

___ checking
___ washing/cleaning
___ need for assurance
___ need to confess
___ symmetry/preciseness/exactness/order
___ scrupulosity
___ counting
___ hoarding
___ touching rituals
___ compulsive praying
___ avoiding
___ other (please describe)

In your opinion, are the above noted obsessions and/or compulsions severe enough to be time consuming (i.e. take more than one hour per day), or cause marked distress or significant impairment?

___ Yes

___ No

3. IF POSSIBLE, PLEASE PROVIDE THE FOLLOWING INFORMATION:

a) At what age did the obsessions and/or compulsions begin? _____

b) Is this youth currently receiving psychiatric, psychological or other treatment for these problems? (If so, please explain)

___ Yes (please explain)

_____

___ No

c) Is this youth currently receiving pharmaceutical treatment for these problems?

___ Yes Please list prescribed medications _____

_____

Date medication was started _____

___ No

4. PLEASE LIST ANY OTHER CURRENT DIAGNOSES PERTAINING TO THIS YOUTH (USING DSM-IV CRITERIA)

_____

_____

_____

_____

APPENDIX I-2

REFERRAL FORM FOR CLINICAL CONTROL GROUP

Youth's Name: _____ Date of Birth: _____
(day/month/year)

Youth's Grade: _____

Name of Parents: _____ Phone # _____

Referred By: _____

Please Provide the Following Information:

a) Please describe the reason(s) this youth is receiving treatment:

_____

_____

b) Please list any current diagnoses pertaining to this youth (using DSM-IV criteria)

_____

c) At what age did these difficulties begin? _____

d) Is this youth currently receiving psychiatric, psychological or other treatment for these problems?

_____ Yes (please explain) _____
_____ No

e) Is this youth currently receiving pharmaceutical treatment for these problems?

_____ Yes Please list prescribed medications _____
Date medication was started _____
_____ No

APPENDIX J

YOUTH CONSENT FORM

This research project will look at a questionnaire which measures the thoughts, habits and behaviors of youth. In order to do this, we are asking both you and your parent to describe certain aspects of your thoughts, habits and behaviors by answering questions and completing rating scales. All data will be kept strictly confidential; data collected will be given a code number to ensure that the results are anonymous and will be stored in a locked filing cabinet. Your name will not be attached to any published results. Later, both you and your referral source, if you wish, will be provided a written report detailing your individual results on the measures administered. Participation in this study will require approximately two hours of your time. Along with providing you and your referral source with a valuable assessment service, we will also reimburse you $10.00 for your participation.

I understand that I will be asked to:

1) answer some questions or perform some activities measuring my general knowledge and approach to solving new problems, and
2) provide some information regarding my thoughts, habits and daily behavior.

I understand that my parent will be asked to:

1) provide some information regarding my thoughts, habits and daily behaviors.

I understand that all information collected in this research will be kept strictly confidential (within the limits of the law) and that my identity will not be revealed at any time.

I understand that a written report outlining my performance on the measures administered will be sent to me and my referral source, if I wish.

I understand that my results will not be discussed with, or sent to, my teacher(s) or any other persons unless my parent specifically requests in writing that this information be shared.

I understand that participation if voluntary and I am free to withdraw from this study at any time, without explanation (even after the testing has begun), and that this will in no way affect my school program or services provided by the Queen Alexandra Center for Children's Health. I also understand that if I chose to withdraw, all data already collected will be immediately destroyed.

I understand that there is no risk or discomfort involved in this testing, that is, no more than normally associated with academic testing.

I have read and understood the above information and have been given the opportunity to ask questions.

Child's Name (please print): _____

Child's Signature: _____

Today's Date: _____

Experimenter: _____

APPENDIX K

PARENT CONSENT FORM

This research project will look at a questionnaire which measures the thoughts, habits and behaviors of youth. In order to do this, we are asking both you and your child to describe certain aspects of his/her thoughts, habits and behaviors by answering questions and completing rating scales. All data will be kept strictly confidential; data collected will be given a code number to ensure that the results are anonymous and will be stored in a locked filing cabinet. Your child's or your name will not be attached to any published results. Later, both you and you referral source, if your wish, will be provided a written report detailing your child's results on the measures administered. Participation in this study will require approximately two hours of your time. Along with providing you and your referral source with a valuable assessment service, we will also reimburse you $10.00 for your participation.

