Impulsivity in Obsessive-Compulsive Personality Disorder (OCPD): An exploration of the validity of the compensatory theory of OCPD development.

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IMPULSIVITY IN OBSESSIVE-COMPULSIVE PERSONALITY DISORDER (OCPD): AN EXPLORATION OF THE VALIDITY OF THE COMPENSATORY THEORY OF OCPD DEVELOPMENT

by
Aleksandar Milosevic

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

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ABSTRACT

The compensatory theory (CT) of Obsessive-Compulsive Personality Disorder (OCPD) development (Villemarette-Pittman et al., 2004) suggests OCPD develops to regulate pre-existing impulse control difficulties. Several hypotheses were tested to explore the CT's presupposition of a positive relationship between OCPD and impulsivity. Three hundred and twenty-eight undergraduates were administered the Personality Diagnostic Questionnaire-4+ (PDQ-4+; Hyler, 1994) and the Revised NEO-Personality Inventory (NEO-PI-R; Costa & McCrae, 1992). Results suggested NEO-PI-R Impulsiveness predicted variance in OCPD ($\beta = .30, t = 4.98, p < .01$) and its two latent components ($\beta = .28, t = 4.57, p < .01; \beta = .14, t = 2.30, p = .02$), and was elevated in OCPD ($F_{(1,325)} = 13.58, p < .01$) and an OCPD subtype ($F_{(4,321)} = 8.24, p < .01$). While this study appeared to support the CT, future research should examine the temporal relationship between OCPD and impulse control difficulties.
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TABLE OF CONTENTS

ABSTRACT .......................................................................................................................... iii
ACKNOWLEDGEMENTS ........................................................................................................ iv
LIST OF TABLES .................................................................................................................... viii

CHAPTER

I. INTRODUCTION
   Statement of the Problem .............................................................................................. 2

II. REVIEW OF THE LITERATURE
   Definition of Obsessive-Compulsive Personality Disorder (OCPD) ..................... 4
   Prevalence of OCPD ...................................................................................................... 5
   Lack of Empirical Studies on OCPD ........................................................................... 6
   Etiological Theories of OCPD Development ............................................................... 7
      Psychoanalytic Theory .............................................................................................. 7
      Social Learning Theory ........................................................................................... 8
      Biological Theory .................................................................................................... 9
   Compensatory Theory (CT) of OCPD Development ............................................. 11
      Theoretical Precedents for the CT ......................................................................... 12
      Compensatory Theories of OCD Development ................................................... 13
   Lack of Research on Impulse Control Difficulties in OCPD .................................. 13
   Impulsivity .................................................................................................................. 14
      Impulsivity as a Multidimensional Construct ......................................................... 15
      Whiteside and Lynam’s Multidimensional Model of Impulsivity ...................... 16
   OCPD and Impulsivity ............................................................................................... 18
OCPD and Substance Dependence .................................................19
OCPD and Eating Disorders...........................................................20
OCPD and Impulsive Aggression ...................................................21
Conclusion ................................................................................22
Hypotheses ................................................................................23

III. DESIGN AND METHODOLOGY

Participants ................................................................................28
Procedure ..................................................................................29
Measures ..................................................................................29
  Personality Disorders Measure .................................................29
  Impulsivity Measures ...............................................................31

IV. RESULTS

Regression Analyses/MANOVA ...................................................37
Factor Analysis/Regression Analyses ..........................................42
Cluster Analysis/MANOVA .........................................................46

V. DISCUSSION

Hypothesis 1a ............................................................................50
Hypothesis 1b ............................................................................52
Hypothesis 2 .............................................................................54
Hypothesis 3 .............................................................................57
Conclusion ...............................................................................58
Implications of the Findings .......................................................60
Limitations of this Study ............................................................61
Future Directions ......................................................................63
LIST OF TABLES

Table 1: Intercorrelations between NEO-PI-R Impulsivity-Related Traits in Several Studies...........................................................34

Table 2: Descriptive Statistics for Overall Sample (N = 328)..............................................36

Table 3: Descriptive Statistics for Males (N = 89) and for Females (N = 239)..............37

Table 4: Regression Coefficients for NEO-PI-R Impulsivity-Related Traits on PDQ-4+
OCPD Total Scores (OCPD_{total}) Simultaneous Multiple Regression (N = 326)....39

Table 5: Correlations between NEO-PI-R Impulsivity-Related Traits and PDQ-4+
OCPD_{total} (N = 326)................................................................................................39

Table 6: MANOVA of NEO-PI-R Impulsivity-Related Traits in OCPD (N = 143) vs.
Non-OCPD (N = 184) Groups ..................................................................................41

Table 7: Summary of PDQ-4+ OCPD Exploratory Factor Analysis Results (N = 325)
.................................................................................................................................43

Table 8: Regression Coefficients for NEO-PI-R Impulsivity-Related Traits on OCPD Fac
tor 1 Simultaneous Multiple Regression (N = 325).................................................45

Table 9: Regression Coefficients for NEO-PI-R Impulsivity-Related Traits on Factor 2 Regression Simultaneous Multiple Regression (N = 325)............................46

Table 10: MANOVA of NEO-PI-R Impulsivity-Related Traits in OCPD Clusters (N =
150, N = 176)...........................................................................................................48
CHAPTER I
INTRODUCTION

Recent evidence has suggested that Obsessive-Compulsive Personality Disorder (OCPD) is a common condition both in community (Grant et al., 2004) and in clinical samples (Zimmerman, Rothschild, & Chelminski, 2005). Despite relatively high prevalence rates, little empirical attention has been given to OCPD in the past several decades (Grillo & McGlashan, 1999; Pfohl & Blum, 1995; Pollack, 1995). Specifically, there has almost been a complete lack of research exploring the etiology of OCPD (Villemarette-Pittman, Stanford, Grieve, Houston, & Mathias, 2004).

While theorists from psychoanalytic (e.g., Abraham, 1921), social learning (e.g., Carr, 1974), and biological (e.g., Stein et al., 1996) perspectives have suggested possible causes of OCPD, empirical support for these existing developmental models is limited (see Villemarette-Pittman et al., 2004 for a review). In an effort to generate renewed interest into the scientific study of the etiology of OCPD, Villemarette-Pittman and colleagues proposed a theory that suggests OC personality traits arise in some individuals on a developmental pathway that begins with impulse dysregulation. That is, these authors suggested that OCPD develops in order to allow certain individuals to control, or compensate, for a primary and underlying difficulty with impulse regulation. According to Villemarette-Pittman and colleagues, the occasional explosive losses of self-control that occur in individuals with OCPD reflect a temporary breakdown in the OC regulatory mechanism and a release of their latent impulsivity. Following these lapses of self-control, however, the pathological hyper-control that characterizes the OC personality is reinstated. The individual with OCPD, therefore, moves back and forth on a continuum of
self-control, characteristically being overcontrolled but occasionally displaying increased levels of undercontrol (i.e., impulsivity).

The compensatory theory (CT) of OCPD development is based largely on clinical observations of losses of control of aggressive impulses in OCPD patients and on empirical evidence of high rates of comorbidity between OCPD and disorders involving elevated levels of impulsivity (e.g., drug dependence). To date, however, no study has attempted to empirically validate the CT of OCPD development or any aspect of this etiological model.

STATEMENT OF THE PROBLEM

The purpose of the present study was to explore the validity of an aspect of the CT of OCPD development suggested by Villemarette-Pittman and colleagues (2004). Specifically, the relationship between OCPD and impulsivity was examined since a positive association between these constructs is a fundamental presupposition of the CT, and upon which its theoretical merit rests. In empirically studying a developmental model of a relatively common personality disorder, the present findings will have both theoretical and clinical implications in regards to the understanding and treatment of OCPD.

Since Villemarette-Pittman and colleagues (2004) failed to elaborate which components of the OCPD construct are related to impulsivity, the present study attempted to explore the nature of the relationship between OCPD and impulsivity in three different ways. First, the strength and direction of the association between four dimensions of impulsivity (i.e., Impulsiveness, Excitement Seeking, Self-Discipline, and Deliberation) and OCPD were studied, as were the levels of these dimensions of impulsivity in
individuals who met diagnostic threshold for an OCPD diagnosis relative to those who
did not meet diagnostic threshold. Second, the four dimensions of impulsivity were used
to predict latent components of the OCPD diagnosis. Finally, individuals were clustered
according to their patterns of OCPD diagnostic criteria endorsement and clusters were
compared on four dimensions of impulsivity to determine if an “impulsive” OCPD
subtype emerged.

The overall goal of the present study was to determine the nature of the
relationships between OCPD as a diagnostic category, the latent components of the
OCPD diagnosis, and OCPD subtypes, and four dimensions of impulsivity to empirically
explore a critical aspect of the CT of OCPD development. The present study expanded on
previous studies by directly examining the relationship between OCPD and impulsivity in
several different ways, and by conceptualizing and measuring impulsivity as a
multidimensional construct. More broadly, the present study examined the dimension of
self-control, with the hyper-control that characterizes OCPD at one end of the spectrum
and the under-control of impulsivity at the opposite end of the spectrum. The dimension
of self-control was used to explain previous findings that OCPD is positively associated
with disorders involving a lack of self-control.
CHAPTER II
REVIEW OF THE LITERATURE

Definition of Obsessive-Compulsive Personality Disorder (OCPD)

OCPD is defined as a pervasive pattern of preoccupation with orderliness, perfectionism, and mental and interpersonal control at the expense of flexibility, efficiency, and openness (American Psychiatric Association, APA, 2000). To receive a diagnosis of OCPD, an individual must meet at least four of the following criteria, as outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition - Text Revision (DSM-IV-TR; APA):

1. is preoccupied with details, rules, lists, order, organization, or schedules to the extent that the major point of the activity is lost;
2. shows perfectionism that interferes with task completion (e.g., is unable to complete a project because his or her own overly strict standards are not met);
3. is excessively devoted to work and productivity to the exclusion of leisure activities and friendships (not accounted for by obvious economic necessity);
4. is overconscientious, scrupulous, and inflexible about matters of morality, ethics, or values (not accounted for by cultural or religious identification);
5. is unable to discard worn-out or worthless objects even when they have no sentimental value;
6. is reluctant to delegate tasks or to work with others unless they submit to exactly his or her way of doing things;
7. adopts a miserly spending style toward both self and others; money is viewed as something to be hoarded for future catastrophes; and/or,
8. shows rigidity and stubbornness.

In addition to meeting the threshold number of diagnostic criteria, to be diagnosed with OCPD an individual must have exhibited these traits chronically since the beginning of early adulthood and across a variety of contexts. Gallagher, South, and Oltmanns (2003) noted that the polythetic nature of the diagnostic criteria for OCPD allows the condition to manifest itself in a number of ways. Despite the many possible presentations of the disorder, Pfohl and Blum (1995) suggested that perfectionistic, cognitively rigid, and emotionally-constricted are salient descriptors that apply to almost all individuals diagnosed with OCPD.

Prevalence of OCPD

OCPD has been found to be a prevalent disorder both in community and in clinical samples. The prevalence of DSM-III-R (APA, 1987) OCPD in the community has been reported to range from 0.7% to 4.5% (Bodlund, Ekselius, & Lindstrom, 1993; Jackson & Burgess, 2000; Klein et al., 1995; Lenzenweger, Loranger, Korfine, & Neff, 1997; Maier, Lichtermann, Klingler, Heun, & Hallmayer, 1992; Moldin, Rice, Erlenmeyer-Kimling, & Squires-Wheeler, 1994), and was found to be one of the most frequently diagnosed personality disorders across community samples (Torgersen, Kringlen, & Cramer, 2001). While the current edition of the DSM reported prevalence estimates of approximately 1% in community samples, DSM-IV (APA, 1994) OCPD had a much higher prevalence rate in a recent study of personality disorders that employed an extremely large, representative American sample (Grant et al., 2004). This study found that DSM-IV OCPD was the most prevalent personality disorder in the general
population, with a rate of 7.9%, and accounted for over half of all personality disorder diagnoses.

In addition to having a relatively high prevalence rate within the community, OCPD has generally been found to be one of the most frequently diagnosed personality disorders in clinical populations (Stuart, Pfohl, Bataglia, Bellodi, Grove, & Cadoret, 1998; Wilfley, Friedman, Dounchis, Stein, Welch, & Ball, 2000). For example, in a recent study of psychiatric outpatients (Zimmerman et al., 2005) the prevalence rate of DSM-IV OCPD was 8.7%, making it the third most commonly diagnosed personality disorder in this clinical sample.

Additionally, while some sources have suggested an excess of OCPD diagnoses in males (e.g., APA, 2000; Jackson & Burgess, 2000; Stone, 1993; Torgensen et al., 2001), no sex differences in OCPD prevalence rates were found in other studies (e.g., Albert, Maina, Forner, & Bogetto, 2004; Grant et al., 2004).

Lack of Empirical Studies on OCPD

While OCPD is relatively common in the general population and in clinical samples, little empirical attention has been given to this personality disorder in the past several decades (Grillo & McGlashan, 1999; Pfohl & Blum, 1995; Pollack, 1995). In exploring the literature on personality disorders from 1966 to 1995, Blashfield and Intoccia (2000) reported an average of less than 10 published articles on OCPD per year. Furthermore, in a recent MEDLINE database search Villemarette-Pittman et al. (2004) found only 40 articles on OCPD published from 1996 to 2001, considerably less than the 10 per year found by Blashfield and Intoccia. Despite recent findings that OCPD is more prevalent than was generally believed (Grant et al., 2004), it appears that empirical
exploration on the topic has declined since 1995. This has led some (i.e., Blashfield & Intoccia) to refer to OCPD as an empirically “dead” personality disorder, but has spurred other authors (i.e., Villemarette-Pittman et al.) to provide a comprehensive review of the topic in order to stimulate research on the associated features, correlates, and etiology of OCPD. In this regard, the present study explored the validity of an etiological model of OCPD development in order to improve understanding of the possible causal factors of this understudied, yet highly prevalent disorder. Furthermore, understanding how self-control can serve an adaptive function in reducing the expression of destructive impulses, using the CT of OCPD development as a model, will have therapeutic implications for a number of disorders involving impulse dyscontrol (e.g., substance dependence, antisocial personality disorder).

