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**University of Southampton**

Faculty of Environmental and Life Sciences

School of Psychology

**Mapping Obsessive Compulsive Personality Disorders (OCPD) Traits: Development  
and Validation of Measures for Overcontrolled Disorders and OCPD**

by

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Thesis for the degree of Doctor of Philosophy

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### Abstract

Based on the theory of Maladaptive Overcontrol (Lynch, 2018) this thesis developed and validated two self-report measures: a 17-item screening measure for overcontrolled disorders and a 42-item measure of Obsessive-Compulsive Personality Disorder (OCPD). Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and psychometric analyses in Studies 1 and 2 showed that the 17-item Brief Overcontrol Scale (BOS) has a robust factor structure and strong psychometric properties. In Studies 3 and 4 I present the development and validation of the 42-item Obsessive Compulsive Personality Disorder Inventory (OC-PDI) and I offer evidence on the measure's convergent, discriminant and predictive validity. Study 5 focuses on the trait profile of OCPD. I provide further evidence on the construct validity of the OC-PDI and I discuss the conceptualisation, phenomenology, and operationalisation of OCPD, using the Personality Inventory for DSM-5 (PID-5) as a measure of criterion validity. Analyses conducted on a sample of participants scoring high in OCPD traits showed that Social Anxiety is a core trait of OCPD which should be included in assessment measures of this personality disorder, whereas the PID-5 trait of Intimacy Avoidance does not belong to the OCPD spectrum phenomenology. The role of Maladaptive Coping and Emotion Regulation difficulties is investigated for the first time in OCPD literature using structural equation models. I argue that contrary to common phenomenological interpretations, OCPD is characterised by marked Emotion Regulation deficits which mediate the link between OCPD and depression and anxiety. Future research should focus on replicating the psychometric properties of the BOS and the OC-PDI in clinical samples to further validate and refine the measures.

*Keywords:* measurement development, construct validation, Overcontrol, Obsessive Compulsive Personality Disorder, emotion regulation, PID-5



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## Research Thesis: Declaration of Authorship

Print name: Dionysios Seretis

Title of thesis: **Mapping Obsessive Compulsive Personality Disorders (OCPD)  
Traits: Development and Validation of Measures for Overcontrolled  
Disorders and OCPD**

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

This work was done wholly or mainly while in candidature for a research degree at this University;

Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;

Where I have consulted the published work of others, this is always clearly attributed;

Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;

I have acknowledged all main sources of help;

Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;

Parts of this work has been published before submission as:

Seretis, D., Maguire T., Hempel R, Lynch, T and Hart C, (2017) The Brief Overcontrol Scale. University of Southampton [doi:10.5258/SOTON/D0148](https://doi.org/10.5258/SOTON/D0148)

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Signature:

Date:



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.



## **Mapping Obsessive Compulsive Personality Disorders (OCPD) Traits: Development and Validation of Measures for Overcontrolled Disorders and OCPD**

### **Thesis Outline**

The aims of this thesis are to investigate and develop the construct of Obsessive-Compulsive Personality Disorder (OCPD) and to validate two new self-report measures: a screening measure of Maladaptive Overcontrol and a measure specific to OCPD.

Chapter 1 begins with the definition of the construct of Maladaptive Overcontrol (OC), a central concept of this thesis, upon which the theory on development and validation of the measures of OCPD draws. The chapter starts with a brief introduction to the historical roots of overcontrol within the person-centred tradition of personality. An overview of the limitations of person-centred models of overcontrol is then provided. The focus then shifts to the personality domains and lower-order traits that are posited to comprise Maladaptive OC, OC disorders, and the prototypical OC disorder: OCPD. The chapter finishes with the need for the development and validation of assessment tools that reliably measure OCPD.

In Chapter 2 the development and validation of a 17-item self-report screening measure of Maladaptive OC/OCPD is presented. The chapter first details Study 1, which focuses on the development of the initial item-pool and analysis of data from a community sample in order to explore the factor structure of the measure. Study 2 presents analysis of data collected in university students, showing strong psychometric properties of the measure with excellent criterion validity. Results demonstrate that this scale is a valid starting point for the assessment of Maladaptive OC disorders in clinical settings. Limitations and further research warranted are outlined.

Chapter 3 outlines the development of a multidimensional personality scale designed with a view to aiding in (differential) diagnosis and assessment of severity of OCPD. In Study 3 I conduct an Exploratory Factor Analysis and present initial psychometric properties of the Obsessive-Compulsive Personality Disorder Inventory (OC-PDI). In Study 4 I confirm a six-factor structure of the OC-PDI and I present evidence on the measure's convergent, divergent and predictive validity. The phenomenology of OCPD and the clinical utility of the OC-PDI in assessment and clinical evaluation of OCPD are discussed.

Chapter 4 offers additional evidence on the construct validity of the OC-PDI by means of Study 5 and the use of a sample of participants scoring high in OCPD traits. Evidence is presented which supports the inclusion of the trait Social Anxiety and the removal of the

Intimacy Avoidance trait from standard measures of OCPD including the PID-5. OCPD is associated with depression, anxiety and Dysthymia. The role of Coping and Emotion Regulation difficulties is explored for the first time in OCPD literature. The study tests a series of hypotheses about the mediating role of Emotion Regulation difficulties in clinical outcomes associated with OCPD. I identify areas that need to be prioritized in the course of a full evaluation of OCPD by mental health professionals.

Chapter 5 offers a brief synopsis of the most important findings of the thesis. Limitations of the studies and new avenues for research are discussed. Future research should focus on replicating the psychometric properties of the BOS and the OC-PDI in clinical samples in order to further refine and validate the measures. Contrary to common perceptions of OCPD, the evidence claims a crucial role for Emotion Regulation deficits in OCPD. It is argued that the findings of Study 5 lead to a new conceptualization of OCPD which prioritizes deficits in Social Interaction, Emotion Regulation and Coping mechanisms.

## **Chapter 1: Literature Review on the Concept of Overcontrol**

### **1.1 Definition of Maladaptive Overcontrol (OC) and Overview of Chapter 1**

This thesis explores the temperament and personality traits associated with Maladaptive Overcontrol (OC) and Obsessive-Compulsive Personality Disorder (OCPD). OCPD is a construct which is poorly researched and not well understood, but has a long history in psychopathology, tracing back as early as 1903 ([Reddy, Vijay, & Reddy, 2016](#)). Maladaptive Overcontrol (OC) is a new construct. The first part of the chapter explores the construct of Maladaptive OC while in the latter part of the chapter I explain how the theory on OC can shed light on the phenomenology and assessment of OCPD.

Maladaptive OC is posited to be characterized by four main deficits ([Lynch, Seretis, & Hempel, 2016a](#); [Lynch, 2018a](#)): 1) Low receptivity and openness: manifested by high risk aversion, avoidance of novelty and disconfirming critical feedback. 2) Low flexible-control: manifested by compulsive needs for structure and order, rigid behaviours, and strict moral standards for oneself and others. 3) Inhibited emotional expression and low emotional awareness: manifested by inhibited and/or inauthentic emotional expression. 4) Lack of social connectedness and intimacy with others: manifested by aloofness in relationships, high envy, resentment, bitterness, and low empathy.

The first aims of the thesis are to develop and validate a self-report screening measure to assess over-control (OC) and a more in-depth self-report measure to operationalise and measure the more narrowly defined construct of OCPD in clinical and research settings. Both measures are based on theory by [Lynch \(2018a\)](#), although the development of the OCPD measure takes into account a number of additional considerations regarding the phenomenology of OCPD.

Before discussing the validation of self-report measures of OC and OCPD in more detail (Chapters 2, 3) this first chapter focuses on the theory and conceptualisation of Maladaptive OC which provides the theoretical basis of the thesis and an overview of the recent literature on OC is offered with a view to explaining why an assessment measure of this new construct is warranted. The necessity for the development of a self-report inventory of OCPD is also outlined, but this matter is discussed in more detail in Chapters 3 and 4. The current chapter is organised in the following four parts: 1) historical overview of the concept

of OC within the person-centred or typological tradition, 2) limitations of the existing models of OC within the typological tradition, 3) outline of the theory underlying the new construct of Maladaptive OC, 4) review of OC disorders posited to be part of the OC spectrum with an emphasis on the links between each disorder (or groups of disorders) and their links to Maladaptive OC dimensions and dispositional traits. The main points of the chapter are then summarised and a brief rationale of the need for the development of new measures is presented.

## 1.2 Historical Overview of the Concept of Overcontrol

### 1.2.1 Variable-Centered Versus Person-Centered Approaches

Possibly the most long-standing debate in the field of personality focuses on how personality is organized and as such how it should be studied. Two main approaches have informed the fields of personality and individual differences, developmental psychology and psychopathology: variable-centered and person-centered approaches to personality.

Dimensional or variable-centered approaches ([Cloninger, 1986](#); [Costa & McCrae, 1992b](#); [Eysenck & Eysenck, 1987](#)) conceptualize personality in terms of the differences among individuals along personality attributes or traits. Traits are variables operationalized as dimensions, e.g., by means of empirically validated psychometric measures of one or the other personality trait. The focus is on understanding and measuring personality structure in terms of these population-derived dispositional traits.