I understand that my child will be asked to:

1) answer some questions or perform some activities measuring her/his general knowledge and approach to solving new problems, and
2) provide some information regarding her/his thoughts, habits and daily behavior.

I understand I will be asked to:

1) provide some information regarding my child's thoughts, habits and daily behaviors.
2) provide general information about my/my spouse's occupation and psychological history.

I understand that all information collected in this research will be kept strictly confidential (within the limits of the law), and that the identity of participating youth and parents will not be revealed at any time.

I understand that a written report outlining my child's performance on the measures administered will be sent to me and my referral source, if I wish.

I understand that my child's results will not be discussed with, or sent to, my child's teacher(s) or any other persons unless I specifically request in writing that this information be shared.

I understand that participation is voluntary and both I and my child are free to withdraw from this study at any time, without explanation (even after the testing has begun), and that this will in no way affect my child's school program or services provided by the Queen Alexandra Center for Children's Health. I also understand that if my child and/or I chose to withdraw, all data already collected will be immediately destroyed.

I understand that there is no risk or discomfort involved in this testing, that is, no more than normally associated with academic testing.

I have read and understood the above information and have been given the opportunity to ask questions.

Parent's Name (please print): _____

Parent's Signature: _____

Today's Date: _____

Experimenter: _____

If you would like to receive a summary of the final results of this study, please provide your mailing address below:

_____

_____

APPENDIX L

ORDER OF ADMINISTRATION OF THE MEASURES

I. YOUTH

1. Explanation of study and completion of consent form
2. Wechsler Intelligence Scale (i.e., WISC-III, WAIS-R, or WAIS-III)
3. SLOI-CV
4. YSR
5. CSDQ

II. PARENTS

1. Explanation of study and completion of consent form
2. SLOI-PV
3. CBCL
4. CSDQ-PV
5. Completion of brief parent questionnaire

APPENDIX M

DIRECTIONS FOR ADMINISTERING THE SLOI-CV AND SLOI-PV

1. SLOI-CV

a) Administration

The examiner reads the following:

For this next part, I would like you to fill out this questionnaire. In front of you is a list of habits that many students your age have. Please read each statement carefully and think about whether it is one of your everyday habits. There are no right or wrong answers, just your feelings about yourself and your everyday habits.

** If it is not one of your habits, or is not true of you, circle FALSE.*
** If it is one of your habits, circle TRUE.*

** Whenever you think that a statement is TRUE of you, I want you to think about how much this habit STOPS YOU FROM DOING THINGS OR WASTES YOUR TIME.*

> *If it does not stop you from doing things or does not waste your time, circle 1.*
>
> *If it stops you from doing things a little or wastes your time a little, circle 2.*
>
> *If it stops you from doing things pretty much or wastes your time pretty much, circle 3*
>
> *If it stops you from doing things a lot or wastes your time a lot, circle 4.*

While the questionnaire is being completed, the examiner may not clarify the meaning of the statements. Simply request the youth to respond to the best of his/her ability.

After the questionnaire is completed, the examiner may then query particular responses or request the youth to provide examples in order to provide clarity (i.e., "What types of things do you have to check?"). This additional information should be noted on the response form.

b) Scoring

Two scores may be derived from this measure: *an Obsessional Score and an Interference Score.* The *Obsessional Score* is the total number of "true" responses. The *Interference Score* is the sum of the following scale weights:

No interference	0
Interferes a little	1
Interferes pretty much	2
Interferes a lot	3

2. SLOI-PV

a) Administration

The examiner reads the following:

For this next part, I would like you to fill out this questionnaire about your son/daughter. In front of you is a list of habits that many youth his/her age have. Please read each statement carefully and think about whether it is one of your son/daughter's everyday habits. There are no right or wrong answers, just your feelings about your son/daughter and his/her everyday habits.

** If it is not one of his/her habits, or is not true of him/her, circle FALSE.*

** If it is one of his/her habits, circle TRUE.*

** Whenever you think that a statement is TRUE of your son/daughter, I want you to think about how much this habit STOPS HIM/HER FROM DOING THINGS OR WASTES HIS/HER TIME.*

> *If it does not stop him/her from doing things or does not waste his/her time, circle 1.*
>
> *If it stops him/her from doing things a little or wastes his/her time a little, circle 2.*
>
> *If it stops him/her from doing things pretty much or wastes his/her time pretty much, circle 3*
>
> *If it stops him/her from doing things a lot or wastes his/her time a lot, circle 4.*

While the questionnaire is being completed, the examiner may not clarify the meaning of the statements. Simply request the parent to respond to the best of his/her ability.