Etiological Theories of OCPD Development

While the current diagnostic criteria for OCPD have evolved from earlier editions of the DSM (Grillo, 2004a), the qualitative description of the disorder has varied little since Freud first described the anal character in the early 1900s (Pfohl & Blum, 1991). Despite consensus on the core nature of the disorder, a variety of theories have been proposed over the years on the etiology of OCPD.

Psychoanalytic theory. According to early Freudians, the anal character emerges as a result of an excessive fixation of psychological energy, or libido, on the anal stage of development. During the second to third years of life, the anus becomes the critical site of sexual tension and gratification for a child (Brenner, 1973). Pleasurable and unpleasurable sensations are associated with the retention of feces and with their expulsion, and these bodily processes become the primary objects of the child’s interest.
A conflict may develop, however, between the child’s desire to freely control excretory activities and the parents’ responsibility to regulate the child’s elimination and retention according to social standards of cleanliness and impulse control (Freud, 1959). While many factors can contribute to fixation at the anal stage of development (e.g., parental impatience, inappropriate onset of toilet training, extreme frustration or gratification experienced by the child; Pfohl & Blum, 1991; Pollack, 1979; Pollack, 1987a), the end result is invariably the emergence of a personality with tendencies toward orderliness, parsimony, and obstinacy (i.e., the “anal character”) (Abraham, 1921; Ingram, 1982; Pfohl & Blum, 1991).

From a psychoanalytic perspective, Shapiro (1965, 1981) noted that OC personality traits serve a defensive function against the expression of impulses that contributed to the parental-child conflict during the anal stage of development. Specifically, OC traits such as orderliness, devotion to discipline and work, and deliberation are theorized to act as “counter-measures” to urges to engage in distasteful, socially inappropriate acts. Since these primitive urges were inappropriately experienced during childhood, the strength of their need for expression increases as the child ages. According to Shapiro the strength of these urges and the fear of their expression account for the necessity of developing exaggerated OC traits, which serve the purpose of inhibiting their emergence. Despite the elaborate nature of this etiological model, a review of studies attempting to empirically validate it offered little support for the proposed relationship between conflicts during the anal stage and the development of OCPD (Pollack, 1979).

*Social learning theory.* A second etiological theory suggests OCPD is predominantly a socially learned behaviour that results from the modeling of significant
adult figures during childhood. This theory proposes that OCPD emerges from repeated interactions between the child and important adult figures, who are themselves rigid, controlling, and obsessional in their style (Carr, 1974). Furthermore, Benjamin (1993) suggested the developmental history of an individual with OCPD included relentless coercion to perform correctly and to follow an adult’s rules, regardless of the cost to the child. These individuals developed in an environment that placed an emphasis on intrapersonal and interpersonal control at the expense of warmth (McWilliams, 1994), and, as children, they were punished when they failed and were given few rewards for their successes. While this theory remains to be empirically validated, individuals with OCPD have reported lower levels of paternal care and higher levels of parental over-involvement relative to individuals with other personality disorders (Nordhal & Stiles, 1997).

**Biological theory.** The third prominent theory on the etiology of OCPD is biological and is rooted in the hypothesized relationship between OCPD and Obsessive-Compulsive Disorder (OCD). Despite the proposal that a specific connection exists between these disorders (Stein & Hollander, 1993), a number of lines of evidence have suggested otherwise. For example, while some authors have reported that OCD is more frequently associated with premorbid OC personality patterns than with other personality patterns, an extensive review of studies on this topic has not robustly supported this suggestion. In some studies OCPD was the most common personality disorder in patients with OCD (Horesh, Dolberg, Kirschenbaum-Aviner, & Kotler, 1997; Mataix-Cols, Baer, Rauch, & Jenike, 2000; Samuels et al., 2000; Stanley, Turner, & Borden, 1990), while in others it was not (Black, Noyes, Pfohl, Goldstein, & Blum, 1993; Maina, Bellino, Bogetto, & Ravizza, 1993; Matsunaga et al., 1998; Sciuto, Diaferia, Battaglia, Perna,
Gabriele, & Bellodi, 1991; Steketee, 1990; Torres & Del Porto, 1995), suggesting caution in the interpretation of the relationship between OCPD and OCD. In addition, several authors have speculated that some children with early-onset OCD might have developed OC personality traits as part of an adaptive coping pattern (Berg et al., 1989; Swedo, Leonard, & Rapoport, 1990). Children with OCD, however, are no more likely than controls to develop OCPD (Thomsen & Mikkelsen, 1993), thus raising more questions about the nature of such a relationship. Finally, several studies (Albert et al., 2004; Mavissakalian, Hamann, Abou Haidar, & de Groot, 1993; Mavissakalian, Hamann, & Jones, 1990; Sanderson, Wetzler, Beck, & Betz, 1994; Sciuto et al., 1991) have failed to support the hypothesis of a specific link between OCPD and OCD since similar OCPD prevalence rates were found in patients with OCD, panic disorder, generalized anxiety disorder, and social anxiety disorder. Following their extensive review of the literature on the topic, Albert et al. concluded that OCPD and OCD are two distinct disorders that can coexist but that are not specifically linked.

Although arguments against the unique relationship between OCPD and OCD are compelling, the obsessive-compulsive spectrum theory proposed by Stein and Hollander (1993), based largely on hypothesized relationships between disorders characterized by obsessiveness and compulsiveness, has implicated neurotransmitter dysfunction as a factor contributing to the development of OCPD. Indirect evidence for dysfunction of the serotonin system comes from the association between OCPD and harm avoidance. Since individuals with OCPD have been characterized by increased harm avoidance, it has been suggested that serotonergic dysfunction may be associated with OCPD insofar as serotonin mediates harm avoidance (Stein et al., 1996). Furthermore, OCPD symptoms have been negatively correlated with prolactin response to fenfluramine, a purported
indicator of serotonergic dysfunction (Stein et al.). While evidence in this area is limited, these findings have suggested that biological factors may play a role in the etiology of OCPD.

Compensatory Theory (CT) of OCPD Development

Due to the lack of empirical support for existing etiological models of OCPD, Villemarette-Pittman and colleagues (2004) proposed a developmental theory of OCPD that addresses their seemingly contradictory clinical observation of high rates of OCPD in individuals with impulsive aggression. These authors suggested that OC personality traits develop in some individuals in order to compensate for their innate or acquired tendency toward behavioural disinhibition (i.e., impulsivity). In other words, the intensity with which some individuals occasionally lose control of their impulses to engage in harmful acts is enough to warrant an equally intense need for self-control. According to Villemarette-Pittman and colleagues, this unwavering desire for self-control manifests itself through the adoption of the rigid routines and increased attention to details that characterize OCPD. When the personality type becomes dysfunctional, however, the extreme rigidity paired with an underlying low impulse control produces an individual that, when things do not meet his or her rigid and perfectionistic standards, can lose control in an explosive and impulsive manner (Villemarette-Pittman et al.). Following an explosive burst of impulsiveness there is, however, a strong tendency to re-assert self-control in an exaggerated form. The cycle of loss of self-control and re-assertion of control can continue indefinitely.

Since it is known that disinhibited patients benefit from highly structured environments (Frick, 1998), Villemarette-Pittman and colleagues (2004) argued that the
prophylactic mechanism of the OC personality style may be very effective in controlling potentially destructive impulses insofar as the disinhibition individuals who go on to develop OCPD exhibit is neither chronic nor pervasive. Additionally, from a behaviorist perspective, since the OC style can be highly rewarding both in terms of the increased successes it can bring and in the social acceptance of its discipline and high standards of performance, these individuals are likely initially reinforced to maintain these personality traits. Despite the benefits they may receive from adopting this personality style, Villemarette-Pittman and colleagues suggested that internally individuals with OCPD are continuously waging a battle between their intense destructive impulses and their extreme resistance to express these urges.

Theoretical precedents for the CT. Many theorists, largely from a psychodynamic perspective and predating the work of Villemarette-Pittman and colleagues (2004), have acknowledged the intense internal struggle for self-control that lies at the heart of OCPD. Furthermore, these authors have also noted that lapses in the OC regulatory mechanism can lead to moments of impulsiveness. For example, Shapiro (1965; 1981) noted that OC traits allow an individual to counter the expression of their feared, destructive urges. In addition, Ingram (1982) suggested that “since the most disruptive impulses are those of violence and rage, in compulsive persons self-control serves largely to control rage... The experience of relaxation of self-control... can produce a sense of explosiveness in feelings and impulses” (p. 195). Furthermore, Millon (1981) wrote that individuals with OCPD are constantly battling to manage the internal turmoil of their unresolved struggle between obedience and defiance, and must control against the external eruption and the internal disruption of their emotions and impulses.
Compensatory theories of OCD development. While the CT of OCPD development was not clearly articulated as an empirically testable model prior to the work of Villemarette-Pittman and colleagues (2004), similar theories have been suggested for the etiology of OCD. For example, Hoehn-Saric and Barksdale (1983) reported that a subgroup of OCD patients with impulsive personalities had more psychological difficulties during childhood (e.g., low frustration tolerance, poor interpersonal relationships), and suggested that compulsions were an attempt at impulse control. In addition, Cottraux and Gerard (1998) proposed that an innate biological predisposition toward increased levels of impulsivity is compensated for by compulsive behaviour. They suggested that individuals with OCD believe themselves to be highly impulsive and potentially dangerous to others, and subsequently develop ritualistic behaviours to prevent the danger they see themselves inflicting. Stein (2000) also suggested that impulse dyscontrol underlies a compensatory response of resistance in individuals with OCD.

The collective work of these authors (i.e., Cottraux & Gerard, 1998; Hoehn-Saric & Barksdale, 1983; Stein, 2000), along with clinical literature acknowledging the internal conflict between self-control and impulsiveness in patients with OCPD, suggests the CT of OCPD development may have some theoretical merit. The validity of this model of OCPD development, however, should rest upon a firm empirical foundation. To date, empirical support for this model is lacking since the study of impulse control difficulties in OCPD has been a largely neglected empirical endeavor.

Lack of research on impulse control difficulties in OCPD. Villemarette-Pittman and colleagues (2004) suggested that impulsivity has remained relatively unexplored in OCPD for one major reason. They proposed that OCPD has not been uniquely associated
with “behavioural disinhibition” because the childhood path of many individuals who exhibit these difficulties (e.g., antisocial personality disorder, borderline personality disorder, attention-deficit/hyperactivity disorder, conduct disorder) is a lifestyle characterized by considerable disruption and socially unacceptable behaviour. The individual who has adopted an OC personality style to manage his or her problems with self-regulation, on the other hand, is likely socially reinforced for his or her organizational skills, ambition, and high expectations. When this individual exhibits occasional losses of control, these incidents are likely not viewed so negatively in light of his or her socially acceptable strengths. Furthermore, an individual whose initial self-regulation problems are minimized by OC personality traits is less likely to be detected as having a problem in the first place, whereas individuals who develop an antisocial or borderline personality disorder are more likely to be identified and referred for treatment (Bender et al., 2001). Villemarette-Pittman and colleagues suggested this is the primary reason behind the lack of empirical research on impulse control difficulties in OCPD.

**Impulsivity**

Impulsivity is a critically important psychological construct, appearing in almost all theoretical systems of personality. Impulsivity also plays a prominent role in various forms of psychopathology (Whiteside & Lynam, 2001). In addition to a DSM-IV-TR (APA, 2000) section strictly devoted to impulse-control disorders (e.g., intermittent explosive disorder, trichotillomania, pathological gambling), impulsivity appears in the diagnostic criteria for conditions such as antisocial personality disorder, borderline personality disorder, attention-deficit/hyperactivity disorder (ADHD), bulimia nervosa, and mania. Moreover, impulsivity plays a major role in etiological theories of
psychopathy (Lynam, 1996) and substance dependence (Wills, Vaccaro, & McNamara, 1994).

*Impulsivity as a multidimensional construct.* Impulsivity has largely been conceptualized as a multidimensional construct. As Depue and Collins (1999) noted, the umbrella term *impulsivity* comprises a cluster of traits that includes such terms as impulsiveness, sensation seeking, risk-taking, novelty seeking, boldness, adventuresomeness, boredom susceptibility, unreliability, and unorderliness. Accordingly, the majority of theories on impulsivity have acknowledged the heterogeneous nature of the construct. For example, Buss and Plomin (1975) suggested that impulsivity is a multidimensional temperament with inhibitory control (i.e., the ability to delay the performance of an action) as its core aspect. In Buss and Plomin’s model, the remaining dimensions of impulsivity include the tendency to consider alternatives and consequences before making a decision, the ability to remain on task despite competing urges, and the tendency to become bored and seek out novel stimuli.

Eysenck and colleagues have also conceptualized impulsivity as a multidimensional construct within the framework of their theory of personality. Eysenck and Eysenck (1977) divided what they termed “broad impulsiveness” into four distinct dimensions: narrow impulsiveness, risk-taking, non-planning, and liveliness. Furthermore, they found that these four dimensions of impulsivity correlated differentially with the three factors of their model of personality. For instance, narrow impulsiveness correlated highly with neuroticism and psychoticism, but did not correlate with extraversion. This work contributed to Eysenck and Eysenck’s (1985) refined proposal that impulsivity consists of two components: venturesomeness, which was
related to the extraversion factor, and impulsiveness, which was related to the psychoticism factor.