Person-centered or type approaches conceptualize personality in terms of naturally occurring attributes within the person ([Block & Block, 1980](#); [Giannini, 1997](#); [Mandara, 2003](#)). The focus lies on the organization of personality as a constellation of characteristics *within* individuals, and person-centered approaches emphasize that personality traits should not be studied in isolation but rather in a framework that defines each person as a whole. By focusing on overarching constellation of traits of persons, person-centred approaches aim to identify groups or subsets of individuals, i.e., “personality types”, who have similar configurations of traits or in other words share the same basic personality structure ([Block, 1971; 2017](#)). This does not mean that types do not lend themselves to quantifiable means of measuring individual differences or that the two approaches are necessarily incompatible.

### 1.2.2 The Typology Approach

There are several theories which conceptualize personality in terms of broad types, and have a long history in the field. The most influential are: the typological theory by Carl Jung which has been quantified in the 16 personality types of the Myers–Briggs Type Indicator (MBTI) ([Myers, McCaulley, Quenk, & Hammer, 1998](#)), Jerome Kagan’s theory on inhibited and uninhibited types ([Kagan, Reznick, & Gibbons, 1989](#)), and attachment style typologies ([Bartholomew & Horowitz, 1991](#); [Cooper, Shaver, & Collins, 1998](#)) whose theoretical bases are founded on the joint work of Bowlby and Ainsworth ([Bowlby, 1992, 2011](#)). Due to the focus of the current review on the overcontrolled type, I have outlined the origins and current status of the typological approach originated by Block ([Block & Block, 1980](#)) which has dominated personality typology in the last decade and within which he introduced the concept of overcontrol ([Block, 1971; 2017; Block & Block, 1980](#)).

Block conceptualised two core dimensions upon which personality and personality development are organized : Ego-control and Ego–resiliency ([Block & Block, 1980](#)). The empirical work and formulation of these constructs was based on psychoanalytic theories of personality. Block attempted to integrate basic aspects of psychoanalytic theory based on the epistemological work of Fenichel ([Fenichel, 1945a, 1945b](#)) and theoretical work by Lewin ([Lewin, 1935, 1938](#)). He argued that impulse is the core concept of all psychoanalytic models. Block believed that psychosocial development is driven towards the modulation of the impulse via a series of *structures* or *functions* which aim to direct the – largely pleasure seeking- impulse component of the human psyche into adaptive objectives. These functions are internalized cognitive and behavioural mechanisms which allow the individual to develop their drive for maximization of pleasure while adapting this drive to the restraints imposed by social reality and societal constraints. Examples of such structures are gratification delay, inhibition of aggression, affective constraints to avoid loss of emotional bonds and exercise of caution before new or potentially threatening situations. Ego-control is posited to be the common underlying feature of these functions which operate in a way that “impulse is modulated and ego is served” ([Block & Block, 1980,p.41](#)). Within this conceptualization, individuals at the extreme ends of Ego control are dysfunctional. Adaptability, in Block’s model, also relies on the interrelated structures that constitute the construct of Ego-control *and* Ego-resiliency. Ego resiliency, the second meta-dimension identified by Block, is an interlinked key determinant of the adaptive or maladaptive output. Broadly, it refers to one’s ability to respond to challenging situational demands with flexibility and adaptability rather

than in a rigid fashion. When dimensionalized, the construct of Ego-control lies on a continuum with Overcontrol at one end and Undercontrol at the other.

*Overcontrol*, according to Block, is characterized by excessive or undue gratification of delay, minimal expression of affect, inhibited or indirect manifestation of needs and overly containment of impulse and action ([Donnellan & Robins, 2010](#)). Overcontrolled individuals are conformist, avoidant of uncertainty, and lack venturesomeness and tendencies to explore unfamiliar situations. They are also organized and structured. *Undercontrol*, according to Block, refers to insufficient modulation of impulse, inability to delay gratification, and over direct expression of affect ([Donnellan & Robins, 2010](#)). Undercontrolled individuals are described as spontaneous, prone to emotional fluctuations and immediate gratification of their needs, comfortable with uncertainty and novelty, and enthusiastic.

### 1.3 Limitations of the Theoretical Models of Overcontrol

The work of Block and colleagues is important not only because they were the first to coin the terms overcontrol and undercontrol but also because of their conceptualization of “control” as a nonlinear concept. In other words, according to Block’s model, self-control has an inverse U relationship with psychological adjustment and well-being, with the extremes of overcontrol and undercontrol being associated with diminished psychological well-being. In contrast, competing models of self-control interpret control in a linear fashion, i.e., as something which “by definition... one cannot have too much of” ([Funder & Block, 1989, p. 1042](#)). Therefore, there is a crucial difference between Block’s theory and other theoretical models of self-control (and related constructs such as that of gratification delay) ([Baumeister, Heatherton, & Tice, 1994](#); [Kanfer & Karoly, 1972](#); [Mischel, Shoda, & Peake, 1988b](#)).

Importantly, Block’s work led to the formulation of the *RUO typology*, first identified by Robbins and colleagues ([Robins, John, Caspi, Moffitt, & Stouthamer-Loeber, 1996](#)) who identified three personality types, each distinctly and coherently related with the Five Factor Model (FFM) dimensions ([Costa & McCrae, 2009](#); [Goldberg, 1990](#)) in a sample of African, American, and Caucasian boys. The RUO typology identifies the personality types of ego resilient, overcontrollers, and undercontrollers and it is the typological model which has received the most attention in the last decades. This typology has been replicated with some consistency ([Asendorpf & van Aken, 1999](#); [Hart, Hofmann, Edelstein, & Keller, 1997](#); [Hart, Atkins, & Fegley, 2003](#); [Robins et al., 1996](#); [Steca, Alessandri, & Caprara, 2010](#); [Weir &](#)

[Gjerde, 2002](#)). However, despite the originality of the RUO model the three-type model (based on the person-orientated approach) suffers from some serious limitations. These limitations can be distinguished in two broad categories: theoretical and methodological/empirical. [Bergman and Andersson \(2010\)](#) offer a comprehensive overview of the drawbacks of the person-centred approach. Below I offer an outline of the most important limitations drawing on their arguments.

### 1.3.1 Theoretical Limitations

First, there is disagreement among researchers on the ontological status of the term *type*. The term *type* is used and understood in various ways which are often incompatible. [Block and Ozer \(1982\)](#) and [Meehl \(1979\)](#) distinguish between two meanings of the term: *type-as-label or communicative taxon* which serves as useful abstraction to summarize information about a group of individuals and *type-as-distinctive-form or true taxon* which views types as qualitatively distinct natural kinds. In this second view the overcontrolled type is a real entity of the nature which differs in its ontological properties from other types. Second, most fields in psychology are variable-oriented as opposed to person-oriented. Consequently, the formulation and empirical testing of hypotheses from a person-centred approach is often very difficult. For example, quite often both variable-centered approaches and person-centered approaches use the same methodological tools, e.g., cluster analysis. However, in person-centered research it is often patterns of variables that are analysed rather than variables per se. If typological research is more than a simpler way of representing complex relations of continuous variables, then the analysis warranted is a complicated endeavour ([Mendelsohn, Weiss, & Feimer, 1982](#); [von Eye & Bergman, 2003](#)). Third, a major disadvantage of the theory underlying the person-centered approach is that it lacks specificity, i.e., it is too general. In practice this means that formulating specific hypotheses about components of a system may end up being quite arbitrary. In fact, due to empirical limitations inherent in research studies, the number of set components chosen to study the system, quite often, falls far from representing the complex processes that are posited to be involved in the person as a whole ([Bergman & Wångby, 2014](#)). For example, true typological research requires the study of change at the pattern level across time. This entails the measurement of a large number of set of variables at multiple time occasions and analysis of the links of variable structures across different time measurements so that process at the pattern level may be employed. Fourth, replication of the type membership based on a single

methodological tool does not provide robust evidence on the construct validity of the types extracted. For instance, [Herzberg and Roth \(2006\)](#) suggest that the three clusters often replicated in research within the typological tradition are very likely to be the result of researchers' reliance on Cohen's K as the single criterion in cluster analysis. [Herzberg and Roth \(2006\)](#) advocate a sequential framework of replication, cross validation, and external validation in personality type research.

### 1.3.2 Empirical Limitations and Additional Considerations

Despite the replications of the ROU model many researchers have often failed to extract three distinct types of individuals. Types extracted (including the overcontrolled type) are heterogeneous in terms of content and lack stability over time ([Eaton, Krueger, South, Simms, & Clark, 2011](#); [Herzberg & Roth, 2006](#); [Slane, Klump, Donnellan, McGue, & Iacono, 2013](#)). In view of the theoretical and empirical limitations outlined above I add two additional important considerations.

First, although typological approaches to personality have been based on increasingly more elaborate theoretical models (psychodynamic as in Block's work, biological or the more dynamic models by Magnusson, ([Magnusson, 1999](#); [Magnusson, 2000](#)) none of these models explain why the overcontrolled type is intergenerationally perpetuated. In fact this is true for most if not all aspects of personality (to different degrees) ([McAdams & Pals, 2006](#); [Penke, Denissen, & Miller, 2007](#); [Turkheimer, 2000](#)) and it is especially prominent in the Overcontrolled spectrum ([Torgersen et al., 2000](#)) or, as Hertler, who offers a comprehensive review on the topic ([Hertler, 2014](#)), calls it, the "obsessive character".