After the questionnaire is completed, the examiner may then query particular responses or request the parent to provide examples in order to provide clarity (i.e., "What types of things does he/she have to check?"). This additional information should be noted on the response form.

b) Scoring

Two scores may be derived from this measure: *an Obsessional Score and an Interference Score.* The *Obsessional Score* is the total number of "true" responses. The *Interference Score* is the sum of the following scale weights:

No interference	0
Interferes a little	1
Interferes pretty much	2
Interferes a lot	3

APPENDIX N

CSDQ-CV

Name: _____ **Date:** _____ **I.D. #** _____

Below are a list of questions. Read each question carefully and then answer each question by circling **YES** or **NO.** Remember, there are no right or wrong answers.

	Circle One	
1. Do you ever get angry if you have to stop in the middle of something you're doing to eat dinner or go to school?	YES	NO
2. Does it sometimes bother you to share things with your friends?	YES	NO
3. Do you sometimes tell a little lie?	YES	NO
4. Do you ever lip-off or talk back to your parents?	YES	NO
5. When you've made a mistake, do you always say that you are wrong?	YES	NO
6. Have you ever felt like saying mean things to a person?	YES	NO
7. Have you sometimes felt like throwing or breaking things?	YES	NO
8. Are you always careful about keeping your room neat and clean?	YES	NO
9. Do you ever shout when you feel angry?	YES	NO
10. Do you sometimes feel like staying home from school even if you're not sick?	YES	NO
11. Do you sometimes argue with your parents to let you do something that they don't want you to do?	YES	NO
12. Do you ever say things that make somebody else feel bad?	YES	NO
13. Do you ever get angry?	YES	NO
14. Do you ever want to have things just because your friends have them?	YES	NO
15. Do you always listen to your parents?	YES	NO
16. Do you ever forget to say "please" and "thank-you"?	YES	NO
17. When you're alone in a room and hear a strange noise, do you get scared?	YES	NO
18. Do you always wash your hands before every meal?	YES	NO
19. Do you ever find it hard to make friends?	YES	NO
20. Have you ever broken a rule or done something wrong?	YES	NO
21. Do you sometimes make fun of other people?	YES	NO
22. Have you ever borrowed something without asking first?	YES	NO
23. Do you sometimes wish other people would pay more attention to what you say?	YES	NO
24. Are you always happy?	YES	NO
25. Do you sometimes wish you could just play or fool around instead of having to go to school?	YES	NO
26. Do you sometimes do nice things for others?	YES	NO
27. Have you ever given someone a present?	YES	NO

APPENDIX O

CSDQ-PV

Name: _____ **Date:** _____ **I.D. #** _____
Relationship to Child: _____

Below are a list of questions. Read each question carefully and then answer each question by circling **YES** or **NO.** Remember. there are no right or wrong answers.

	Circle One	
1. Does your child ever get angry if s/he has to stop in the middle of something s/he's doing to eat dinner or go to school?	YES	NO
2. Does it sometimes bother your child to share things with her/his friends?	YES	NO
3. Does your child sometimes tell a little lie?	YES	NO
4. Does your child ever lip-off or talk back to you?	YES	NO
5. When your child has made a mistake, does s/he always say that s/he's wrong?	YES	NO
6. Has your child ever felt like saying mean things to a person?	YES	NO
7. Has your child sometimes felt like throwing or breaking things?	YES	NO
8. Is your child always careful about keeping her/his room neat and clean?	YES	NO
9. Does your child ever shout when s/he feels angry?	YES	NO
10. Does your child sometimes feel like staying home from school even if s/he's not sick?	YES	NO
11. Does your child sometimes argue with you to let her/him do something that you don't want her/him to do?	YES	NO
12. Does your child ever say things that make somebody else feel bad?	YES	NO
13. Does your child ever get angry?	YES	NO
14. Does your child ever want to have things just because her/his friends have them?	YES	NO
15. Does your child always listen to you?	YES	NO
16. Does your child ever forget to say "please" and "thank-you"?	YES	NO
17. When your child is alone in a room and hears a strange noise, do s/he get scared?	YES	NO
18. Does your child always wash her/his hands before every meal?	YES	NO
19. Does your child ever find it hard to make friends?	YES	NO
20. Has your child ever broken a rule or done something wrong?	YES	NO
21. Does your child sometimes make fun of other people?	YES	NO
22. Has your child ever borrowed something without asking first?	YES	NO
23. Does your child sometimes wish other people would pay more attention to what s/he says?	YES	NO
24. Is your child always happy?	YES	NO
25. Does your child sometimes wish s/he could just play or fool around instead of having to go to school?	YES	NO
26. Does your child sometimes do nice things for others?	YES	NO
27. Has your child ever given someone a present?	YES	NO