Zuckerman and colleagues similarly conceptualized impulsivity in relation to their general model of personality. Zuckerman, Kulhman, Thomquist, and Kiers (1991), employing a factor analytic method on a variety of personality measures, identified a personality factor consisting of the four subscales of the Sensation Seeking Scale (Zuckerman, 1994) and other measures of impulsivity. This factor, which they labeled impulsive-sensation seeking, consisted of items that related to a lack of planning, the tendency to act without thinking, and the willingness to take risks for the sake of excitement.

Using information from biological, psychological, behavioural, and social perspectives, Barratt and colleagues (Barratt, 1993; Patton, Stanford, & Barratt, 1995; Stanford & Barratt, 1992) also developed a multidimensional approach to impulsivity. These authors identified three factors they suggested reflected the different dimensions of impulsivity. These factors were attentional impulsiveness (i.e., the inability to focus on tasks), motor impulsiveness (i.e., acting spontaneously), and non-planning (i.e., a lack of self-control).

Whiteside and Lynam's multidimensional model of impulsivity. Given the relevance of impulsivity to the field of psychology, Whiteside and Lynam (2001) noted that it is surprising that major inconsistencies exist among the many conceptualizations of the construct. Following their comprehensive review of various models of impulsivity, they suggested that within the Five Factor Model (FFM) of personality, as measured by the Revised NEO-Personality Inventory (NEO-PI-R; Costa & McCrae, 1992), there appeared to be four personality facets that subsumed the major conceptualizations of
impulsivity, and that represented four distinct psychological processes that lead to impulsivity-like behaviour. The four traits were: (1) NEO-PI-R Impulsiveness, which is located on the higher-order Neuroticism factor and measures an individual’s tendency to give in to strong urges, specifically those accompanied by emotions such as depression, anxiety, or anger; (2) NEO-PI-R Excitement Seeking, which is located on the higher-order Extraversion factor and measures an individual’s preference for excitement and stimulation; (3) NEO-PI-R Self-Discipline, which is located on the higher-order Conscientiousness factor and measures an individual’s ability to persist in completing tasks despite boredom and/or fatigue; and, (4) NEO-PI-R Deliberation, which is located on the higher-order Conscientiousness factor and measures an individual’s ability to contemplate the possible consequences of his or her behaviour before acting.

Whiteside and Lynam (2001) reported that these four distinct NEO-PI-R facets captured aspects of impulsivity previously conceptualized by other investigators. For example, low self-control, as described in Buss and Plomin’s (1975) model of impulsivity, is measured by the Impulsiveness and Self-Discipline facets of the NEO-PI-R. High scorers on the Impulsiveness facet are moody, irritable, and excitable, while low scorers on the Self-Discipline facet are described as lazy, disorganized, and not thorough. In addition, Whiteside and Lynam suggested the Excitement Seeking facet is similar to Zuckerman’s (1994) sensation-seeking dimension and the venturesomeness component of impulsivity described by Eysenck and Eysenck (1985). High scorers on this facet are described as pleasure-seeking, daring, and adventurous. Finally, the Deliberation facet is reminiscent of Barratt’s (1993) non-planning factor, with low scorers on this facet being described as hasty, careless, and impatient.
Whiteside and Lynam (2001) argued that while these four facets of personality lead to similar overt behaviours (i.e., the appearance of acting without foresight), they represent distinct psychological pathways to impulsive-like behaviours. More specifically, being high on Impulsiveness or high on Excitement Seeking can lead to impulsive-like behaviour, while lacking Self-Discipline or lacking Deliberation can lead to impulsive-like behaviour. Several studies (Claes, Vandereycken, & Vertommen, 2005; Miller, Flory, Lynam, & Leukefeld, 2003; Whiteside & Lynam, 2001) have shown that these dimensions of impulsivity are differentially related to Axis I and Axis II disorders, such as ADHD and borderline personality disorder, suggesting this model of impulsivity is a useful way of understanding behaviours and forms of psychopathology considered to be characterized by some form of impulsivity.

**OCPD and Impulsivity**

According to the CT of OCPD development, individuals with OCPD exhibit elevated levels of impulsivity (Villemarette-Pittman et al., 2004). While heightened impulsivity has traditionally been linked to antisocial personality disorder (e.g., Barratt, Stanford, Kent, & Felthous, 1997) and borderline personality disorder (e.g., Dougherty, Bjork, Huckabee, Moeller, & Swann, 1999), OCPD and its relation to impulse control difficulties has received far less empirical support despite consistent description in the clinical literature (Villemarette-Pittman et al.). Furthermore, whereas OCPD has been associated with a range of psychosomatic and psychological conditions (see Villemarette-Pittman et al. for a review) and interpersonal problems (Bailey, 1998), little reference has been made to the presence of OCPD in individuals with impulse control difficulties. To complicate matters further, OCD and OCPD are often not distinguished when discussing
the relationship between compulsivity and impulsivity (e.g., Hollander, 1999; Stein et al., 1996). In order to determine the validity of the CT of OCPD development, it is necessary to study the relationship between OCPD and impulsivity in a more direct and unambiguous manner, while taking into account the multidimensional nature of impulsivity.

**OCPD and substance dependence.** While impulsivity has remained relatively unexplored in OCPD, the link between OCPD and impulsivity has received some indirect empirical support from studies examining the comorbidity of this personality disorder and disorders characterized by heightened levels of impulsivity. For example, Suzuki, Muramatsu, Takeda, and Shirakura (2002) compared the prevalence of OC personality traits among hospitalized alcohol dependent subjects and controls. These authors found higher reported levels of OC personality traits in alcohol dependent subjects. Furthermore, the increased rates of OC traits were not explained by the higher levels of depression found in alcohol dependent subjects. Insofar as alcohol abuse and dependence have been linked to impulse control difficulties (e.g., Ball, Tennen, Poling, Kranzler, & Rounsaville, 1997), this finding indirectly supports a positive relationship between OC personality traits and heightened impulsivity.

In addition, Whitmarsh (1999) reported that the compulsive personality structure was present in alcohol dependent individuals and that it correlated with treatment success in early recovery. This finding suggested that the OC personality is associated with a disorder characterized by impulse dyscontrol (i.e., alcohol dependence), and that these traits may play a beneficial role in controlling impulses to engage in excessive drinking. The work of Whitmarsh appeared to support Villemarette-Pittman and colleagues’ (2004)
contention that OC personality traits can function adaptively in individuals struggling with impulse control difficulties.

Finally, in a study of adult opioid dependent inpatients, Modestin, Matutat, and Wurmle (2001) reported that OCPD was more frequently diagnosed in individuals who had childhood ADHD (alone or with comorbid conduct disorder), whereas antisocial and borderline personality disorders were more frequently diagnosed in those with conduct disorder (alone or with comorbid ADHD). Interestingly, all cluster A and all other cluster C personality disorder diagnoses did not differ between these groups and controls, which led the authors to suggest that the OC pattern that develops in some opioid dependent individuals with childhood ADHD could be viewed as a reaction to their primary disinhibitory difficulties. They concluded that ADHD seemed to be more frequently an antecedent of OCPD, and the development of this personality disorder “may serve compensatory purposes” (p. 46). The association between opioid dependence and ADHD, two disorders associated with increased levels of impulsivity (e.g., Avila, Cuenca, Felix, Parcet, & Miranda, 2004; Lejuez, Bornovalova, Daughters, & Curtin, 2005), and OCPD indirectly suggested a positive relationship between this personality disorder and impulse dyscontrol. Furthermore, according to these authors it is possible that impulse dyscontrol is regulated via the development of OC personality traits, a hypothesis that is in line with the CT of OCPD development.

*OCPD and eating disorders.* The indirect link between OCPD and increased impulsivity has also received some support in the eating disorders literature. For example, while it was traditionally believed that OCPD is more prevalent in anorexia nervosa than in bulimia nervosa (Aragona & Vella, 1998), Claes, Vandereycken, and Vertommen (2002) found that rates of OCPD were equivalent in anorexia nervosa and bulimia
nervosa and greater than in normal controls. These authors also reported that higher levels of impulsivity were associated with the purging type of anorexia nervosa and with bulimia nervosa, which suggested an indirect association between elevated impulsivity and OCPD. In addition, a number of studies (Grillo, 2004b; Specker, de Zwann, Raymond, & Mitchell, 1994; Wilfley et al., 2000) have found elevated rates of OCPD in individuals with binge eating disorder, another eating disorder characterized by increased impulsivity (e.g., Nasser, Gluck, & Geliebter, 2004).

*OCPD and impulsive aggression.* From a theoretical standpoint, a number of authors have acknowledged that individuals with OCPD are prone to acts of impulsive aggression. For example, Millon and Davis (1996) suggested that individuals with OCPD harbor an internal conflict between obedience and defiance. That is, superficially they are compliant yet internally they possess a strong desire to defy the regulations that have been imposed upon them. Their disciplined self-restraint controls their intense oppositional feelings, and the powerful destructive urges lurking behind their self-control can break through when their rigid standards are not met. Similarly, Richards (1993) noted that OCPD is partially characterized by qualities of the antisocial (i.e., aggressive) style. He suggested the rigidity of an OC individual’s behaviour is necessary to control their seething antagonism, and their emotional restriction serves as a defense against an uncontrolled outburst of aggressive impulses.

Empirically, impulsive aggression has been directly associated with OCPD in the research of Stein et al. (1996) and Villemarette-Pittman et al. (2004). In comparing males with compulsive personality disorder (CPD) to males with non-compulsive personality disorders (NPDs) and controls, Stein and colleagues found that patients with CPD exhibited greater impulsive aggression than patients with NPDs or than controls. In this
study, total CPD traits correlated positively with impulsive aggression. Furthermore, in their work with individuals with impulsive aggression Villemarette-Pittman and colleagues found that rates of OCPD in impulsive aggressives were similar to rates of personality disorders traditionally known to be associated with elevated levels of impulsivity (e.g., antisocial personality disorder). Specifically, in self-referred individuals 52% met diagnostic criteria for OCPD while 45% met criteria for antisocial personality disorder. In clinic-referred individuals, the second most commonly diagnosed personality disorder following antisocial personality disorder was OCPD, accounting for 25% of all Axis II diagnoses.

Conclusion

There appears to be both theoretical and empirical reasons to assume the CT of OCPD developmental has merit. Theoretically, several authors (e.g., Ingram, 1982; Millon, 1981; Richards, 1993; Shapiro, 1965; Shapiro, 1981) have acknowledged that individuals with OCPD experience an intense internal struggle to control their impulses and that temporary lapses in the OC regulatory mechanism can lead to moments of impulse dyscontrol. Empirically, the literature has suggested that an association between OCPD and elevated levels of impulsivity exists. Specifically, increased rates of OCPD have been observed in individuals with substance dependence, ADHD, and eating disorders, conditions characterized by heightened levels of impulsivity. However, these studies have either only indirectly supported a positive relationship between OCPD and impulsivity (e.g., Suzuki et al., 2002) or they have examined only one dimension of impulsivity (e.g., Stein et al., 1996). In order to improve understanding of the nature of this relationship and, consequently, to begin to explore the validity of the CT of OCPD
development, multiple dimensions of the impulsivity construct should be directly measured in individuals with OCPD.

Hypotheses

The general goal of the present study was to empirically explore one aspect of the CT of OCPD development. Insofar as the CT suggests that OCPD might arise out of attempts to control difficulties with impulsivity, a positive relationship between at least some components of OCPD and impulsivity was expected. The CT, however, fails to elaborate on what elements of the OCPD construct are associated with impulsivity. The present study tested three hypotheses in an effort to explore, in several different ways, how OCPD may be positively associated with impulsivity.

Since impulsivity is understood to be a heterogeneous construct, a multidimensional model of impulsivity was employed in the current study. Impulsivity was conceptualized as a multidimensional construct using Whiteside and Lynam’s (2001) NEO-PI-R model, which is comprised of the dimensions Impulsiveness, Excitement Seeking, Self-Discipline, and Deliberation. Since these authors suggested that phenotypically similar forms of impulsivity may arise from distinct psychological processes, understanding the nature of the psychological processes that precede impulsive behaviour in OCPD would help empirically elaborate the CT of OCPD development. However, the CT does not seem to imply that impulsivity in general is compensated for by OC personality traits. Rather, it appears to suggest that a specific form of impulsivity, namely, urges that increase in strength and break through the self-control mechanism, is counteracted by the OC personality structure. This type of impulsivity is most similar to the Impulsiveness facet of the NEO-PI-R Neuroticism domain. Accordingly, the CT of
OCPD development would not imply that Excitement Seeking (i.e., the preference for excitement and stimulation), low Self-Discipline (i.e., the ability to persist in completing tasks), and low Deliberation (i.e., the ability to contemplate possible consequences of actions before acting) are compensated for by OCPD symptoms. These types of impulsivity, therefore, are not expected to be associated with OCPD.

In the present study, OCPD was operationalized using the DSM-IV-TR definition of the disorder, as measured by the Personality Diagnostic Questionnaire (PDQ-4+; Hyler, 1994). Impulsivity was operationalized using the four impulsivity-related facets of the NEO-PI-R as suggested by Whiteside and Lynam (2001). While Impulsiveness appears to measure the type of impulsivity suggested by the CT, this facet appears to go beyond the CT in specifying that impulsivity is accompanied by distressful emotions.