Second, a sound theoretical model of the overcontrol type or spectrum should offer explanations for phenomena that the person-centred theory has failed to account for. These are not limited to theoretical accounts that can explain individual differences via genetics but also to the role of environmental experiences in the formation of overcontrol. Other important phenomena that are posited to play a crucial role in the phenomenology of overcontrol have not been addressed in the overcontrol type and typological research. For instance, there is a crucial difference between external emotional expression and internal emotion regulation: how someone feels on the inside may not be what they are showing on the outside, i.e., emotional state and emotional expression are more often than not incongruent in *maladaptive*

*overcontrolled (OC)* individuals ([Lynch et al., 2016a](#); [Lynch, 2018a](#); [Lynch, Whalley, et al., 2015](#)).

### 1.3.3 Summary of Limitations

I have outlined the main problems which bear on the conceptualization and operationalization of the overcontrolled type within the person-centred personality tradition and the RUO model; these include variability in the number of solutions extracted and heterogeneity within the three prototype solutions in terms of content, instability in terms of membership, and of psychological correlates. The above considerations appear to confirm the notion first advanced by [Asendorpf, Borkenau, Ostendorf, and Van Aken \(2001\)](#) that types should not be conceived as distinct entities and that boundaries are “fuzzy” (see also the review by [Donnellan and Robins \(2010\)](#)). In a nutshell, it appears that besides the inherent value of type membership which may be used as a useful label to summarize information about individuals, Block’s typology and subsequent models inspired by the work of Block fail to provide a consistent, replicable, empirically-based framework of personality or personality pathology. On the other hand, one should not discredit the accumulating evidence which point to a hierarchical structure of personality pathology within the variable-centered approach. In fact, the Maladaptive OC model that will be outlined allows the generation of truly typological research, i.e., investigating the organization of traits within the individual using variable-based methodology, an idea which is not new ([Marsh, Ludtke, Trautwein, & Morin, 2009](#); [Muthén & Muthén, 2000](#)). Importantly for this work to be accomplished a new theoretical framework is needed which will next be presented.

## 1.4 Definition and Theory Underlying the New Construct of Maladaptive Overcontrol

A novel neuro-biosocial model of Maladaptive OC has been proposed by Lynch to address the limitations of previous conceptualisations of overcontrol ([Lynch, 2018a](#); [Lynch, 2018b](#)). The neuro-biosocial model relies on Porges’ polyvagal theory, a phylogenetic theory of neural regulation of the autonomic nervous system ([Porges, 1995](#)) which links the evolution of the autonomic nervous system (ANS) to emotion, emotional expression, facial gestures, vocal communication, and social behaviour ([Porges, 2007](#)). Briefly, the polyvagal theory posits three dynamic, ANS circuits: a) Myelinated vagus, b) Sympathetic adrenal system and, c) Unmyelinated vagus. These are phylogenetically ordered (most to least phylogenetically advanced) and serve distinct behavioural adaptive functions, i.e.,

respectively: a) Social communication, self-soothing and inhibition of arousal, b) Mobilisation, i.e., fight/flight responses, and c) Immobilisation, i.e., freezing such as death feigning. In this hierarchy of adaptive responses, the newest system is used first, and failing this, the phylogenetically older systems are used sequentially ([Porges, 2007](#)).

It is worth mentioning that although it did not, initially, suggest direct links to mental health Porges' model has found a number of applications in a range of psychiatric problems ([Porges, 2011](#); [Porges & Dana, 2018](#)) and has provided insights and testable hypotheses in emotion regulation and socialization ([Hastings et al., 2008](#)), Borderline Personality Disorder ([Austin, Riniolo, & Porges, 2007](#)), trauma ([Gray, 2017](#); [Porges, 2010](#)), Autism ([Bridges, 2015](#); [Dhossche, 2012](#)), depression ([Chambers & Allen, 2002](#)) and PTSD ([Bracha, 2004](#); [Williamson, Heilman, Porges, Lamb, & Porges, 2013](#); [Williamson, Porges, Lamb, & Porges, 2014](#)). Lynch used the Porges' model to develop a comprehensive aetiopathological theory of Maladaptive OC.

Within the neuro-biosocial theory (Figure 1-1 shows a graphical representation), Maladaptive OC is posited to be the product of transacting influences at three levels: a) genetic diatheses for *high threat sensitivity, high inhibitory control, low reward and superior attention for details*; and b) early environmental experiences characterized by fear and worthlessness emphasizing *high performance, control over one's thoughts and emotions and suppression of negative emotional expressions (such as crying, complaining)* which in turn result in c) a fearful and rigid Coping style which is manifested in *intrapersonal and interpersonal control, suppression of negative thoughts and aversion of negative emotions negative emotions*.

This Coping style is evident in one's relationship with their thoughts and emotions and in a range of behaviours in several areas of life, for example, the quite early learned workaholism, avoidance of social experiences, obscuring of opportunities for learning from social interactions and difficulties in the formation of social bonds ([Lynch et al., 2016a](#); [Lynch, 2018a](#); [Lynch, Hempel, & Dunkley, 2015](#)). The chronicity of OC disorders stems largely from the strong genetic component of OC which makes Maladaptive Coping harder to unlearn whether individuals notice it as behavioural avoidance and social isolation or less so in their compulsive need for order, and attention to detail. Importantly, the lack of social signalling skills of OC patients is believed to be the main cause of the emotional loneliness

experienced by these patients ([Lynch, Seretis, & Hempel, 2016b](#); [Lynch, Hempel, et al., 2015](#)).

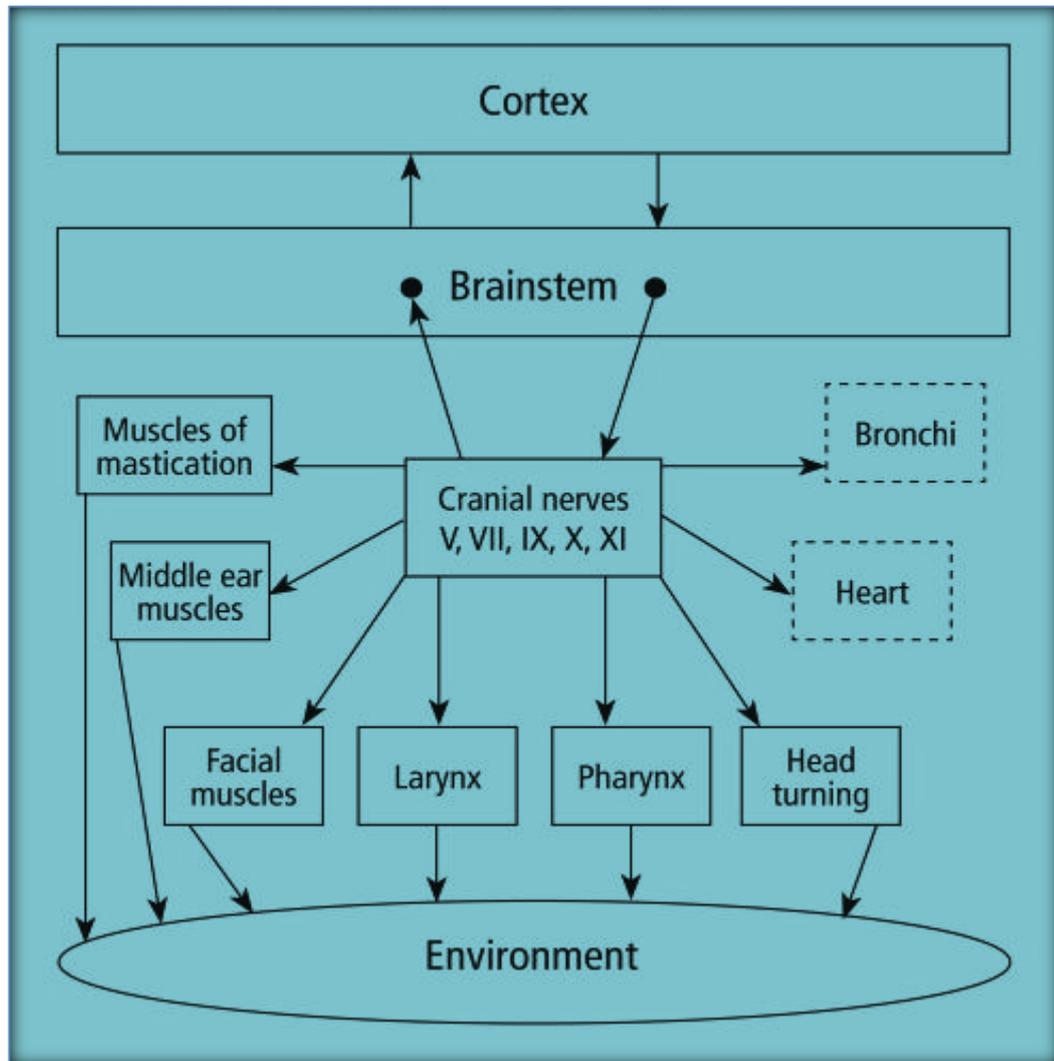


*Figure 1-1* The Neurobiosocial Theory for Overcontrolled Disorders Adapted from The Handbook of Adult Clinical Psychology: An Evidence Based Practice Approach by A. Carr & M. McNulty 2016, London: Routledge. Adapted with permission by A. Carr & M. McNulty

Lynch has incorporated in the Neuro-biosocial theory of Maladaptive OC the social engagement system by [Porges \(2009b\)](#). An integral part of the polyvagal theory ([Porges, 2001, 2009b; Porges, 2011](#)), the social engagement system (Figure 1-2) posits that both top-down and bottom-up processes are involved in the regulation of social signalling. The role of the parasympathetic nervous system mediated by the ventral vagal complex (PNS-VVC) is crucial as it is activated when people feel safe, allowing for the generation of social signalling behaviours which promote engagement via different channels of emotional communication, such as voice tone (prosody), eye contact, and context appropriate facial expressions ([Porges, 1995, 2001](#)). However, when the environment is not perceived as safe but as threatening, the PNS-VVC is deactivated and the *sympathetic nervous system (SNS) defensive-arousal* is

instead engaged to allow for fight or flight responses. Social engagement signalling is then compromised and defensive arousal leads to body posture or movements and facial expressions (such as flat face, gaze aversion) that are perceived by others as lacking the sort of signalling which calls for engagement (see [Schneider, Hempel, and Lynch \(2013\)](#)). Thus, in OC patients, genetically determined diatheses interact with environmental influences to create habitual defensive responses (rooted in temperaments such as threat sensitivity), leading to excessive withdrawal of PNS-VVC and chronic inhibition of its social engagement properties.