APPENDIX P

PARENT QUESTIONNAIRE

Today's Date: _____

Your relationship to child (please circle) MOTHER FATHER

Your child's name: _____

Mother's Occupation: _____

Father's Occupation: _____

1) Have you ever experienced an emotional, psychological or psychiatric problem that led you to seek help? If so, please briefly explain.

2) Has the child's other parent ever experienced an emotional, psychological or psychiatric problem that led you to seek help? If so, please briefly explain.

APPENDIX Q

SELECTED EXAMPLES OF OCCUPATIONAL RANKINGS FROM THE HOLLINGSHEAD OCCUPATIONAL SCALE

Score 9 – Higher Executives, Proprietors of Large Businesses, and Major Professionals

Architects, Chemists, Economists, Lawyers, Physicians, Psychologists

Score 8 – Administrators, Lesser Professionals, Proprietors of Medium-Sized Businesses

Accountants, Authors, Clergymen, Editors, Registered Nurses, Podiatrists, Secondary School Teachers

Score 7 – Smaller Business Owners, Farm Owners, Managers, Minor Professionals

Actors, Designers, Insurance Agents/Brokers/Underwriters, Postmasters, Real Estate Agents, Reporters, Social Workers

Score 6 – Technicians, Semiprofessionals, Small Business Owners

Advertising Agents, Dental Hygienists, Embalmers, Photographers, Secretaries (medical or legal), Teacher Aides

Score 5 – Clerical and Sales Workers, Small Farm and Business Owners

Auctioneers, Bank Tellers, Cashiers, Library Assistants, Recreation Workers, Telephone Operators, Typists

Score 4 – Smaller Business Owners, Skilled Manual Workers, Craftsmen and Tenant Farmers

Bakers, Carpenters, Electricians, Jewellers, Machinists, Postal Clerks, Tailors

Score 3 – Machine Operators and Semiskilled Workers

Barbers, Bus Drivers, Deliverymen, Guards, Meat Cutters, Nursing Aides, Roofers, Taxicab Drivers

Score 2 – Unskilled Workers

Bartenders, Cooks, Garbage Workers, Freight Handlers, Gardeners, Labourers, Parking Attendants

Score 1 – Farm Labourers

Baggage Porters, Dishwashers, Cleaners, Farm Labourers, Maids, Servants, Stock Handlers

APPENDIX R

DIAGNOSTIC ACCURACY OF THE SLOI-CV AND SLOI-PV

SLOI-CV Scores

		≥15	< 15	
OCD	Yes	12	19	31
	No	4	37	41
		16	56	**72**

sensitivity = 38%
specificity = 90%
PPP = 75%
NPP = 66%
hit rate = 68%

SLOI-PV Scores

		≥15	< 15	
OCD	Yes	19	12	31
	No	2	39	41
		21	51	**72**

sensitivity = 61%
specificity = 95%
PPP = 91%
NPP = 77%
hit rate = 81%

sensitivity = proportion of those with OCD correctly identified by SLOI-CV/SLOI-PV scores; **specificity** = proportion of controls correctly identified by SLOI-CV/SLOI-PV scores; positive predictive power (**PPP**) = probability of an OCD diagnosis, given a SLOI-CV or SLOI-PV score equal to or above 15; negative predictive power (**NPP**) = probability of a negative OCD diagnosis given a SLOI-CV or SLOI-PV score equal to or above 15; **hit rate** = overall efficiency or the proportion of both positive and negative diagnoses that were accurately predicted by the SLOI-CV or SLOI-PV using 15 as the cut-off score.