*Hypothesis 1a.* Since the CT suggests that individuals with OCPD give in to strong urges to engage in harmful acts, it was hypothesized that NEO-PI-R Impulsiveness (i.e., the tendency to give in to strong urges accompanied by negative emotions) would predict variance in PDQ-4+ OCPD, and the direction of the relationship between this dimension of impulsivity and OCPD would be positive. A positive association between Impulsiveness and OCPD would provide some empirical support for the CT of OCPD development. While hypotheses on the exact nature of the relationships between NEO-PI-R Excitement Seeking, Self-Discipline, and Deliberation were not made, if these dimensions of impulsivity were either unrelated to OCPD or if the Conscientiousness facets (i.e., Self-Discipline and Deliberation) were positively related and Excitement Seeking was negatively related to OCPD the CT would be further supported.

*Hypothesis 1b.* As stated above, the CT of OCPD development does not explicitly state what elements of the OCPD construct are associated with elevated levels of
impulsivity. The CT, therefore, may simply imply that impulsivity is elevated in individuals who meet diagnostic threshold for OCPD relative to those who do not meet diagnostic threshold for OCPD. This possibility was tested in the current study by comparing levels of dimensions of impulsivity in individuals who met diagnostic threshold for OCPD and those who did not meet diagnostic threshold for OCPD. It was hypothesized that individuals who endorsed four or more OCPD diagnostic criteria on the PDQ-4+ OCPD subscale would show elevated levels of NEO-PI-R Impulsiveness relative to individuals who endorsed three or less OCPD diagnostic criteria. Confirmation of this hypothesis would also provide some support for a critical aspect of the CT of OCPD development. While hypotheses on how these groups would differ on the remaining NEO-PI-R dimensions of impulsivity were not made, if individuals with OCPD had relatively lower levels of Excitement Seeking and elevated levels of the Conscientiousness facets (i.e., Self-Discipline and Deliberation) or if these dimensions were equivalent across groups the CT would be further supported.

Hypothesis 2. It is possible that the CT applies only for particular latent components of the OCPD construct, rather than the diagnosis itself. That is, impulsivity may not be positively associated with OCPD as a diagnostic category but rather with underlying elements of the disorder construct. Once again, the CT is silent in addressing which symptoms of OCPD are related to increased levels of impulsivity.

Several authors (e.g., McCrae et al., 2001; Reynolds & Clark, 2001; Widiger & Frances, 2002) have suggested that OCPD diagnostic criteria do not represent a meaningful and psychometrically homogeneous construct, and others (e.g., Gibbs & Oltmanns, 1995) have emphasized the utility of examining particular factors that underlie OC personality traits (e.g., Gibbs & Oltmanns). However, only one previous study
(Grillo, 2004b) has examined the factor structure of DSM-IV OCPD. A three-factor solution, comprised of the factors rigidity, perfectionism, and miserliness, was found by Grillo (2004b). Given that no further precedent exists, it was hypothesized that the latent structure of PDQ-4+ OCPD in the current study would best be described by a three factor solution. It was also hypothesized that NEO-PI-R Impulsiveness would predict variance in at least one of the OCPD factors in the positive direction. This association would provide some support for an aspect of the CT of OCPD development. Due to the partial exploratory nature of the current study, specific hypotheses were not made regarding what OCPD symptoms would be associated positively with Impulsiveness. In addition, while hypotheses on the nature of the relationships between NEO-PI-R Excitement Seeking, Self-Discipline, and Deliberation were not made, if these dimensions of impulsivity were either unrelated to OCPD factors or if the Conscientiousness facets (i.e., Self-Discipline and Deliberation) were positively related and Excitement Seeking was negatively related to OCPD factors the CT would be further supported.

Hypothesis 3. Finally, it is possible that only certain subtypes of OCPD are positively associated with impulsivity, and the CT of OCPD development applies to only these subtypes. For an “impulsive” OCPD subtype to exist, it is necessary for one cluster of individuals grouped by their pattern of OCPD criteria endorsement to exhibit elevated levels of impulsivity.

It has been suggested that, given the inherent complexity of personality, subtyping personality disorders would advance taxonomic and therapeutic understanding (Davis & Patterson, 2005). While work has been fruitful in the subtyping of Borderline Personality Disorder (e.g., Zittell, 2004), no previous research has attempted to subtype OCPD. Since this portion of the study was also exploratory, no specific hypotheses could be made.
regarding how many OCPD clusters would emerge. However, it was hypothesized that at least one cluster would demonstrate elevated levels of Impulsiveness relative to the other cluster(s). This would also provide some empirical credence for the CT of OCPD development. While hypotheses of how OCPD clusters would differ on the remaining NEO-PI-R dimensions of impulsivity were not made, if individuals in one cluster had relatively lower levels of Excitement Seeking and elevated levels of the Conscientiousness facets (i.e., Self-Discipline and Deliberation) or if these dimensions were equal across clusters the CT would be further supported.

The present study may provide empirical evidence to support a fundamental aspect of the CT of OCPD development (i.e., the positive association between OCPD and impulsivity), an etiological model of a common yet understudied personality disorder. Findings on the relationship between OCPD and impulsivity will allow clinicians to form improved conceptualizations of their patients with OCPD, and will help tailor therapeutic interventions to address the unique needs of the OCPD patient. In addition, present findings may help formulate a model of how disorders characterized by a lack of control can be regulated by training individuals struggling with impulse dysregulation to improve their methods of self-control.
Participants

Participants were 328 (89 male, 239 female) undergraduate students from the University of Windsor in Ontario, Canada. Participants were randomly recruited through a participant pool comprised of students in undergraduate psychology courses offered at the university, and they obtained course credit for participating in the study. The data used in the current study were archival, having been collected for a previous research project in Dr. Stephen Hibbard’s laboratory.

The mean age of participants was 22.64 years ($SD = 5.16$), and ranged from 17 to 59 years. There was no difference in age by gender, $t (325) = 1.35, p = .18$ (2-tailed), $d = .15$. Two-hundred and four (62.2%) participants described themselves as Caucasian or White; 28 (8.6%) as European; 24 (7.3%) as Canadian; 21 (6.4%) as African, Caribbean, or Black; 14 (4.3%) as Asian; 11 (3.4%) as East Indian or South Asian; 4 (1.2%) as Arabic; 11 (3.3%) as another ethnicity; and 11 participants (3.4%) did not complete the ethnicity item on the demographics questionnaire.

The majority of participants (287 or 87.5%) described themselves as single, while 20 (6.9%) described themselves as married, 16 (4.9%) as common-law, and 5 (1.5%) as divorced. One hundred and forty-five (44.2%) participants reported being in their first year of university, 49 (14.9%) in their second year, 37 (11.3%) in their third year, 48 (14.6%) in their fourth year, and 49 (14.9%) reported having attended college.
**Procedure**

All questionnaires were administered on a password-protected web-site as part of a larger personality study (see Appendix B). The web-site contained 14 questionnaires; data from two of the personality questionnaires, as well as from the demographics questionnaire, were used for the present study.

The data were collected from January 2002 to August 2002, during the winter and summer semesters at the University of Windsor. Participants provided informed consent by submitting a form on the web-site (see Appendix A) and were asked to complete all questionnaires within a one-week period, before the expiration of their username and password. Participants responded to each questionnaire item by clicking “radio buttons” (see Appendix G). There were 981 questions in total.

Each participant was randomly assigned to one of three orderings of the questionnaires to counterbalance for fatigue effects and order effects when completing questions. There were no significant differences between the orders of administration and the scored scales for either of the measures employed in the current study.

**Measures**

The personality measures administered in the present study were the Personality Diagnostic Questionnaire-4+ (PDQ-4+; Hyler, 1994), and the Revised NEO-Personality Inventory (NEO-PI-R; Costa & McCrae, 1992). A demographics questionnaire was also administered.

**Personality disorders measure.** To assess OCPD the PDQ-4+ was employed. The PDQ-4+ is a self-report questionnaire designed to assess the 12 DSM-IV personality disorders. Each of the 93 True-False items that comprise the scale corresponds directly to
a single DSM-IV diagnostic criterion, and a response of True indicates the item is to be scored as pathological. For the purpose of the present study, only scores on the OCPD subscale of the PDQ-4+ were examined. In accordance with the DSM-IV, the OCPD subscale requires an individual to meet at least four out of the eight possible criteria (i.e., four of the eight items on the scale) to qualify for the OCPD diagnosis.

Relatively few studies have been conducted with the PDQ-4+, although earlier versions of the PDQ have been widely used and studied extensively. Internal consistency estimates for PDQ-4+ scales have averaged .62 (ranging from .42 to .72) using clinical samples (Fossati et al., 1998; Wilberg, Dammen, & Friis, 2000; Yang et al., 2000). Specifically, one study (Mihura, Meyer, Bel-Baher, & Gunderson, 2003) found an internal consistency for the OCPD scale of .60, the lowest of all personality disorder scales, while in another study (Gallagher et al., 2003) the alpha was below .30 for the OCPD scale. Chronbach’s alpha for the PDQ-4+ OCPD subscale in the present study was .49. These internal consistencies indicate the PDQ-4+ OCPD subscale assesses rather heterogeneous items, suggesting the possibility of separating items (i.e., OCPD diagnostic criteria) into meaningful, homogeneous groups. Alpha was expectedly low for the PDQ-4+ OCPD scale because the items that comprise this scale are meant to represent DSM diagnostic criteria, and these criteria are not designed to be internally consistent but rather to capture the true nature of OCPD.

Ten-day retest reliability coefficients for the PDQ-4+ have been found to be slightly, though not significantly, higher than internal consistencies \((M = .67, \text{ range .48 to .79}; \text{ Yang et al., 2000})\). In addition, the PDQ-4+ has shown correlations in the .20 to .40 range with parallel diagnoses derived from semi-structured interviews (Davison, Leese, & Taylor, 2001; Fossati et al., 1998; Yang et al.), which is consistent with research on cross-
method correspondence (Meyer et al., 2001). The PDQ-4+ also appears to serve reasonably as a screening instrument in that, despite having a high false positive rate, it does not have a high false negative rate (Davison et al., 2001). There do not appear to be any reliability studies on the PDQ-4+ when it is employed to differentiate individuals as having or not having OCPD.

Impulsivity measures. In response to the pressing need to bring order to the multiple conceptions of impulsivity, Whiteside and Lynam (2001) attempted to identify distinct dimensions of personality that have been frequently confused and combined under the name impulsivity. Specifically, within the framework of the Five Factor Model (FFM) of personality as assessed by the NEO-PI-R (Costa & McCrae, 1992), these authors analyzed several commonly used impulsivity measures in hopes of separating impulsivity into its different forms. Whiteside and Lynam concluded that the NEO-PI-R included four personality facets that subsume the major conceptualizations of impulsivity, and represent four distinct psychological processes that lead to impulsive-like behaviour. The four traits were: (1) NEO-PI-R Impulsiveness, which is located on the higher-order Neuroticism factor and measures an individual’s tendency to give in to strong urges, specifically those accompanied by emotions such as depression, anxiety, or anger; (2) NEO-PI-R Excitement Seeking, which is located on the higher-order Extraversion factor and measures an individual’s preference for excitement and stimulation; (3) NEO-PI-R Self-Discipline, which is located on the higher-order Conscientiousness factor and measures an individual’s ability to persist in completing tasks despite boredom and/or fatigue; and, (4) NEO-PI-R Deliberation, which is located on the higher-order Conscientiousness factor and measures an individual’s ability to contemplate the possible consequences of his or her behaviour before acting. Whiteside and Lynam suggested that
being high on Impulsiveness or Excitement Seeking, while lacking Self-Discipline or Deliberation, can lead to impulsive-like behaviour.

In the current study, the four impulsivity-related personality traits were measured using these four facets of the NEO-PI-R, a self-report questionnaire developed by Costa and McCrae (1992) to assess normal personality dimensions based on the FFM of personality. The NEO-PI-R consists of 240 self-report items answered on a 5-point Likert scale (ranging from strongly disagree to strongly agree) with separate scales for the domains Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. Each of the five domains consists of six correlated facets with eight items, for a total of 48 items for each scale. Specifically, four NEO-PI-R facets were used to represent the four components of Whiteside and Lynam’s (2001) multidimensional model of impulsivity: NEO-PI-R Impulsiveness; NEO-PI-R Excitement Seeking; NEO-PI-R Self-Discipline; and NEO-PI-R Deliberation.

The NEO-PI-R is the most commonly employed measure of the FFM of personality. A substantial amount of research has supported both its reliability and validity (e.g., Costa & McCrae, 1992; Widiger & Trull, 1997). Internal consistencies for the individual facets have ranged from .56 to .81 (Costa & McCrae). Whiteside and Lynam (2001) found internal consistencies of .63, .69, .80, and .80 for the facets Impulsiveness, Excitement Seeking, Self-Discipline, and Deliberation, respectively. In the current study, Chronbach’s alphas of .65, .69, .79, and .69 were found for Impulsiveness, Excitement Seeking, Self-Discipline, and Deliberation, respectively. Alphas are expected to be low because these scales are comprised of only six items each, and there is no redundancy in the items. Since the internal consistencies found in the
present study were fairly low (i.e., the measures are not highly reliable), any conclusions drawn from current findings are considered tentative.

A number of investigators (Claes et al., 2005; Miller et al., 2003; Whiteside, Lynam, Miller, & Reynolds, 2005) have suggested that, due to the moderate strength of the relationships between these dimensions, the four NEO-PI-R facets of impulsivity are related yet distinct constructs. Specifically, these studies have found a mean correlation of .36 between these four traits. In the current study, inter-correlational analysis between the dimensions of impulsivity of the NEO-PI-R revealed that five of the six correlations were significant at a moderate level, which was consistent with previous research (see Table 1). The correlations between Excitement Seeking and the other dimensions of impulsivity were very low, suggesting Excitement Seeking may not be a dimension of impulsivity. While Whiteside and Lynam consider this facet of the NEO-PI-R a type of impulsivity, other authors (e.g., Eysenck & Eysenck, 1985) have suggested excitement or sensation seeking is a concept relatively distinct from impulsivity.