Experimental, correlational, and longitudinal research supports the role of the social engagement system in the Neuro-biosocial model underlying Maladaptive OC: for example, emotionally reserved and/or inauthentic non-linguistic social signalling inhibits social connectedness in OC individuals. This is supported by studies on the role of personality traits such as negative affectivity ([Lynch, Schneider, Rosenthal, & Cheavens, 2007](#)) and risk aversion ([Chapman et al., 2007](#)) and experimental research on processing of social cues such as fear ([Rosenthal et al., 2011](#)), and other facial expressions of emotion ([Schneider et al., 2013](#)). Studies have also shown that increases in PNS-VVC activation lead to a more engaging social signalling ([Milad et al., 2007](#); [Wong, Masse, Kimmerly, Menon, & Shoemaker, 2007](#); [Zhang et al., 2014](#)) while suppression of emotions leads to defensive social signalling ([English, John, Srivastava, & Gross, 2012](#); [Gross & John, 2003](#); [Haga, Kraft, & Corby, 2009](#)).



*Figure 1-2* The social engagement system, which consists of a somatomotor component (visceral efferent pathways that regulate the muscles of the face and head) and a visceromotor component (the myelinated vagus that regulates the heart and bronchi) Reprinted from “The Polyvagal Theory: New Insights Into Adaptive Reactions Of The Autonomic Nervous System.” by S.W. Porges, 2009, Cleveland Clinic journal of medicine, 76 Suppl 2, S86–S90. Reprinted with permission by S.W. Porges

A common problem in OC individuals’ signalling is their tendency to mask their inner feelings, making it less likely that others will desire to affiliate with them ([Butler et al., 2003](#); [Dan-Glauser & Gross, 2011](#); [Gross & John, 2003](#)). Another problem is their tendency to overuse incongruent emotional expression (displays of emotion that does not match their inner experience) which makes it more likely to be perceived as inauthentic, and untrustworthy ([Boone & Buck, 2003](#); [English & John, 2013](#); [Kernis & Goldman, 2006](#); [Schug, Matsumoto, Horita, Yamagishi, & Bonnet, 2010](#)). Therefore, it is posited that individuals with Maladaptive OC are remarkably good at containing the expression of their

emotions; to the effect, however, that this becomes a hurdle in obtaining and sustaining close social bonds. Whilst emotion expression inhibition can be useful in certain situations, some contexts (e.g., a friendly gathering) call for relaxation and spontaneity rather than high constraint of emotional expression and behaviour. In fact, the value placed by most societies on self-control and the capacity to delay gratification ([Vazsonyi & Klanjšek, 2008](#)) is a problem in itself: it makes it more difficult for OC individuals to assess the implications of exercising their high capacities for self-control in every single area of life. In turn, this exaggerated use of self-control is reflected in their lack of flexibility and social connectedness.

The neuro-biosocial model of Maladaptive OC further posits that overcontrolled (OC) tendencies stand in contrast to undercontrolled (UC) tendencies. It is important to emphasize that, as conceptualised by [Lynch \(2018a\)](#), OC and UC are multi-faceted constructs and are not the opposite ends of a dimension of self-control. Undercontrolled problems involve difficulties associated with low inhibitory control, i.e., diminished ability to inhibit mood-dependent actions and poor control over the expression of emotions. This kind of problem is typified in Cluster B personality disorders which include Antisocial PD, Borderline/Emotionally Unstable PD, Histrionic PD and Narcissistic PD -particularly Borderline PD, posited to be the prototypical UC disorder- characterised by overly mood dependent actions, chaotic interpersonal relationships, Avoidant Approach Coping, and erratic style of emotional expression ([Zanarini et al., 2007](#)), low tolerance to frustration and aggressiveness ([de Brito & Hodgins, 2009](#)), and dramatic behavioural tendencies ([Blagov, Fowler, & Lilienfeld, 2007](#)). In contrast, the Neuro-biosocial model posits that OC problems involve difficulties associated with high inhibitory control, including; excessive Avoidance Coping, compulsive planning, maladaptive preoccupation with details, distant interpersonal style characteristics most often seen in Cluster C personality disorders (Avoidant PD, Dependent PD and Obsessive-Compulsive PD) Anorexia Nervosa, and Autism Spectrum Disorders ([Lynch & Cheavens, 2008](#); [Riso et al., 2003](#); [Zucker et al., 2007](#)).

### **1.5 Outline of the Structure and Traits of Maladaptive Overcontrol**

This part of the thesis outlines the proposed structure of Maladaptive OC, based on the Neuro-biosocial model described earlier and the evidence presented below. Traits are defined

as relatively stable patterns of behaviours, thoughts, and emotions that are a function of bio-temperament and environmental transactions.

. There is theoretical consensus and ample empirical support that multiple levels of personality pathology exist that differ in their level of abstraction and stability ([McAdams, 2001](#); [Wright & Simms, 2014](#)). Specifically it has been plausibly suggested that there exist highly stable, core traits and surface traits, i.e., traits more easily influenced by random variations of context and environmental demands ([Asendorpf & van Aken, 2003](#); [McAdams, 2001](#)). Therefore, the challenge does not lie in the top of the hierarchy but in the patterns and relationships between lower order traits that form established clinical diagnoses and in this challenge most research has focused. Indeed, the Internalizing/Externalizing meta-factors ([Wright & Simms, 2014](#)) have not always been replicated with consistency in more narrowly defined factors –see for example [Wright and Simms \(2014\)](#) and [Watson, Clark, and Chmielewski \(2008\)](#) for two different conceptualizations. In this regard the argument brought forward by Lynch that all Cluster C disorders belong to the Overcontrolled (Internalizing) personality type remains speculative.

Most research has sought to interpret patterns among abnormal personality traits by linking them to normal personality traits and in particular the domains and lower order traits of the well-validated Five-Factor Model (FFM) of normative personality ([Costa & McCrae, 1992a, 2009](#)). The FFM describes personality in terms of five broad factors: Openness to experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism. The five factors are measured on continua, whereby an individual may be highly Agreeable, low in Agreeableness (disagreeable) or somewhere between these two extremes. Each factor consists of a cluster of more specific dimensional traits that correlate together. The lower-level traits, or facets grouped under agreeableness are: trust, straightforwardness, altruism, compliance, modesty, and tender-mindedness. The DSM-5 Personality and Personality Disorder Work Group proposed diagnosing personality disorders based on maladaptive trait dimensions: these were originally six and were later operationalised into five higher-order domains: Negative affect, Detachment, Antagonism, Disinhibition, and Psychoticism. The Personality Inventory for DSM-5 (PID-5) ([Krueger, Derringer, Markon, Watson, & Skodol, 2012b](#)) operationalised the maladaptive personality trait domains into facet scales which contribute primarily to each domain, i.e., Negative Affect is primarily explained by the facets of Emotional Lability, Anxiousness and Separation Insecurity and secondarily by Submissiveness, Hostility, Perseveration and Depressivity. While all ten DSM-IV-TR

personality disorders were kept in Section II of the DSM-5, the Section III alternative model includes Antisocial, Avoidant, Borderline, Narcissistic, Obsessive-Compulsive, and Schizotypal Personality Disorder. Since the publication of the PID-5, several researchers sought to link normal personality traits with disordered personality features. The majority of evidence suggests that personality disorders can -largely- be conceptualised as an aggregate of abnormal range personality traits reflecting the normal range FFM – both at the level of higher order factors and at the level of PID-5 facets ([De Fruyt et al., 2013](#); [Thomas et al., 2013](#); [Widiger & Costa Jr, 2013b](#)). Lynch has taken a somewhat different perspective. As noted, Lynch argues that there are four bio-temperamental dispositions (diatheses) which form the bases for adult psychopathology through interaction with environmental-learning factors. Three of the temperamental dispositions largely replicate the work by earlier researchers, especially the work by [Rothbart and Ahadi \(1994\)](#), [Watson, Wiese, Vaidya, and Tellegen \(1999\)](#), and [Clark \(2005\)](#) on temperament as a unifying basis for personality and psychopathology. The four temperamental dispositions are outlined below. The focus is on the extreme end of these traits (either at the low or the high end, as indicated), which are associated with Maladaptive OC behaviour. Descriptors are presented at both levels of abstractions (higher-order and lower-order traits).

### 1.5.1 Bio-temperamental Threat Sensitivity

This higher order trait pertains to Neuroticism/Negative Affectivity, i.e., a higher order factor which has been replicated repeatedly in the structure of both normal-range personality measures such as the Multidimensional Personality Questionnaire ([Tellegen & Waller, 2008](#)) as well as personality psychopathology measures ([Clark, Simms, Wu, & Casillas, 2014](#)). High negative emotionality has been associated with a wide range of psychopathological problems ([Krueger, Caspi, Moffitt, Silva, & McGee, 1996](#); [Watson & Clark, 1984](#)) and has been linked with a OC conditions such as Obsessive Compulsive Personality Disorder (OCPD) ([Steenkamp, Suvak, Dickstein, Shea, & Litz, 2015](#)), and Anorexia Nervosa ([Watters & Malouff, 2012](#)).

[Strober, Freeman, Lampert, and Diamond \(2007\)](#) have provided evidence suggesting that the neurocircuitry of fear and anxiety may be a useful heuristic framework for the interpretation of symptoms across different OC disorders. People characterized by Overcontrol are posited to experience aversive tension across time and context, even in situations that most others experience as safe, they experience high threat when entering new

situations, may display increased compliance, and they may check compulsively for safety cues to ensure that everything is well

At the facet level, bio-temperamental threat sensitivity is posited to be manifested in OC individuals' propensities for *fearfulness*, *chronic tension*, *fear of failure*, *indecisiveness*, *social anxiety*, *guilt*, *irritability* and *hostility*

### 1.5.2 Bio-Temperamental Reward Sensitivity

People with Maladaptive OC disorders are generally described as being at the low end of this trait which is strongly related to the higher order factor often replicated in research of personality pathology referred to as Positive Affectivity or Positive Temperament ([Clark et al., 2014](#); [Clark, 2005](#); [Watson & Tellegen, 1985](#)). It pertains to the tendency to experience positive states such as feelings of joy, calmness, and high energy when engaging in everyday life activities. It should not be confused however with the FFM domain of extraversion ([Lynch et al., 2016b](#)). Measures of extraversion include items which combine internal experience (positive affect) with external behaviours (agency, active pursuit of goals). However, people with Maladaptive OC disorders are hypothesized to exhibit diminished positive affect and reduced spontaneous expressions of excitatory-reward or joy and yet are high in agency (experiences of potency following accomplishment of goals). According to Lynch, there are three components of reward systems that are important to account for: 1) *appetitive or incentive motivation*— associated with feelings of desire, excitement, energy and potency ([Depue & Morrone-Strupinsky, 2005](#)). The appetitive phase is also posited to be an important part of social-bonding—linked to unconditioned stimuli, such as facial features, friendly vocalizations and gestures or facial features such as smile ([Porges, 1998](#)) 2) consummatory reward experiences are linked to feelings of increased interpersonal warmth, calmness, satiation, and euphoria ([Depue & Morrone-Strupinsky, 2005](#)) and 3) Social dominance linked to adjusting one's behavior in order to meet the challenge of a changing environment and achievement of what is needed for the tribe to survive.

Reduced bio-temperamental reward sensitivity (positive emotionality) has been linked primarily to depression ([Clark & Watson, 1991](#); [Durbin, Klein, Hayden, Buckley, & Moerk, 2005](#)) and, to a lesser extent, with schizophrenia and social phobia ([Mineka, Watson, & Clark, 1998](#)). People with OC disorders are posited to be less motivated by their current emotional states or the anticipation of future pleasure due to over-learned tendencies to focus

on achievement, oversensitivity to threat, and increased Approach Coping. It is hypothesised that this comprises the lower traits of safety (versus vigilance) and hedonic capacity (versus anhedonia), low levels of which typically characterize individuals with Maladaptive OC. It is also hypothesised that people scoring low on this trait would endorse statements reflecting *risk aversion, anhedonia, and low positive mood states*.

### 1.5.3 Bio-temperamental Constraint

This pertains to inhibitory control, a non-affective based system which is posited to regulate the previous two affect-based temperamental systems. Bio-temperamental constraint is consistent with the Disinhibition-Constraint system by [Clark \(2005\)](#). Being at the high Constraint end of this system and genetically predisposed to experience lower and quicker satiation in reward, individuals high in OC will accordingly display higher avoidance of potentially unhealthy rewarding experiences compared to people with lower self-control/constraint -see also [Redden and Haws \(2013\)](#)-and they are hard-wired to be able to work hard. In OC disorders actions are dependent on potential consequences rather than the present moment and are dictated by logic as opposed to mood. This biotemperamental disposition is linked with the trait of Compulsive striving ([Lynch et al., 2016a](#); [Lynch, 2018a](#)) which is in turn linked to *compulsive working/workaholism*. Most people with OC disorder are competitive and driven individuals, they leave limited time for enjoyment or fun, they can tolerate distress in order to achieve a task, and they work compulsively to the extent of burn-out or when continuing to work is clearly counterproductive. A secret pride of their superior capacities to tolerate pain and delay gratification is often present ([Lynch et al., 2016b](#)). In line with the heightened sense of urgency that dominates OC individuals and a fear-induced tendency to work excessively ( i.e., in order to avoid future negative outcomes) a compulsive orientation toward future consequences has been documented in the obsessive personality and OCPD literature ([Eskedal & Demetri, 2006](#); [Salzman, 1980;1991](#)). It is proposed that people with high bio-temperamental constraint would endorse items suggesting limited time for fun, neglecting to spend time with family or friends, self-worth related to work rather than personal life, perseverance, and overly compliance.

### 1.5.4 Detail-focused Processing

This higher order trait refers to the preference for details over global processing, insistence on sameness, hyper vigilance for small discrepancies, high pattern recognition, and

preference for symmetry over asymmetry ([Calvo et al., 2009](#); [Srinivasagam et al., 1995](#); [Suda et al., 2014](#)). Although Lynch suggests that this is a second non-affective diathesis this is not consistent with other models of temperament or hierarchical models of personality pathology. Instead, Detail-focused Processing has been treated as an adult trait rather than a genetic predisposition and it has been linked to weak central coherence in the Autism and Eating disorders literature ([Happé & Frith, 2006](#); [Lopez, Tchanturia, Stahl, & Treasure, 2008b](#)). Early in the conceptualization of obsessive-compulsive personality disorder (OCPD), [Shapiro \(1965\)](#) had referred to this trait as “attention to small local details” and had linked it to obsessive personality—a hypothesis confirmed with regard to visual attention by [Yovel, Revelle, and Mineka \(2005\)](#). There is evidence -including recent systematic and meta-analytic evidence in the case of Anorexia Nervosa and Autism ([Happé & Frith, 2006](#); [Katie Lang, Lopez, Stahl, Tchanturia, & Treasure, 2014](#); [Lang & Tchanturia, 2014](#)) - that OC patients exhibit weaknesses on tasks demanding global processing, while they demonstrate a bias for and/or superior capacities for detailed-focused or local processing ([Aloi et al., 2015](#); [Lopez et al., 2008](#); [Lopez, Tchanturia, Stahl, & Treasure, 2008a](#); [Lopez, Tchanturia, Stahl, & Treasure, 2009](#); [Losh et al., 2009](#)).

OC individuals would be inclined to endorse statements of an excessive focus on details, missing the overall picture, being particularly good in tasks requiring attention to detail, noticing and being disturbed by lack of symmetry in their surroundings or being disturbed by a lack of clear structure in tasks.

With the exception of the predisposition for detailed processing- for which there is no evidence that it has a substantial genetic component- the framework of personality pathology proposed by Lynch is consistent with existing evidence ([Clark, 2005](#); [Clark, 2007](#)). It is important to note that the FFM higher order factors may be considered components of the three bio-temperaments proposed by Lynch –see for example [Markon, Krueger, and Watson \(2005\)](#) for a similar argument. Moreover, Lynch’s argument that personality pathology can be hierarchically conceptualised as either Maladaptive OC or Maladaptive UC reflects-albeit from a novel aetiological point of view- the empirically validated structure of personality pathology in two meta-factors: Internalizing versus Externalizing ([Kushner, Quilty, Tackett, & Bagby, 2011](#); [Markon et al., 2005](#); [Morey, Krueger, & Skodol, 2013](#); [Watson et al., 2008](#); [Wright et al., 2012](#); [Wright & Simms, 2014](#)). Finally, I should briefly mention the specific personality traits that are linked to Maladaptive OC in accordance with the proposed

framework ([Lynch, 2018a](#)) as these have informed this thesis and the item pools for the development of OC and OCPD questionnaires. These are briefly mentioned below.

#### **1.5.4.1 Moral certitude.**

OC individuals are posited to be at the high end of this dimension which is manifested by *obstinacy* and a compulsive *need for structure and order* across situations and contexts. These are features consistently associated with OCPD pathology ([Samuel & Widiger, 2008, 2010](#); [Samuel & Widiger, 2011](#); [Samuel & Gore, 2012](#)).

People high in moral certitude are posited to endorse items which demonstrate rule-governed behaviour and a ‘right’ way of doing things often accompanied by as a set of rules and principles that must be adhered to, and an overly strong regard for social commitments and promises that a person feels they must honour at all costs. When rules or procedures do not clearly prescribe the correct course of action, decision making is often overwhelming for people who are Overcontrolled.