Whiteside and Lynam’s (2001) conceptualization of impulsivity has received some external validation by Miller and colleagues (2003). These authors found the four dimensions of impulsivity were differentially related to several externalizing and internalizing disorders. Specifically, Impulsiveness was positively associated with aggressive behaviour, borderline personality symptoms, eating problems, and depressive symptoms, while Excitement Seeking was positively associated with conduct problems, antisocial personality disorder, and alcohol and drug use. Furthermore, Self-Discipline was negatively associated with psychopathy and inattentive symptoms of ADHD, while Deliberation was negatively associated with antisocial personality disorder and hyperactive symptoms of ADHD. Other authors (e.g., Claes et al., 2005) have also
Table 1

*Intercorrelations between NEO-PI-R Impulsivity-Related Traits in Several Studies*

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

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concluded that this model of impulsivity appears to offer a useful way of understanding behaviours and forms of psychopathology characterized by some form of impulsivity.
CHAPTER IV
RESULTS

An examination of the assumptions of normality revealed that none of the scored scales were significantly skewed. Inspection of histograms indicated that all scales were relatively normally distributed. Statistically, the skewness for all scales fell between -1.4 and 1.5, which was adequate given the large sample size (Tabachnick & Fidell, 2001). Descriptive statistics for the overall sample are presented in Table 2, while descriptive statistics by gender are presented in Table 3.

Table 2
Descriptive Statistics for Overall Sample (N = 328)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>S.D.</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEO Impulsiveness</td>
<td>17.73</td>
<td>4.07</td>
<td>.65</td>
</tr>
<tr>
<td>NEO Excitement Seeking</td>
<td>20.98</td>
<td>4.97</td>
<td>.69</td>
</tr>
<tr>
<td>NEO Self-Discipline</td>
<td>18.08</td>
<td>5.09</td>
<td>.80</td>
</tr>
<tr>
<td>NEO Deliberation</td>
<td>16.70</td>
<td>4.32</td>
<td>.80</td>
</tr>
<tr>
<td>PDQ-4+ OCPD</td>
<td>3.40</td>
<td>1.71</td>
<td>.49</td>
</tr>
</tbody>
</table>

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Table 3

Descriptive Statistics for Males (N = 89) and for Females (N = 239)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEO Impulsiveness</td>
<td>16.81</td>
<td>4.30</td>
</tr>
<tr>
<td>NEO Excitement Seeking</td>
<td>21.39</td>
<td>4.83</td>
</tr>
<tr>
<td>NEO Self-Discipline</td>
<td>17.97</td>
<td>4.56</td>
</tr>
<tr>
<td>NEO Deliberation</td>
<td>16.35</td>
<td>4.21</td>
</tr>
<tr>
<td>PDQ-4+ OCPD</td>
<td>2.99</td>
<td>1.68</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEO Impulsiveness</td>
<td>18.07</td>
<td>3.92</td>
</tr>
<tr>
<td>NEO Excitement Seeking</td>
<td>20.85</td>
<td>5.04</td>
</tr>
<tr>
<td>NEO Self-Discipline</td>
<td>18.08</td>
<td>5.33</td>
</tr>
<tr>
<td>NEO Deliberation</td>
<td>16.82</td>
<td>4.36</td>
</tr>
<tr>
<td>PDQ-4+ OCPD</td>
<td>3.55</td>
<td>1.69</td>
</tr>
</tbody>
</table>

Regression Analysis/MANOVA

Hypothesis 1a. The hypothesis that NEO-PI-R Impulsiveness would predict variance in PDQ-4+ OCPD in the positive direction was tested by simultaneously entering the four NEO-PI-R facets of impulsivity into a regression equation and examining whether these dimensions predicted variance in PDQ-4+ OCPD and in what direction. The four dimensions of impulsivity were the predictor variables, while OCPD_total (i.e., total scores on the PDQ-4+ OCPD subscale) was used as the criterion variable in the simultaneous multiple regression analysis. Minimally, the multivariate $R$
for the regression equation was expected to be significant; \( t \) statistics and individual betas were expected to be in the predicted directions, although were not necessarily required to be significant. By simultaneously entering the four dimensions of impulsivity into a regression analysis predicting OCPD\(_{\text{total}}\) rather than examining four separate correlations, Type I error was reduced.

The assumptions of normality, linearity, and homoscedasticity were confirmed by plotting the predicted value of the criterion variable against the residuals. Results of the regression analysis are displayed in Table 4.

When the four dimensions of impulsivity were entered as predictors simultaneously, a significant model that predicted 7.7% of the variance in OCPD\(_{\text{total}}\) scores was found \((R^2 = .08, F_{(2, 322)} = 6.74, p < .01)\). Two dimensions of impulsivity were found to be significant simultaneous, positive predictors of OCPD\(_{\text{total}}\) scores: Impulsiveness \((\beta = .30, t = 4.98, p < .01)\) and Deliberation \((\beta = .12, t = 2.03, p = .04)\) (see Table 4). These results indicated that both NEO-PI-R Impulsiveness and Deliberation were significant positive predictors of OCPD when the other measures of impulsivity were held constant.

Zero-order correlations between the four NEO-PI-R dimensions of impulsivity and OCPD\(_{\text{total}}\) are displayed in Table 5. These results indicated that only NEO-PI-R Impulsiveness was significantly correlated with OCPD\(_{\text{total}}\) in the positive direction. As seen in Table 4, it was only when the other dimensions of impulsivity were partialled out of OCPD\(_{\text{total}}\) scores that Deliberation became significantly positively associated with OCPD\(_{\text{total}}\).
Table 4

*Regression Coefficients for NEO-PI-R Impulsivity-Related Traits on PDQ-4+ OCPD Total Scores (OCPD<sub>total</sub>) Simultaneous Multiple Regression (N = 326)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEO Impulsiveness</td>
<td>.13</td>
<td>.03</td>
<td>.30**</td>
</tr>
<tr>
<td>NEO Excitement Seeking</td>
<td>-.01</td>
<td>.02</td>
<td>-.02</td>
</tr>
<tr>
<td>NEO Self-Discipline</td>
<td>-.00</td>
<td>.02</td>
<td>-.00</td>
</tr>
<tr>
<td>NEO Deliberation</td>
<td>.05</td>
<td>.02</td>
<td>.12*</td>
</tr>
</tbody>
</table>

Note: $R^2 = .08$ ($p < .01$).

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

Table 5

*Correlations between NEO-PI-R Impulsivity-Related Traits and PDQ-4+ OCPD<sub>total</sub> (N = 326)*

<table>
<thead>
<tr>
<th></th>
<th>NEO Impulsiveness</th>
<th>NEO Excitement Seeking</th>
<th>NEO Self-Discipline</th>
<th>NEO Deliberation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDQ-4+ OCPD&lt;sub&gt;total&lt;/sub&gt;</td>
<td>.25*</td>
<td>.01</td>
<td>-.07</td>
<td>.01</td>
</tr>
</tbody>
</table>

*p < .05.
Hypothesis 1b. To test the hypothesis that elevated levels of Impulsiveness occur in individuals who meet diagnostic threshold for OCPD (i.e., the OCPD group) relative to individuals who do not meet diagnostic threshold for OCPD (i.e., the Non-OCPD group), a one-way multivariate analysis of variance (MANOVA) was employed. Specifically, the MANOVA compared participants who endorsed four or more OCPD diagnostic criteria on the PDQ-4+ OCPD subscale to participants who endorsed three or less OCPD diagnostic criteria on the PDQ-4+ OCPD subscale on levels of the four NEO-PI-R dimensions of impulsivity. The independent variables in this analysis were OCPD group status (i.e., OCPD or Non-OCPD) and the dependent variables were the four dimensions of impulsivity.

One hundred and forty-three (43.6%; 29 males, 114 females) participants met diagnostic threshold for an OCPD diagnosis and were thus classified as OCPD, while 184 (56.1%; 59 males, 125 females) participants did not meet diagnostic threshold for OCPD and were thus classified as Non-OCPD. One participant did not complete the OCPD subscale of the PDQ-4+ and could not be placed in either group. The two groups did not differ in average age, $t(325) = 1.79, p = .08$ (2-tailed), $d = .21$.

The results of the MANOVA, which are displayed in Table 6, indicated that group effects were significant (Wilk's $\lambda = .94, F(4, 322) = 5.17, p < .01$). While the OCPD and Non-OCPD groups had equivalent levels of Excitement Seeking, Self-Discipline, and Deliberation, they differed significantly on Impulsiveness ($F(1, 325) = 13.58, p < .01$). Specifically, participants who met diagnostic threshold for OCPD had significantly higher levels of Impulsiveness than participants who did not meet diagnostic threshold for OCPD ($M_{OCPD} = 18.65, SD_{OCPD} = 4.38; M_{Non-OCPD} = 17.01, SD_{Non-OCPD} = 3.66$). This finding indicates that only Impulsiveness appeared to be elevated in OCPD.
Table 6

MANOVA of NEO-PI-R Impulsivity-Related Traits in OCPD (N = 143) vs. Non-OCPD (N = 184) Groups

<table>
<thead>
<tr>
<th>Factor</th>
<th>Multivariate F</th>
<th>df</th>
<th>F</th>
<th>Variable</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCPD Group</td>
<td>.94</td>
<td>1,325</td>
<td>5.17</td>
<td>NEO Impulsiveness</td>
<td>13.58</td>
<td>.00</td>
</tr>
<tr>
<td>Group Status</td>
<td></td>
<td></td>
<td></td>
<td>NEO Excitement Seeking</td>
<td>.01</td>
<td>.91</td>
</tr>
<tr>
<td>Status</td>
<td></td>
<td></td>
<td></td>
<td>NEO Self-Discipline</td>
<td>.02</td>
<td>.89</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NEO Deliberation</td>
<td>.53</td>
<td>.47</td>
</tr>
</tbody>
</table>

Testing for the assumption of homogeneity of variances revealed that the null hypothesis of equal group variances was rejected for the Impulsiveness dimension ($\eta^2 = 5.33, p = .02$). Since the variances of the two groups were unequal for the dimension of Impulsiveness, Welch and Brown-Forsythe statistics, which do not require that all population variances are equal (Norusis, 2003), were subsequently employed to test for differences between the groups on the Impulsiveness dimension. The result of this analysis was similar to that found in the MANOVA analysis (Welch = 12.99, $p < .01$, Brown-Forsythe = 12.99, $p < .01$), confirming that the OCPD and Non-OCPD groups differed on the Impulsiveness dimension.

Factor Analysis/Regression Analysis

Hypothesis 2. The hypothesis that the latent structure of the OCPD construct would best be described by a three-factor solution was tested by reducing the PDQ-4+
OCPD subscale scores into a smaller number of component factors using Principal Components Analysis (PCA) with varimax rotation. PCA is a data reduction technique often used to identify a small number of factors that explain as much of the variance as possible observed in a larger number of manifest variables (e.g., OCPD diagnostic criteria). Varimax rotation was selected in order to produce uncorrelated latent variables that each accounted for unique and independent variance in OCPD scores. The component loadings were evaluated to determine the OCPD diagnostic criteria that loaded onto each factor and in order to interpret the meaning of the components.

The appropriate factor solution was selected using standard criteria. Specifically, using PCA with varimax rotation the selection criteria were components with eigenvalues greater than one and an examination of the scree plot (Tabachnick & Fidell, 2001). In the present study, only two components had eigenvalues over one. Furthermore, inspection of the scree plot suggested the retention of two components. Based on these selection criteria, a two-factor solution that accounted for 36.39% of the variance in OCPD scores was deemed most appropriate (see Table 7).

Factor one had an eigenvalue of 1.80 and accounted for 22.52% of the total variance in OCPD scores. The varimax rotated component matrix revealed that the following PDQ-4+ OCPD items loaded onto the first factor: I waste time trying to make things perfect (.67), I often get lost in details and lose sight of the big picture (.63), I have accumulated lots of things that I do not need but I cannot bear to throw out (.60), If others cannot do things correctly, I would prefer to do them myself (.48), and I have a higher sense of morality than other people (.35). Examining the strengths of the loadings on this factor, it appeared that this factor reflected a hyper-conscientious aspect of OCPD. That is, the above criteria indicated this factor represented an aspect of OCPD in which
Table 7

Summary of PDQ-4+ OCPD Exploratory Factor Analysis Results ($N = 325$)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>I waste time trying to make things perfect.</td>
<td>1.00</td>
</tr>
<tr>
<td>I often get lost in details and lose sight of the big picture.</td>
<td>0.63</td>
</tr>
<tr>
<td>I have accumulated lots of things that I do not need but I cannot bear to throw out.</td>
<td>0.60</td>
</tr>
<tr>
<td>If others cannot do things correctly, I would prefer to do them myself.</td>
<td>0.48</td>
</tr>
<tr>
<td>I have a higher sense of morality than other people.</td>
<td>0.35</td>
</tr>
<tr>
<td>People complain that I'm stubborn as a mule.</td>
<td>0.64</td>
</tr>
<tr>
<td>I put my work ahead of being with my family or friends or having fun.</td>
<td>0.57</td>
</tr>
<tr>
<td>I see myself as thrifty but others see me as being cheap.</td>
<td>0.56</td>
</tr>
</tbody>
</table>

Eigenvalues 1.80 1.11

% of variance 22.52 13.87
the individual himself or herself is admitting to being motivated by a concern to be hyper-vigilant in control of error.