#### **1.5.4.2 Constricted expressivity.**

OC clients are at the high end of this trait which refers to chronic (either conscious or automatic) tendencies for *inhibition/suppression of emotional expression* (versus the *spontaneous* outward display of emotion) and *reservedness*. Studies have consistently reported decreased emotional expression among people with OC disorders ([Casper, 1990](#); [Davies, Schmidt, Stahl, & Tchanturia, 2011](#); [Forbush & Watson, 2006](#); [Geller, Cockell, Hewitt, Goldner, & Flett, 2000](#); [Kaye, 2008](#)). Suppressing emotional expression and exhibiting context incongruent emotional expressions (i.e., when the expression of emotion does not match the emotional experience on the inside, such as smiling when distressed or angry) is strongly associated with psychological distress and low social connectedness ([Barr, Kahn, & Schneider, 2008](#); [Buck, Losow, Murphy, & Costanzo, 1992](#); [Kennedy-Moore & Watson, 2001](#); [King & Emmons, 1990](#)).

It is expected that this trait will be captured by items representing *low self-disclosure*, *infrequent expression of vulnerability*, *insincere emotional expressions*, and a *reserved manner of relating to others*, as well as of *being overly pro-social*.

#### 1.5.4.3 Affiliation avoidance.

OC individuals are at the high end of this trait, which is manifested by *withdrawal*, *distrust* and *interpersonal anxiety*. The unusually high threshold at which OC individuals may derive enjoyment from social situations and intimate social bonds ([Depue & Morrone-Strupinsky, 2005](#)) lies at the core of Affiliation Avoidance. This leads in turn to decreased social engagement. My interpretation of this trait differs somewhat from Lynch in that OC individuals feel socially isolated but in fact crave emotional connectedness. Therefore, withdrawal is the result of interpersonal anxiety and reduced pleasure from social interactions as opposed to reluctance to pursue social engagement due to distrust which is a characteristic feature of Cluster C personality disorders. Therefore, as I will explain further in Chapter 3 my conceptualisation of this traits differs from the PID-5 OCPD trait of Intimacy Avoidance which is in line with the argument by Lynch that OC individuals are expected to endorse statements indicating cynicism about close relationships and intimacy.

My argument, however, is in line with the caution by Lynch that that this trait is distinct from Extraversion and behavioural expressions, as conceptualized in the FFM, which pertains to tendencies such as being polite or appearing friendly. In fact, many OC individuals are prosocial, i.e., they appear calm, polite and friendly irrespective of their mood. Instead, this trait refers to a diminished pleasure from social interactions due to anxiety and the extent a person seeks intimacy as opposed to merely being prepared to appear polite and co-operative. This distinction between internal mood and external behaviour (often incongruent in OC individuals) is a central tenant of OC and has informed the assessment of Maladaptive OC ([Lynch et al., 2016b](#)) (see Chapter 3).

Patients high in Affiliation Avoidance are expected to endorse items about *being overly cautious when meeting others*, *being reluctant to engage in unstructured social interactions*, *experiencing low levels of pleasure from and increased anxiety of social engagement*, and *attending social events out of social obligation*.

#### 1.5.4.4 Openness to experience.

OC individuals exhibit low levels of this higher order trait which entails the specific traits of risk-aversion, experiential avoidance, dismissal of critical judgments or negative feedback, intolerance of uncertainty, fear and avoidance of novel or unexpected stimuli, and obstinacy. Low Openness manifested by avoidance of internal challenging emotions and

novelty, along with defensiveness against disconfirming critical feedback, limits opportunities to learn and benefit from social interaction ([Lynch, 2018a](#)). In addition, a low level of openness is posited to be very closely linked with the social isolation that most OC individuals report. For example, obstinacy and habitual dismissal of critical feedback are strong social signals to others who often perceive OC individuals as arrogant and hard to please.

It should be noted that Openness in this conceptualisation is different to the Openness to experience domain as conceptualized within the Five Factor Model (FFM) tradition ([McCrae & Costa, 1985](#); [McCrae & Costa, 1997](#)). The OC conceptualization of Openness does not focus on imagination, creativity and preoccupation with aesthetic activities (see the NEO-PI-R ([Costa & McCrae, 1992a](#)) based on the FFM)

## 1.6 Review of Disorders Posited to Be Part of the OC Spectrum

### 1.6.1 Obsessive Compulsive Personality Disorder (OCPD) as the Prototypical Overcontrol Disorder

In a pooled sample derived from eight epidemiological studies undertaken between 1989 and 1997 in the community, [Torgersen, Kringlen, and Cramer \(2001\)](#) reported a median of 2.0 % for Obsessive Compulsive Personality Disorder (OCPD), the highest of all DSM-III-R personality disorders (PDs). Later epidemiological studies also often report OCPD as the most prevalent personality disorder in the general population ([Ansell, Pinto, Crosby, Becker, Anez, et al., 2010](#); [Ekselius, Tillfors, Furmark, & Fredrikson, 2001](#); [Grant et al., 2004](#)) at a rate of up to 7.9% ([Grant et al., 2004](#)). In the epidemiological study by [Zimmerman, Rothschild, and Chelminski \(2005\)](#) OCPD was the second most prevalent personality disorder within mental health outpatients' settings. Within patient samples with anxiety disorders, OCPD is consistently diagnosed at a very high rate ([Albert, Maina, Forner, & Bogetto, 2004](#); [Sanderson, Wetzler, Beck, & Betz, 1994](#)) reaching a prevalence of 34% in OCD ([Lochner et al., 2011](#)).

OCPD is a personality disorder included in all previous editions of the Diagnostic and Statistical Manual of Mental Disorders (DSM): Listed as Compulsive Personality in DSM-I ([APA, 1952](#)) it is described as a “chronic, excessive, or obsessive concern with adherence to standards of conscience or of conformity” (p.37) with typical features of over inhibition, over

conscientiousness, inordinate capacity, rigidity and lack a normal capacity for relaxation (p.37).

There was no change in the description of this personality disorder in the second edition of the manual ([APA, 1968](#)), where it is described as a “behaviour pattern, characterized by excessive concern with conformity and adherence to standards of conscience” (p.43) and is accompanied by the same features as in DSM-I.

A major amendment occurs in the third edition of the DSM ([APA, 1980](#)) with the provision of distinct operational diagnostic criteria - and classification of mental disorders in multiple axes. A rich clinical description, often relevant and insightful (“When pleasure is considered, it is something to be planned and worked for (p.326)”) other times overly restrictive “[People with OCPD] rarely give compliments (p.326)” is followed by a list of five criteria of which four need to be met to warrant diagnosis: restricted ability to express affection, perfectionism, insistence on others submitting to one’s way of doing things, workaholism, and indecisiveness (p.27).

Diagnostic criteria change again in DSM-IV ([APA, 1994](#)) where a number of quite distinct traits are aggregated to form, apparently, one feature “The essential feature of Obsessive-Compulsive Personality Disorder is a preoccupation with orderliness, perfectionism, and mental and interpersonal control, at the expense of flexibility, openness, and efficiency” (p. 669). Of note is that restricted affectivity is removed from the diagnostic criteria. The diagnosis is warranted when four out of eight criteria are met; 1) preoccupation with details, 2) perfectionism, 3) excessive devotion to work, 4) over conscientiousness, 5) hoarding, 6) reluctance to delegate tasks, 7) frugality, and 8) rigidity. The criteria remain unchanged in the text-revised version ([APA, 2000](#)).

Calls for a change in the classification of personality disorders came as early as two decades before the 5th edition of the DSM, with authors pointing at several disadvantages of the categorical models of classification of personality disorders. These included: significant heterogeneity among patient sharing the same diagnosis, high comorbidity, inadequate coverage of personality disorder symptomatology by mental health practitioners often captured in the not otherwise specified (NOS) diagnosis, discontinuity in the conceptualization and operationalization between structural models of normal functioning personality traits and personality psychopathology ([Cloninger, 1987](#); [Gunderson, Links, & Reich, 1991](#); [Heumann & Morey, 1990](#); [Widiger & Sanderson, 1995b](#); [Widiger & Trull,](#)

[2007](#)). In Section II of the DSM-5, OCPD is assessed by the same diagnostic criteria as DSM-IV-TR (any four out of a total of eight criteria need to be met).

In response to criticisms about categorical models of personality disorders, an alternative model was introduced in Section III of the DSM-5, by means of the Personality Inventory for DSM-5 (PID-5) ([Krueger et al., 2012b](#)). This is a measure of 25 personality traits, whereby a diagnosis of OCPD requires the presence of Rigid Perfectionism and two or more of the pathological traits of Perseveration, Intimacy Avoidance and Restricted Affectivity ([APA, 2013](#)). However, even this conceptualization of OCPD is suboptimal. Chapters 3 and 4 offer a critique of this conceptualisation of OCPD and present the need for the development of a new measure specific to OCPD to aid diagnosis of the disorder and to guide treatment formulation.