Factor two had an eigenvalue of 1.11 and accounted for 13.87% of the total variance in OCPD scores. The varimax rotated component matrix revealed that the following PDQ-4+ OCPD items loaded onto factor two: *People complain that I'm stubborn as a mule* (.64), *I put my work ahead of being with my family or friends or having fun* (.57), and *I see myself as thrifty but others see me as being cheap* (.56). Examining the strengths of the loadings on this factor, it appeared that this factor reflected an *interpersonal* aspect of OCPD. That is, the above criteria suggested this factor represented an aspect of OCPD in which the individual is admitting to having characteristics or engaging in behaviours that others judge negatively. Therefore, a two-factor solution appeared to best describe the OCPD factor structure.

To test the hypothesis that NEO-PI-R Impulsiveness would predict variance in at least one PDQ-4+ OCPD factor in the positive direction, multiple regression analyses were conducted by simultaneously entering the impulsivity predictors and using the OCPD factors as criterion variables. Once again, for each regression analysis the predicted values of the outcome variables were plotted against the residuals, and the assumptions of normality, linearity, and homoscedasticity were confirmed. The results of these regression analyses are presented in Tables 8 and 9.

When the four dimensions of impulsivity were entered as predictors simultaneously, a significant model that predicted 9.2% of the variance in OCPD factor one scores was found ($R^2 = .09$, $F_{(4,321)} = 8.09, p < .01$). Two dimensions were found to be significant simultaneous predictors of factor one scores: Impulsiveness ($\beta = .28, t = \ldots$
4.57, \( p < .01 \) and Deliberation \( (\beta = .13, t = 2.11, p = .04) \) (see Table 8). In addition, Self-Discipline was almost a significant, negative predictor of factor one \( (\beta = -.11, t = -1.93, p = .06) \). These results indicate that both NEO-PI-R Impulsiveness and Deliberation were significant positive predictors of OCPD factor one when the other measures of impulsivity were held constant. Self-Discipline was almost a significant negative predictor of OCPD factor one when the other measures of impulsivity were held constant.

Table 8

Regression Coefficients for NEO-PI-R Impulsivity-Related Traits on OCPD

Factor 1 Simultaneous Multiple Regression \( (N = 325) \)

<table>
<thead>
<tr>
<th>Variable</th>
<th>( B )</th>
<th>( SE \ B )</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEO Impulsiveness</td>
<td>.07</td>
<td>.02</td>
<td>.28**</td>
</tr>
<tr>
<td>NEO Excitement Seeking</td>
<td>.01</td>
<td>.11</td>
<td>.03</td>
</tr>
<tr>
<td>NEO Self-Discipline</td>
<td>-.02</td>
<td>.11</td>
<td>-.11</td>
</tr>
<tr>
<td>NEO Deliberation</td>
<td>.03</td>
<td>.14</td>
<td>.13*</td>
</tr>
</tbody>
</table>

Note: \( R^2 = .09 \) \( (p < .01) \).

\* \( p < .05 \). \* \( p < .01 \).

In addition, when the four dimensions of impulsivity were simultaneously entered as predictors a significant model that predicted 4.2\% of the variance in OCPD factor two scores was found \( (R^2 = .04, F(4, 321) = 3.53, p < .01) \). Two dimensions were found to be significant predictors of factor two scores: Impulsiveness \( (\beta = .14, t = 2.30, p = .02) \) and
Self-Discipline ($\beta = .16, t = 2.74, p < .01$) (see Table 9). These results indicated that both Impulsiveness and Self-Discipline were significant positive predictors of OCPD factor two when the other measures of impulsivity were held constant.

Table 9

*Regression Coefficients for NEO-PI-R Impulsivity-Related Traits on OCPD

**Factor 2 Simultaneous Multiple Regression ($N = 325$)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SEB$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEO Impulsiveness</td>
<td>.04</td>
<td>.02</td>
<td>.14*</td>
</tr>
<tr>
<td>NEO Excitement Seeking</td>
<td>-.02</td>
<td>.01</td>
<td>-.10</td>
</tr>
<tr>
<td>NEO Self-Discipline</td>
<td>.03</td>
<td>.01</td>
<td>.16**</td>
</tr>
<tr>
<td>NEO Deliberation</td>
<td>.02</td>
<td>.01</td>
<td>.07</td>
</tr>
</tbody>
</table>

Note: $R^2 = .04$ ($p < .01$).

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

Cluster Analysis/MANOVA

*Hypothesis 3.* To test the final hypothesis of the existence of a subtype of OCPD characterized by elevated levels of Impulsiveness, non-hierarchical K-means cluster analysis using PDQ-4+ OCPD diagnostic criteria as the clustering variables was conducted. Cluster analysis strives to identify homogeneous subgroups that maximize between-group differences and minimize within-group differences on the clustering variables. Using this statistical technique, participants were clustered into $k$ homogeneous
groups based on OCPD diagnostic criteria. K-means cluster analysis employs an iterative procedure wherein participants are repeatedly assigned to cluster membership on the basis of their smallest Euclidean distance to each subsequent cluster centroid.

In the present analysis, nine iterations occurred and the minimum Euclidean distance between initial clusters was 2.83. K-means cluster analysis suggested that a two-cluster solution was the most robust. The distance between the final clusters was 1.10. Final cluster centers revealed that the first cluster was comprised of the following PDQ-4+ OCPD diagnostic criteria: I often get lost in details and lose sight of the big picture, I waste time trying to make things perfect, I put my work ahead of being with my family or friends or having fun, I have a higher sense of morality than other people, and If others cannot do things correctly, I would prefer to do them myself. The following PDQ-4+ OCPD diagnostic criteria comprised the second cluster: I have accumulated lots of things that I do not need but I can not bear to throw out, I see myself as thrifty but others see me as being cheap, and People complain that I’m stubborn as a mule.

A MANOVA was conducted to compare levels of the dimensions of impulsivity between the emergent clusters. The results of the MANOVA indicated that group effects were significant (Wilk’s $\lambda = .91, F(4,321) = 8.24, p < .01$). The first cluster ($N = 150$) had a significantly higher level of Impulsiveness than the second cluster ($N = 176$; $M_{Cluster1} = 18.77, SD_{Cluster1} = 4.34, M_{Cluster2} = 16.88, SD_{Cluster2} = 3.59; F(1,324) = 18.70, p < .01$) (see Table 10). This result indicated that one OCPD cluster demonstrated relatively higher levels of Impulsiveness (i.e., the “Emotionally Impulsive OCPD Subtype”).

Once again, the Levene statistic was low for the Impulsiveness facet ($LS = 6.50, p < .01$), suggesting a violation of the assumption of homogeneity of variances between the clusters. However, Welch and Brown-Forsythe statistics confirmed MANOVA findings,
suggesting the two clusters differed on levels of Impulsiveness. The clusters did not differ significantly on the remaining three dimensions of impulsivity.

Table 10

*MANOVA of NEO-PI-R Impulsivity-Related Traits in OCPD Clusters (N = 150, N = 176)*

<table>
<thead>
<tr>
<th>Factor</th>
<th>Variable</th>
<th>F</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCPD Cluster</td>
<td>NEO Impulsiveness</td>
<td>18.70</td>
<td>1, 324</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>NEO Excitement Seeking</td>
<td>1.46</td>
<td>1, 324</td>
<td>.23</td>
</tr>
<tr>
<td></td>
<td>NEO Self-Discipline</td>
<td>.00</td>
<td>1, 324</td>
<td>.97</td>
</tr>
<tr>
<td></td>
<td>NEO Deliberation</td>
<td>.93</td>
<td>1, 324</td>
<td>.34</td>
</tr>
</tbody>
</table>

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The purpose of the present study was to empirically explore a critical presupposition of the CT of OCPD development (Villemarette-Pittman et al., 2004). Since the CT presupposes that a positive relationship between OCPD and impulsivity exists but does not explicitly state what aspect of the OCPD construct is associated with impulsivity, the current study tested a number of hypotheses in order to provide an elaborate account of the nature of this relationship. The following hypotheses were examined in the present study: 1a) NEO-PI-R Impulsiveness was expected to be a significant positive predictor of PDQ-4+ OCPD; 1b) NEO-PI-R Impulsiveness was expected to be elevated in OCPD relative to Non-OCPD individuals; 2) the manifest OCPD construct was expected to be best explained by a three-factor structure, and at least one of these factors was expected to be positively predicted by NEO-PI-R Impulsiveness; and, 3) an impulsive OCPD subtype with elevated levels of NEO-PI-R Impulsiveness was expected to emerge. While hypotheses were not made regarding how the remaining three dimensions of impulsivity would be associated with OCPD, the CT would be supported if these dimensions were either unrelated to OCPD or if Excitement Seeking was negatively associated with OCPD and/or the Conscientiousness facets were positively associated with OCPD.

It should be noted that insofar as the internal consistencies of the NEO-PI-R impulsivity scales and the PDQ-4+ OCPD scale were fairly low (i.e., the measures were not highly reliable), any conclusions drawn from current findings should be considered tentative.
Hypothesis 1a.

In regards to hypothesis 1a, the four NEO-PI-R dimensions of impulsivity predicted a small percentage (i.e., 7.7%) of the variance in OCPD, with Impulsiveness and Deliberation being significant positive predictors of OCPD. This finding confirmed hypothesis 1a, and thus provided some empirical support for a critical presupposition of the CT of OCPD development. As expected according to the CT, Impulsiveness was associated with OCPD in the positive direction. This association indicates that the tendency to give in to strong urges that are accompanied by negative emotions appears to be a type of impulsivity that characterizes OCPD. Accordingly, as the CT would suggest, it is possible that OC personality traits serve the function of helping individuals with OCPD from letting go of their self-control and giving in to strong, destructive urges. This finding seems consistent with the writings of Villemarette-Pittman and colleagues (2004), who acknowledged that lapses in the OC self-control mechanism lead to a release of previously inhibited destructive impulses in OCPD patients, and provides some empirical support for their etiological model of OCPD development.

Deliberation was also associated with OCPD in the positive direction. Therefore, in the present study, OCPD was associated with a tendency to contemplate the possible consequences of a behaviour before acting. This finding, while not a main hypothesis, would be expected given that OCPD has been characterized by deliberativeness to the point of indecisiveness (Shapiro, 1965). Notably, however, the zero-order correlation between Deliberation and OCPD was insignificant. It was only when Impulsiveness was partialled out in the regression analysis that Deliberation became positively associated with OCPD. These results would then suggest that deliberativeness, and perhaps Conscientiousness as a whole, becomes relevant to OCPD only in the face of NEO-PI-R...
Impulsiveness which, following Whiteside and Lynam (2001), were used in the present study to index impulsivity.

Results also suggested that Impulsiveness and Deliberation appear to be suppressor variables in the prediction of OCPD. According to Cohen, Cohen, Aiken, and West (2003), suppression indicates the relationship between the predictor variables (i.e., Impulsiveness and Deliberation) is masking their true relationships with the dependent variable (i.e., OCPD), which would be larger or of the opposite sign were they not correlated. In other words, both Impulsiveness and Deliberation would have larger correlations with OCPD if the two variables were not correlated. As was seen by examining the beta statistics, when either Impulsiveness or Deliberation was partialled from OCPD the residual correlation between the other predictor variable and OCPD was larger than the respective zero-order correlation.

Since Impulsiveness becomes a part of OCPD largely because of the role of Deliberation and since these traits are dynamically opposite forces, these findings suggest that OCPD traits appear to be a defense against letting go of one’s impulses. Specifically, thinking and reflecting on the consequences of actions before engaging in those acts may help an individual with OCPD regulate their tendency to give in to strong, harmful urges. This appears consistent with the psychodynamic view that the over-utilization of cognitive processes to deal with troubling emotions is a defensive function associated with the OC personality (Shapiro, 1981). Therefore, it appears that the essence of OCPD lies in the fact that one form of impulsivity, as operationalized by NEO-PI-R Impulsiveness, is compensated for by a form of “anti-impulsivity,” as measured by NEO-PI-R Deliberation, and perhaps by the entire NEO-PI-R Conscientiousness scale, although this goes beyond Whiteside and Lynam’s (2001) model of impulsivity. This appears to
help explain the seemingly contradictory finding of the heightened impulsivity that is observed clinically in patients with OCPD, a disorder traditionally considered "non-impulsive" (Villemarette-Pittman et al., 2004). In addition, it provides the first empirical support for the CT of OCPD development.

Excitement Seeking and Self-Discipline were both found to be insignificant predictors of OCPD. While not main hypotheses, these findings provided additional support for the CT given that this etiological model does not suggest the involvement of the types of impulsivity associated with Excitement Seeking or low levels of Self-Discipline in OCPD. That is, the symptoms of OCPD are not seen as developing in order to compensate for the negative consequences that may arise because of one's tendency toward seeking stimulation and excitement or one's inability to remain on task despite boredom and/or difficulty. On the other hand, the CT does not specify that Deliberateness is the only form of compensation for impulsive tendencies that is etiologically involved in the development of OCPD. Future research should likely investigate the entire NEO-PI-R Conscientiousness scale and each of its six facets as either positively or negatively related to OCPD. When these relationships are negative, this can be viewed as some form of impulsivity operative in OCPD or its symptoms, which would also be consistent with the CT.

**Hypothesis 1b).**

In regards to testing hypothesis 1b, over 43% of the present sample endorsed four or more OCPD diagnostic criteria and thereby met diagnostic threshold for the personality disorder according to the PDQ-4+ OCPD scale. Previous researchers have found that approximately one quarter of college students met criteria for at least one personality
disorder diagnosis on self-report questionnaires similar to the measure employed in the present study (Dolan, Evans, & Norton, 1995; Xiufen, Yueqin, & Liming, 2000). One possible explanation for the large proportion of the current undergraduate sample meeting diagnostic threshold for OCPD is that students who volunteered to participate in the study for course credit may have been more perfectionistic and success-oriented than the average student. Consequently, this personality style would be reflected in a larger percentage of individuals endorsing the threshold number of items on the OCPD subscale, a disorder characterized by perfectionistic tendencies and achievement striving.

According to a recent comprehensive study of personality disorder prevalence rates within the community (Grant et al., 2004), the prevalence of OCPD was found to be approximately 8% (Grant et al., 2004). This prevalence rate is five times smaller than the rate of OCPD found with the current sample. In the present study, however, OCPD diagnoses per se were not determined. Rather, participants were simply asked to rate themselves on diagnostic criteria for the personality disorder. A tally of endorsed diagnostic criteria was then determined, and if an individual reported experiencing four or more symptoms they were given a “diagnosis” of OCPD. This method of diagnosing is not an accurate reflection of how clinical diagnoses of OCPD are rendered. To be formally diagnosed as having this personality disorder, in addition to meeting the threshold number of diagnostic criteria pervasively across a broad range of personal and social situations, an individual must experience clinically significant distress or impairment in social and/or occupational functioning, and these personality traits must be stable since late adolescence and not attributable to another mental or medical condition (APA, 2000). The current self-report method of assessing the presence of OCPD did not take into account the other criteria necessary to receive a formal diagnosis of the disorder.
Furthermore, it has been shown that the PDQ-4+ has correlations in the .20 to .40 range with parallel diagnoses derived from semi-structured interviews (Davison et al., 2001; Fossati et al., 1998; Yang et al.), suggesting that a “diagnosis” obtained from this self-report measure is only moderately associated with diagnoses determined by more formal and clinically employed diagnostic procedures. It would be expected that had a more formal diagnostic procedure been administered (e.g., a semi-structured interview), the rate of OCPD in the current sample would have been substantially lower and similar to prevalence rates found in community samples.

Current findings suggested that individuals who met diagnostic threshold for OCPD had similar levels of Excitement Seeking, Self-Discipline, and Deliberation, but higher levels of Impulsiveness than individuals who did not meet diagnostic threshold for OCPD. This finding was consistent with the CT of OCPD development, further providing empirical support for the theory. This suggests once again that the tendency to give in to strong urges appears to be a type of impulsivity that characterizes OCPD, and perhaps OCPD symptoms function to help an individual control for destructive impulses. Furthermore, these findings also suggest that individuals with OCPD are likely not compensating for the negative consequences associated with Excitement Seeking and/or low levels of Self-Discipline and Deliberation.

Hypothesis 2.

In regards to the second hypothesis, factor analysis revealed that the OCPD diagnostic criteria were reduced to a two-factor solution that accounted for over 36% of the variance in OCPD scores. That is, two underlying, or latent, variables best described the OCPD diagnosis construct. The finding of a two-factor solution was not expected...
given that a previous study concluded that the factor structure of the OCPD diagnosis was best described by a three-factor solution (Grillo, 2004b). This previous study, however, employed a semi-structured interview to formally diagnosis OCPD in a significantly older clinical sample that consisted solely of individuals with binge eating disorder. The differences in assessment methods and in sample characteristics between these studies may have accounted for the differential findings in the OCPD factor structure. Despite a distinct factor structure between studies, the current study also found that preoccupation with details and perfectionism loaded highly on a single factor. These two traits have been found to be the best OCPD inclusion criteria and have the best predictive utility of an OCPD diagnosis (Grillo, 2004b; Grillo et al., 2004), suggesting they have more clinical relevance than other OCPD symptoms.

In the present study, the first OCPD factor, which consisted of the diagnostic criteria preoccupation with details, perfectionism that interferes with task completion, inflexibility about matters of morality, “hoarding,” and reluctance to delegate work to others, accounted for 22.52% of the variance. Examining the strengths of the loadings on this factor, it appeared that this factor reflected a hyper-conscientious aspect of OCPD. That is, criteria such as I often get lost in details and lose sight of the big picture, I waste time trying to make things perfect, and I have accumulated lots of things that I do not need but I can not bear to throw out, indicated this factor represented an aspect of OCPD in which the individual is admitting to having characteristics or engaging in behaviors that are motivated by a concern to be hyper-vigilant in control of error.

The hyper-conscientious factor was significantly predicted by the Impulsiveness and Deliberation dimensions. Furthermore, the associations between these dimensions of impulsivity and the hyper-conscientious factor were in the positive direction. In other
words, OCPD diagnostic criteria relating to preoccupation with details, perfectionism, and hoarding were positively related to a proneness to give in to strong urges when negative emotions arise and the tendency to contemplate the consequences of actions before acting. The relationship between these diagnostic criteria and Deliberation appears clear; that is, thinking things through thoroughly is highly involved in detailed focus, in perfectionism, and in not throwing things away “just in case.” Results relating to the hyper-conscientious factor of OCPD appear to be consistent with the CT of OCPD development. That is, individuals who report the four symptoms of OCPD that comprise the hyper-conscientious factor of the disorder are prone to give in to strong urges, and may think things through thoroughly to help regulate their tendency toward expressing harmful impulses.

The second OCPD factor, which consisted of the diagnostic criteria being a workaholic or excessively devoted to productivity, being miserly toward oneself and others, and being rigid and stubborn, accounted for 13.87% of the variance in OCPD scores. Examining the strengths of the loadings on this factor, it appeared that this factor reflected an interpersonal aspect of OCPD. That is, criteria such as I see myself as thrifty but others see me as being cheap and People complain that I'm stubborn as a mule suggested this factor represented an aspect of OCPD in which individuals with the disorder are admitting to having characteristics or engaging in behaviours that others judge negatively.

The interpersonal factor was significantly predicted by Impulsiveness and Self-Discipline, both in the positive direction. Therefore, it appears that OCPD diagnostic criteria relating to a miserly spending style and rigidity and stubbornness were associated with a tendency to give in to urges accompanied by distressing emotions and the ability to
remain on task. Results relating to the interpersonal factor of OCPD also appear to be consistent with the CT of OCPD development. That is, individuals who report these four symptoms of OCPD are prone to giving in to strong urges associated with negative emotions, and may use Self-Discipline to help regulate these difficulties with impulsiveness.

Interestingly, both Self-Discipline and Deliberation are facets of NEO-PI-R Conscientiousness and are generally considered to be positively associated with certain elements of the OCPD diagnosis. However, Self-Discipline is a better explanatory variable for factor two than is Deliberation, which is a better explanatory variable for factor one, because the interpersonal factor is comprised of diagnostic criteria that emphasize how being rigid and excessively devoted to work conflict with relationships with others. Regardless of which form of impulsivity is associated with which OCPD factor, these findings suggest that individuals with OCPD may develop an exaggerated form of conscientiousness as a mechanism to counteract their tendencies toward Impulsiveness.

Hypothesis 3

In regards to the third hypothesis, clustering individuals based upon their pattern of OCPD diagnostic criteria endorsement yielded a two-cluster solution. Similar to the results that were found when individuals who met diagnostic threshold for OCPD were compared to those that did not, the two clusters had equivalent levels of Excitement Seeking, Self-Discipline, or Deliberation. However, one of the clusters demonstrated higher levels of Impulsiveness. This indicated that a subtype of OCPD exists that is characterized by a tendency toward impulsive-like behaviour accompanied by negative
emotions (i.e., an Emotionally Impulsive OCPD Subtype). This finding suggested the possibility that the CT of OCPD development might apply only to a particular subgroup of individuals who go on to develop the personality disorder.

Conclusion

The present findings appeared to provide consistent support for a critical aspect of the CT of OCPD development. Most notably, the Impulsiveness facet of the NEO-PI-R, which measures an individual’s tendency to give in to strong urges following negative emotions in an effort to alleviate these distressful feelings, was elevated in OCPD and one subtype of the disorder (i.e., the Emotionally Impulsive OCPD Subtype), and predicted variance in the OCPD construct and the hyper-conscientious and interpersonal components of the disorder. Excitement Seeking was found to be completely unrelated to OCPD. However, two Conscientiousness facets, Deliberation and Self-Discipline, positively predicted variance in OCPD and the OCPD hyper-conscientious factor and the OCPD interpersonal factor, respectively.

Present results suggested that Impulsiveness is the primary type of impulsivity that characterizes OCPD. Insofar as Deliberation and Self-Discipline are also positively associated with OCPD, these personality traits may help the individual with OCPD compensate for their tendencies toward losing control of their impulses when they experience negative emotions.

NEO-PI-R Impulsiveness appears to accurately capture the experience of impulsivity in individuals with OCPD as described by the CT of OCPD development, despite the theory not being explicit about the emotions that accompany impulsive-like behaviours in OCPD. Furthermore, Impulsiveness is likely the proper operationalization
of OCPD impulsivity since this facet has also been positively associated with aggressive
behaviour (Miller et al., 2003). Villemarette-Pittman and colleagues (2004) have noted
that impulsivity in individuals with OCPD often comes in the form of impulsive
aggression.

The association between OCPD and Impulsiveness is consistent with the work of
a number of theorists (e.g., Ingram, 1982; Millon, 1981; Richards, 1993; Shapiro, 1965),
who have suggested that the inability to regulate affective responses may be a component
of OCPD in at least some individuals with the disorder. Furthermore, Impulsiveness may
be a personality variable that explains empirical findings of an association between
OCPD and disorders characterized by deficits in impulse control. Elevated rates of OCPD
have been found in individuals with bulimia nervosa (Claes et al., 2002), binge eating
disorder (Grillo, 2004b; Specker et al., 1994; Wilfley et al., 2000), borderline personality
disorder (Skodol & Oldham, 1992), drug and alcohol dependence (Modestin et al., 2001;
Suzuki et al., 2002), and impulsive aggression (Stein et al., 1996), disorders and
behaviours that have also been positively associated with the NEO-PI-R Impulsiveness
facet of Neuroticism (Claes et al., 2005; Miller et al., 2003). It is possible that this
personality characteristic may underlie these various conditions and explain the
mechanism by which a disorder characterized by excessive over-control (i.e., OCPD) can
coop-occur with disorders and behaviours characterized by under-control. Previous
researchers may have failed to make this empirical connection since Impulsiveness is the
least represented component of impulsivity in most measures of the construct (Whiteside
& Lynam, 2001).

While the current study was not designed to address the temporal relationship
between OC personality traits and impulsivity, it nonetheless provided some support for a
major presupposition of the CT of OCPD development, namely that OCPD is positively associated with a type of impulsivity.

**Implications of the Findings**

Present findings have both clinical and theoretical implications. Clinically, results suggested impulsivity in individuals with OCPD should be thoroughly assessed as this trait likely has etiological and, consequently, therapeutic significance. Impulsiveness, the dimension of impulsivity that appeared to characterize OCPD, has been found to be more associated with psychological disorders than any of the other NEO-PI-R dimensions of impulsivity and it appears to be able to adequately distinguish clinical from control groups (Whiteside et al., 2005). This makes Impulsiveness a unique marker of the extent of an individual's psychopathology, and clinicians should recognize its relevance during psychological assessment. In addition, understanding that impulse dyscontrol in certain individuals with OCPD may be a primary difficulty will allow clinicians to employ forms of treatment that are more etiologically tailored.

Theoretically, the current findings provided support for a critical aspect of a developmental theory of OCPD, a relatively common and understudied personality disorder. Since empirical support for theories of the genesis of most personality disorders is lacking (Villemarette-Pittman et al., 2004), the current study provided much needed research in the area of personality disorder development. More broadly, however, these findings can refine our understanding of a construct that has far reaching implications in clinical psychology: self-control. Impulsiveness, an underrepresented dimension of impulsivity, may be a personality variable that mediates the relationship between over-control and under-control on the dimension of self-control. That is, individuals may move
along this dimension, from over to under control, based upon their temperamental predisposition toward Impulsiveness. Under neutral or positive conditions, an individual high on Impulsiveness may lie toward the center of the dimension or nearer the over-controlled end of the spectrum, depending upon their level of OC personality traits. When they are aroused by negative emotions, however, an individual high in Impulsiveness will move toward the under-controlled end of the continuum and will be highly likely to engage in impulsive-like behaviours. Theoretically, this may explain previous associations between OCPD, a disorder of excessive self-control, and a host of conditions and behaviours (e.g., borderline personality disorder, substance dependence, impulsive aggression) characterized by under control. A deeper understanding of the dimension of self-control and the personality variable that may mediate movement along this continuum can inform the development of treatment models aimed at training individuals to regulate their urges to engage in impulses that have destructive consequences.

Limitations of this Study

The present study had a number of limitations. With respect to the participants involved in the study, the sample was not sufficiently diverse in terms of age and ethnicity, thus limiting the generalizability of the findings to the community. In addition, the large discrepancy between the number of males and females in the current sample was also problematic in this regard. Furthermore, since a student population was employed results may not be applicable to the clinical populations from which the CT of OCPD development was formulated.

In addition, Costa and McCrae (1992) have reported that individuals with personality psychopathology may be unable to describe themselves accurately. Since the
personality data were collected via a self-report questionnaire method it may be considered biased. That is, the distortions in self-perception that characterize many personality disorders may have prejudiced the current data.

Formal diagnoses of OCPD, made through the use of a semi-structured or structured diagnostic interview, were not rendered in the current study. The PDQ-4+ has shown correlations in the .20 to .40 range with parallel diagnoses derived from semi-structured interviews (Davison et al., 2001; Fossati et al., 1998; Yang et al., 2000). Therefore, the method employed in the current study of categorizing participants as having OCPD based upon their endorsement of a threshold number of diagnostic criteria likely does not relate highly to a more formal diagnosis generated by an experienced clinician. This may limit the generalizability of current findings to clinical populations.