OCPD has been associated with several maladaptive personality traits related to the temperamental dispositions and OC traits outlined above. More specifically, individuals with OCPD exhibit poor tolerance of uncertainty ([Gallagher, South, & Oltmanns, 2003](#)), high levels of experiential avoidance ([Wheaton & Pinto, 2017](#)), increased risk aversion ([Chapman et al., 2007](#)), high negative affectivity, low positive affectivity, rigidity and perfectionism ([Ansell, Pinto, Edelen, & Grilo, 2008b](#); [Pinto, Ansell, Grilo, & Shea, 2007](#)). [McGlashan et al. \(2005\)](#) found that rigidity, reluctance to delegate, and perfectionism were the most prevalent and stable OCPD criteria over a period of two years. OCPD has also been associated with exceptionally high moral standards and conscientiousness, extreme conformity, a strong need for interpersonal control, preoccupation with details, excessive devotion to work and compulsive persistence to tasks ([Costa, Samuels, Bagby, Daffin, & Norton, 2005](#); [Gallagher et al., 2003](#); [Samuel & Griffin, 2012](#)).

### **1.6.2 Anorexia Nervosa (AN)**

Interestingly, OCPD is very common among eating disorders with co-occurrence rates between OCPD and Anorexia Nervosa (AN) reaching 60% ([Anderluh, Tchanturia, Rabe-Hesketh, & Treasure, 2003](#)). A recent large scale study of 3,266 admissions to 16 different treatment units, that assessed the prevalence of AN in PD diagnoses and Major Depression, found that women with OCPD were five times more likely to have AN compared to the rest of psychiatric comparison groups ([Reas, Ro, Karterud, Hummelen, & Pedersen, 2013](#)). With an increasing incidence among the high risk-group of girls aged 15-19 years ([Smink, van](#)

[Hoeken, & Hoek, 2012](#)), AN is characterised by very high mortality rates ([Arcelus, Mitchell, Wales, & Nielsen, 2011](#)) while the majority of cases do not receive specialist mental health care ([Hoek & van Hoeken, 2003](#); [Hoek, 2006](#)). In terms of chronicity, the evidence is often conflicting: [Steinhausen \(2002\)](#) estimated that among the surviving patients less than 50% recover fully and 20% do not improve at all. Other researchers report more favourable outcomes ([Keski-Rahkonen et al., 2007](#); [Turner, Marshall, Stopa, & Waller, 2015](#)). A recent study showed that differences in chronicity and outcome are related to trait vulnerability in AN ([Uher et al., 2003](#)).

The resistance to treatment and chronic course of AN can be explained by maladaptive personality pathology interfering with change. A number of studies have established strong links between AN and maladaptive OC cognitions ([Gabriel & Waller, 2014](#); [Waller, Ormonde, & Kuteyi, 2013](#)) and OC features such as perfectionism ([Bulik et al., 2003](#); [Fairburn, Cooper, Doll, & Welch, 1999](#); [Halmi et al., 2000](#); [Halmi et al., 2005](#)), distress tolerance ([Corstorphine, Mountford, Tomlinson, Waller, & Meyer, 2007](#)), restraint, negative emotionality, rigidity and inflexibility, preoccupation with details ([Lilenfeld, Wonderlich, Riso, Crosby, & Mitchell, 2006](#); [Serpell, Livingstone, Neiderman, & Lask, 2002](#); [Tokley & Kemps, 2007](#); [Wonderlich & Mitchell, 2001](#); [Wonderlich, Lilenfeld, Riso, Engel, & Mitchell, 2005](#)), and cognitive inflexibility ([Tchanturia, Anderluh, et al., 2004](#)), including set shifting difficulties ([Roberts, Tchanturia, Stahl, Southgate, & Treasure, 2007](#); [Tchanturia, Morris, et al., 2004](#)). Crucially, OC traits have been reported to exist prior to the development of AN ([Anderluh, Tchanturia, Rabe-Hesketh, Collier, & Treasure, 2009](#)) and are negative prognostic factors for the outcome of AN ([Steinhausen, 2002](#)).

### **1.6.3 Obsessive Compulsive Disorder (OCD)**

The role of maladaptive traits in anxiety disorders has also provided findings of interest to the OC construct ([Bienvenu & Stein, 2003](#); [Brandes & Bienvenu, 2006](#)). Temperamental and personality characteristics such as harm avoidance ([Starcevic, Uhlenhuth, Fallon, & Pathak, 1996](#)), intolerance of uncertainty ([Lee, Orsillo, Roemer, & Allen, 2010](#)), and high persistence ([Cloninger, Zohar, Hirschmann, & Dahan, 2012](#)) have been consistently linked to the onset and course of anxiety disorders. Personality pathology plays a critical role in resistance to treatment: Treatment resistant anxiety disorders are highly comorbid with Cluster C diagnoses ([Massion et al., 2002](#)) and presence of cluster C diagnoses moderate the outcome of these disorders ([Ansell et al., 2011](#); [Cox, Turnbull, Robinson, Grant, & Stein,](#)

2011). These studies appear to suggest that treatment resistant anxiety disorders share core features of Maladaptive OC. The evidence base is stronger for Obsessive Compulsive Disorder (OCD). OCD demonstrates a number of typical OC traits and Maladaptive Coping strategies, such as Perfectionism and preoccupation with details ([Park, Storch, Pinto, & Lewin, 2015](#)), rigid patterns of thinking and need for order ([Pinto, Greene, Storch, & Simpson, 2015](#)), a sense of incompleteness ('not-just-right experiences') ([Ecker, Kupfer, & Gonner, 2014](#)), doubts about action ([Frost & Steketee, 1997](#)), and Harm Avoidance ([Richter, Summerfeldt, Joffe, & Swinson, 1996](#)). Moreover, both OCD and OCPD are often associated with maladaptive hoarding ([Pertusa et al., 2008](#); [Samuels et al., 2008](#); [Steketee & Frost, 2003](#)), a behaviour which, from an OC perspective, is associated with compulsive planning ([Lynch, 2018a](#)).

#### 1.6.4 Autistic Spectrum Disorders (ASDs)

Autism Spectrum Disorders (ASDs) are highly co-morbid with OCD ([Samuels et al., 2014](#); [Vannucchi et al., 2014](#)), and are strongly linked to AN ([Oldershaw, Treasure, Hambrook, Tchanturia, & Schmidt, 2011](#); [Rhind et al., 2014](#)). ASDs have many of the posited core OC features such as high harm avoidance and low sociability, novelty seeking, reward dependence, and cooperativeness as assessed by the Temperament and Character Inventory (TCI) ([Vuijk, de Nijs, Vitale, Simons-Sprong, & Hengeveld, 2011](#)), as well as high inhibition and compulsivity on the Dimensional Assessment of Personality Pathology—Basic Questionnaire (DAPP-BQ) ([Livesley & Jackson, 2009](#)) and low openness to experience on the NEO-PI-R ([Costa & McCrae, 1992a](#)) - see [Strunz et al. \(2014\)](#) for a recent study on personality pathology on ASDs. In an investigation of the prevalence of personality disorders in patients with Asperger syndrome, [Lugnegård, Hallerbäck, and Gillberg \(2012\)](#) found that approximately half of the study group met criteria for a cluster A or cluster C personality disorder. Specifically, OCPD is often reported as the most prevalent PD in individuals with ASDs ([Hofvander et al., 2009](#)). Indeed, the phenomenology of Asperger's syndrome is similar to that of OCPD ([APA, 2013](#))

Recent evidence also suggests that the social cognition and social skill impairments that characterize ASDs extend to the sub-clinical expression of autistic traits, i.e., the broader autism phenotype (BAP) ([Losh, Childress, Lam, & Piven, 2008](#); [Sasson, Nowlin, & Pinkham, 2013](#)), a construct that refers to the presence of mild autistic-like characteristics ([Bolton et al., 1994](#); [Ingersoll & Wainer, 2014](#)). Although there are no universally accepted criteria for

BAP, it is structured around three components: pragmatic language difficulties, aloofness, and behavioural and cognitive rigidity ([Wainer, Ingersoll, & Hopwood, 2011](#)).

In a series of studies focusing on such operationalization, [Allen \(2015\)](#) confirmed a strong link between BAP and over-focusing ([Kinsbourne, 1991](#)), an overly selective attentional style which, in turn, is hypothesized to be associated with sensory sensitivity and hyper-arousal ([Liss, Saulnier, Fein, & Kinsbourne, 2006](#)). This attentional style is highly related to the high-detailed focusing trait that is posited to be one of the eight core OC trait-domains, as outlined above.

Interestingly, BAP is associated with loneliness: [Jobe and White \(2007\)](#) showed that individuals with BAP experience increased levels of loneliness and these were linked to deficits in social skills and understanding rather than preference. In a more recent study level of loneliness was predicted by social interaction anxiety and fear of negative evaluation ([Lamport & Zlomke, 2014](#)). Interpersonal hostility mediated by Social Anxiety has also been found in individuals with BAP ([Pugliese, Fritz, & White, 2015](#)).

### **1.6.5 Relationship of Maladaptive Overcontrol with Treatment Resistant Depression and Obsessive-Compulsive and Related Disorders**

Treatment resistant depression (TRD) and Obsessive-Compulsive and Related Disorders (OCRDs) are not posited to be part of the Maladaptive OC group of disorders. However, there is evidence suggesting links with maladaptive OC/OCPD traits.