To date, there has been no single conceptualization that has achieved widespread acceptance as the model of impulsivity (Whiteside et al., 2005). Whiteside and Lynam (2001) have argued that the four facets of the NEO-PI-R used in the current study provide the most exhaustive account of a variety of behaviours that are considered impulsive. This conceptualization of impulsivity, however, is restricted to the domain of self-report personality measures and does not take into account the possibility that distinct dimensions of impulsivity may be measurable only by employing another assessment modality (e.g., neuropsychological tests). In addition, since the internal consistencies of the impulsivity measures in the present study were fairly low (i.e., the measures are unreliable), any conclusions drawn from current findings should be considered tentative.

Third variables that were not measured in the present study may have accounted for the observed relationships between Impulsiveness and OCPD. Since this dimension of impulsivity is embedded within the Neuroticism facet of personality, it is highly likely
that general Neuroticism was a third variable that at least partially explains the association between Impulsiveness and OCPD. Miller and colleagues (2003) noted that Impulsiveness is highly infused with negative affect and found that this dimension of impulsivity was positively related to depression. Depression and negative affect are two constructs known to be highly associated with Neuroticism (McLennan, Buchanan, & Bates, 1994). Since general Neuroticism and other related variables (e.g., negative affect, depression) were not measured in the current study, one cannot rule out the possibility of a significant third variable explaining the observed effects.

Despite positive associations between the constructs, no causal relationship between Impulsiveness and OCPD could be determined based upon current findings. While a critical element of the CT of OCPD development is the notion that impulse control difficulties preceded the emergence of OC personality symptoms, this aspect of the theory could not be addressed by the present study.

Future Directions

Present results suggested that impulsive-like behaviours accompanied by negative emotions are positively associated with the OCPD construct, with the hyper-conscientious and interpersonal components of the disorder, and with one subtype of the disorder (i.e., the Emotionally Impulsive OCPD Subtype). While the current study explored only one crucial presupposition of the CT, results indicated that this model of OCPD development has some theoretical merit. However, before future investigators continue to explore the validity of this theory, the CT of OCPD development should be elaborated in more detail. Notably, the psychological processes that underlie the impulsive behaviour in individuals with OCPD should be specified more concretely in order to reduce ambiguity and allow
future researchers to ensure the construct validity of the measures of impulsivity they employ. In addition, the OCPD symptoms that are associated with impulsive-like behaviours should be more thoroughly explicated, since OCPD is a heterogeneous disorder and current results suggested dimensions of impulsivity were differentially related to constellations of OCPD traits.

While the model of impulsivity suggested by Whiteside and Lynam (2001) appears very comprehensive, measuring impulsivity using neuropsychological and behavioural techniques in addition to self-report measures in future studies would allow for a more thorough understanding of how this construct is associated with OCPD. Perhaps the impulsivity characteristic of individuals with OCPD is more accurately measured via a neuropsychological assessment tool. Furthermore, measuring impulsivity in clinical samples of individuals formally diagnosed with OCPD would address concerns of the external validity of the current findings.

Finally, further validation of the CT should involve studying the temporal relationship between impulse control difficulties and OCPD symptoms. Since Villemarette-Pittman and colleagues (2004) suggested that impulse dyscontrol has a much earlier onset than any OCPD symptoms, future research should make an effort to investigate this temporal relationship. For example, longitudinal research following children with impulse control difficulties into adulthood and then measuring rates of OCPD would be an ideal way to further explore the validity of this developmental model. Alternatively, measuring impulsivity at childhood through retrospective techniques and then relating early-onset impulse dyscontrol to adulthood OC personality traits would be another appropriate way to explore the theoretical merit of the CT of OCPD development.
Participant:

Consent to Participate in Research

**Project Title:** Moderators of the relationship between Personality and Maladaptive Behaviour

**Principle Investigator:** Michelle-Renée Carroll  
**Faculty Sponsor:** Stephen Hibbard, Ph.D.

After reading each point, indicate that you understand each point by clicking on the box.

At the end of the form, if you agree to participate, also click on the "I consent to Participate" button. If you have any questions contact the principle investigator via e-mail: mcarroll46@cogeco.ca

1. **General purpose.** For the past few years, studies have been conducted attempting to show how personality relates to maladaptive traits. In addition, other studies have been conducted to explore how people's styles of forming attachments to others also related to their interpersonal style. The purpose of the present study is to explore how these two might relate to one another.

![I understand]

2. **Procedures.** For the purpose of this study I will be asked to complete a number of questionnaires pertaining to motivation, personality and other behaviours.

![I understand]

3. **Risks.** I understand that there are no significant physical risks or likelihood of psychological injury as a result of reading these lists and giving my ratings. A few of the responses may cause temporary embarrassment or may remind me of acts or situations in my personal life I would rather not recall. However, the questionnaires have been filled out without any lasting effects by thousands of people. If, after responding to the items in these questionnaires, you experience any unpleasant emotions and feel the need to talk to someone about these emotions, help can be had through the Student Counselling Centre (2nd floor of the CAW centre 253-3000 x4616). If you prefer to seek help elsewhere, a list of resources is available to you through the Student Counselling Centre or through the Psychological Services Center.

![I understand]
4. Confidentiality. I understand that my ratings will be completely confidential. There will be no recording of my name or any information that identifies me in any way with my responses. The results of the study showing group data may be later published.

I understand

5. I understand that the results of the research will be available to me by request from Dr. Hibbard at 285 Chrysler Hall South (x2248). I also understand that Dr. Hibbard will be available to answer questions about this research during normal office hours Mondays, 10a.m. - 1p.m.

I understand

6. I understand that my participation in the process is completely voluntary and that I will be able to withdraw at any time from the study without the loss of bonus points.

I understand

7. I understand that this study has been reviewed and received ethics clearance through the University of Windsor Research Ethics Board. If you have questions regarding your rights as a research subject, contact:

Research Ethics Co-ordinator Telephone: 519-253-3000, # 3916
University of Windsor E-mail: ethics@uwindsor.ca
Windsor, Ontario
N9B 3P4

I understand

Click here to indicate that you voluntarily consent to participate in the research project.
APPENDIX B

Web Login Page

Project Title: Moderators of the relationship between Personality and Maladaptive Behaviour
Principal Investigator: Michelle-Renee Carroll
Faculty Sponsor: Stephen Hibbard, Ph.D.

For this study you are asked to complete a number of questionnaires pertaining to how you act and your beliefs about yourself and your interpersonal behaviour. While this site is as user-friendly as possible, completing these questionnaires is time-consuming and may take you a few hours. Please try to complete all of the questionnaires in one sitting. It is important for the validity of the findings that you be in the same state of mind (i.e. mood) when completing all of the questionnaires. However, you may not have time to complete all of the questionnaires at once or may experience technical difficulties or have unexpected interruptions. For these reasons, this website was developed so that you may return to the login page and continue to complete the questionnaires on more than one occasion. This website is set up so that you have one week to complete all of the questionnaires before your Username and Password expire.

If you need to comeback to any of the questionnaires, return directly to this login site and click on the link for the questionnaire where you left off:

If you have any problems completing the questionnaires or would like more information about this study please go to http://www.uwindsor.ca/personality and click on the Help completing the questionnaires link in the Table of Contents or contact the primary investigator (Michelle Carroll) via e-mail at any time at mcarroll46@cogeco.ca.

You are also free to review the consent form that you must submit at the begining of the study at any time by clicking on the this link: Consent form

Many of the questions within and across the questionnaires are similar to one another. It is very important for the accuracy of the results of this study that you answer all of the questions as truthfully as possible. Also, please complete the questionnaires in the order that they appear in the table of contents.

Thank you for participating in this research,

Michelle Carroll

Please Enter the following information:
Please enter your id: 
Password:
Our database shows that the following information has been completed by you. 0% are marked with "X" and therefore means you have not completed that questionnaire.

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N.B. Please complete the questionnaires in the order that they appear in the status table.
Also, when saving the questionnaires, only click on the "save" button once. Sometimes it may take a few seconds before the status page reappears.

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</table>

Please e-mail the primary investigator (mcarroll46@cogeco.ca) once you have completed the study to receive a more detailed description of the study and to confirm that your bonus marks have been submitted to the participant pool.
APPENDIX D

Introduction to Website

For this study you are asked to complete a number of questionnaires pertaining to how you act and your beliefs about yourself and your interpersonal behaviour.

There are two main Web pages associated with this study. This site allows you to access information about the purpose of the study and provides detailed information about how to complete the questionnaires. At the top left-hand side of this page there is a Table of Contents. This page is the "Introduction". You can click on the second entry labelled "Help completing the questionnaires" to get more detailed instructions on how to login to the site, enter your data and use the frames created to help you complete the questionnaires.

While this site is as user-friendly as possible, completing these questionnaires is time-consuming and may take you a few hours. Please try to complete all of the questionnaires in one sitting. It is important for the validity of the findings that you be in the same state of mind (i.e., mood) when completing all of the questionnaires. However, you may not have time to complete all of the questionnaires at once or may experience technical difficulties or have unexpected interruptions. For these reasons, this website was developed so that you may return to the login page and continue to complete the questionnaires on more than one occasion. This website is set up so that you have one week to complete all of the questionnaires before your Username and Password expire.

If you need to come back to any of the questionnaires, return directly to the login site and click on the link for the questionnaire where you last left off.

To get to the login site from here, click on the "Go to Survey" link in the upper left-hand corner of this page or go to http://www.uwindsor.ca/personality/login

If you have any questions about this site or problems completing the questionnaires contact the primary investigator (Michelle Carroll) via e-mail at any time at mcarroll46@cogeco.ca.

Many of the questions within and across the questionnaires are similar to one another. It is very important for the accuracy of the results of the study that you answer all of the questions as truthfully as possible. Also, please complete the questionnaires in the order that they appear in the table of contents.

Thank you for participating in this research,

Michelle Carroll
Help completing the questionnaires

This Web site has been developed to be as user-friendly as possible. There are fourteen questionnaires and a consent form that must be completed. It will take approximately two hours to complete all of them but you can "log out" and return at a later time to complete the study in its entirety.

Logging into the site

You will have received a Username and a Password which enable you to login as often as you'd like within a period of time to complete all of the questionnaires. Please ensure that you log out whenever you leave your computer so that unauthorized individuals do not alter your responses.

You "activate" your session the first time you log in. From that point you have seven days to complete all fourteen questionnaires. After seven days your session will expire and you will not be able to log in again.

The Status Page

A status page will appear after you have logged in. The page appears similar to the picture shown below.

Our database shows that the following information has been completed by you. 0% are marked with "X" and therefore means you have not completed that questionnaire.

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</tr>
</thead>
<tbody>
<tr>
<td>Consent Form</td>
<td>☑</td>
<td>100%</td>
</tr>
<tr>
<td>Questionnaire 1</td>
<td>☐</td>
<td>39%</td>
</tr>
<tr>
<td>Questionnaire 2</td>
<td>☐</td>
<td>11%</td>
</tr>
<tr>
<td>Questionnaire 3</td>
<td>☐</td>
<td>23%</td>
</tr>
<tr>
<td>Questionnaire 4</td>
<td>☐</td>
<td>25%</td>
</tr>
<tr>
<td>Questionnaire 5</td>
<td>☐</td>
<td>33%</td>
</tr>
<tr>
<td>Questionnaire 6</td>
<td>☐</td>
<td>10%</td>
</tr>
</tbody>
</table>

Click here to answer Questionnaire 1
The status page allows you to select which of the fourteen questionnaires you'd like to fill out. You just point to the Questionnaire in the list and click on the link.

You'll also notice a status column to the right of the questionnaire link and a column showing the number of questions completed for that questionnaire expressed as a percent. Your status will change to a "thumbs up" picture when you have answered all of the questions.

The Questionnaire - adjusting the frames

The questionnaires is divided into two frames. The top frame contains instructions and a legend that you will use to answer the questions that appear in the bottom frame. You can scroll up and down through either frame by using the scroll bar to the right of the frame. You can also adjust the size of the frames by "clicking" on the bar that separates the two frames and, while holding the button down, drag your mouse up or down. Release the button when you have resized the frame to the desired size.

Selecting your responses

Use your mouse to move the cursor over the radio button that is to represent your answer. Then click the left button. A black dot will remain inside the circle to indicate your selection. If you change your mind just repeat the process to select a different choice. The black dot will move to your new selection.

The last questionnaire

In the last questionnaire, you are asked to provide some information about yourself such as the number of years you have completed in school. You can click on the blank boxes and type out your answer using your keyboard.
Purpose of the Study

The purpose of the study is to investigate relations between different personality variables, interpersonal events and maladaptive behaviours. It is very important that you complete the study as truthfully as possible so that any relationships between the variables can be properly ascertained. The data collected in this study will be used to test many hypotheses. The primary reason is to ascertain whether or not a particular personality questionnaire is a good predictor of maladaptive behaviour or if other measures, such as measures of interpersonal events contribute to the prediction of maladaptive behaviour.

Please e-mail the primary investigator once you have completed the study to receive a more detailed description of the study and to confirm that your bonus marks have been submitted to the participant pool.

Thanks,

Michelle Carroll
primary investigator
M.A. Candidate, Adult Clinical Psychology
Department of Psychology
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APPENDIX G

Example of Web-based Questionnaire

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Please rate the following 100 common human traits to describe yourself as accurately as possible. Describe yourself as you see yourself at the present time, not as you wish to see yourself in the future. Describe yourself as you are generally or typically, as compared with the other persons you know of the same sex and roughly your same age.

<table>
<thead>
<tr>
<th>Trait</th>
<th>Very</th>
<th>Somewhat</th>
<th>Fairly</th>
<th>Not at All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggressive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compassionate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sincere</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assertive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open-minded</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreeable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kind</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trustworthy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Using the above rating scale, please rate the following 100 common human traits to describe yourself as accurately as possible. Describe yourself as you see yourself at the present time, not as you wish to see yourself in the future. Describe yourself as you are generally or typically, as compared with the other persons you know of the same sex and roughly your same age.

---

73
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74


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78


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