TRD is defined as unresponsive depression that is either treatment-resistant, chronic, or both ([Fava & Davidson, 1996](#)), although it has traditionally referred to as the type of depression that is unresponsive to consecutive courses of treatment regimens, e.g., at least two successive trials with (usually different classes of) antidepressants ([Burrows, Norman, & Judd, 1994](#)). TRD is reported to reach a prevalence of around 35% among all depressed individuals when employing the criterion of two adequately given pharmacological treatments ([Rush et al., 2006](#)). In addition, it is a highly recurrent mental disorder; even when multiple treatments are eventually met with success, approximately 80% of the individuals who achieve remission relapse within a year ([Fekadu et al., 2009](#)). As a consequence, TRD is a significant public health problem: it is a highly debilitating condition associated with poor quality of life and high mortality ([Fekadu et al., 2009](#)). Moreover, it is a very expensive

condition ([Crown et al., 2002](#)) and costs rise with increasing chronicity ([Olchanski et al., 2013](#); [Russell et al., 2004](#)).

Certain findings of relevance to personality, and the concept of Maladaptive OC, are noteworthy and are consistently reported in the literature on TRD. An estimated 40-60% of unipolar depressed patients meet criteria for a comorbid personality disorder, most commonly Paranoid, Avoidant and Obsessive-compulsive PD, and these patients are the least likely to respond to treatment ([Candrian et al., 2008](#); [Fava et al., 2002](#)). Klein et al. (1995) has reported similar findings with regards to Dysthymia.

Moreover, perfectionism is positively related to the chronicity of depression symptoms ([Hewitt, Flett, & Ediger, 1996](#); [Hewitt, Flett, Ediger, Norton, & Flynn, 1998](#)) and OC traits, such as rigid internalized expectations, excessive control of spontaneous emotion, and inordinate fears of making mistakes are reported at significantly higher rates amongst those with chronic depression relative to acute depression ([Huprich, Porcerelli, Keaschuk, Binienda, & Engle, 2008](#); [Riso et al., 2003](#); [Riso & Newman, 2003](#)). Importantly, the chronic anhedonia that accompanies TRD is akin to the high threshold of bio-temperamental reward sensitivity of individuals with Maladaptive OC experience. Therefore, patients with OCPD traits appear to be a high-risk group for developing chronic or treatment resistant depression. Chronic depression is classified as Persistent depressive disorder in DSM-5 and, by implication, should be highly prevalent in individuals with Maladaptive OC/OCPD traits. This hypothesis is, in part, explored in Chapter 4 which deals specifically with OCPD.

I presented, in Section 1.6.3 the evidence on the overlap between OCD and OCPD and the rationale for including OCD in the spectrum of Maladaptive OC disorders. There is also evidence linking Maladaptive OC with the entire group of conditions that are now part of the newly introduced diagnostic category of Obsessive-Compulsive and Related Disorders (OCRDs). This group of disorders include OCD, body dysmorphic disorder (BDD), trichotillomania (hair-pulling disorder), excoriation (skin-picking) disorder, and hoarding disorder. DSM-5 redefined obsessions and recognizes avoidance and thought stopping beyond overt compulsions as other means to deal with obsession. This seems to bring OCD closer to OCPD and the case has been made that OCPD should be part of the OCRDs ([Fineberg et al., 2015](#); [Stein et al., 2016](#)). However, it should be noted that not all these disorders appear to share the OCPD trait profile. Hoarding is associated with higher levels of impulsivity and lower levels of conscientiousness and distress tolerance ([Hezel & Hooley,](#)

2014). Patients with hair-pulling disorder are characterised by high levels of FFM Neuroticism and FFM Agreeableness domains but not Conscientiousness ([Hagh-Shenas, Moradi, Dehbozorgi, Farashbandi, & Alishahian, 2015](#)). Body dysmorphic disorder is highly comorbid with Avoidant personality disorder and has a far weaker association with OCPD ([Phillips & McElroy, 2000](#); [Veale et al., 1996](#)). On the other hand, OCPD is the most prevalent comorbid personality disorder in individuals with excoriation ([Wilhelm et al., 1999](#)). Therefore, despite the increasing evidence of the OCRDs relatedness to one another in terms of diagnostic validators, such as symptom similarity, familiarity, and biomarkers ([Phillips & Stein, 2015](#)), more empirical research in the personality traits associated with these putative Maladaptive OC disorders is warranted. The issue is revisited in section 5.2 of Chapter 5.

### **1.6.6 Summary of the Most Representative OC Disorders**

In summary, the most representative OC disorders are Obsessive-Compulsive Personality Disorder (OCPD), Anorexia Nervosa (AN), Obsessive-Compulsive Disorder (OCD), Autism Spectrum Disorders (ASDs) and in particular Asperger's syndrome. It is posited that these conditions share typical OC traits such as cognitive and behavioural rigidity, avoidance of new and unfamiliar experiences, inhibition of emotional expression, and fear of mistakes and failure.

Putative Maladaptive OC disorders might also be considered Treatment Resistant Depression and the conditions grouped with OCD under the diagnostic category of Obsessive-Compulsive and Related Disorders (OCRDs). Maladaptive OC may also underlie disorders in adolescence which show poor adherence to standard treatment protocols, especially when they have very early onset (e.g., early onset OCD, especially when comorbid with tics, and early onset somatoform disorders).

### **1.7 Aim and Brief Rationale of the Need for the Development of a New screening Measure of OC**

Much of the discussion in the first parts of the chapter can be traced back to the person centred- versus variable-centred debate in the field of personality which has been outlined above. The evidence for the RUO model person types was reviewed based on the work of Block and first extracted by Robins et al (1996) and later Asendorpf and colleagues

([Asendorpf & van Aken, 1999](#); [Asendorpf et al., 2001](#)) which was met with partial success. A number of studies failed to extract three distinct types of individuals ([Costa, Herbst, McCrae, Samuels, & Ozer, 2002](#); [Rammstedt, Riemann, Angleitner, & Borkenau, 2004](#); [Van Leeuwen, De Fruyt, & Mervielde, 2004](#)). Other researchers found no evidence supporting either the stability over time or three specific types ([Akse, Hale, Engels, Raaijmakers, & Meeus, 2007](#); [Asendorpf & van Aken, 1999](#); [Asendorpf, 2003](#); [van Aken & Semon Dubas, 2004](#)).

The need for development of new measures that tap into the higher and lower order traits of OC is dictated by both theoretical and practical reasons. First, new scales/subscales are deemed necessary to reflect the Neuro-biosocial model underlying OC, which is novel and different in substantial aspects to existing theories of personality pathology ([Lynch, 2018a](#)). Scales of overcontrol that have been developed within the typological approach cannot do justice to this model and some of them have been developed with different aims, e.g., to capture adaptive self-control tendencies. The somewhat fuzzy and empirically weak conceptualization of the overcontrolled type (as well as the undercontrolled type) underlined is reflected in the few measures developed during the last decades aiming to capture these types, as described in the section below.

### **1.7.1 Existing Measures of Concepts Related to Overcontrol**

The only self-report inventory that Block developed (but not validated) was related to the construct of Ego-resiliency. Block and Kremen's emotional Ego-Resiliency scale ([Block & Kremen, 1996](#)) consists of 14 items rated on a 4-point scale and is linked to the central concepts of adaptability and resilience, which Block regarded as the core attitudinal aspects of the Ego-resilience concept. Examples of items include "I am regarded as a very energetic person", "I quickly get over and recover from being startled." In addition to being unrelated to Maladaptive Overcontrol, this scale was hardly used by researchers or by Block himself. Further measures developed by Block and colleagues include Letzring's revised scale of Emotional Undercontrol and Resiliency ([Letzring, Block, & Funder, 2005](#)) and Klohnen's Ego Resiliency scale, the latter being the one most closely related to Maladaptive OC (measuring confident optimism, autonomous activity, interpersonal warmth, and skilled expressiveness) ([Klohnen, 1996](#)).

[Rosenbaum \(1980\)](#) developed the Self-Control Schedule (SCS), a 36-item self-report instrument focusing on the application of individual differences of self-control on

behavioural problem solution. The SCS has four subscales: (a) use of cognition to control challenging emotional reactions (e.g. “When an unpleasant thought is bothering me, I try to think about something pleasant”); (b) problem solving (e.g. “When I am short of money, I decide to record all my expenses in order to budget more carefully in the future.”); (c) ability to delay immediate gratification (e.g. “I prefer to finish a job that I have to do before I start doing things I really like”); and (d) perceived self-efficacy (e.g. “My self-esteem increases when I am able to overcome a bad habit.”). The SCS is a useful measure of self-control that has been used extensively in clinical samples. However, it is primarily a measure of Coping dimensions related to self-control and thus limited in capturing the multidimensional nature of the Maladaptive Overcontrol construct.

Somewhat constricted in its breadth, the Self-Control Questionnaire (SCQ) ([Brandon, Oescher, & Loftin, 1990](#)) is a 16-item self-control measure that measures work behaviour (workaholism) and impulse control with the majority of items referring to eating behaviours and exercise. Given the narrow focus on health and eating behaviour, areas in which gender differences are quite pronounced, the SCQ could be useful in female patients with anorexia nervosa but it cannot be used as a broad measure of dispositional self-control.

The Self-Control Questionnaire (SCQ) by [Rehm et al. \(1981\)](#) was developed in order to be used as part of a Self-Control Therapy Program for Depression. It is a 40-item 5-point Likert-type scale designed to capture which cognitive (e.g. “Thinking about how well I'm doing so far is what keeps me trying.”) and behavioural (e.g., “I encourage myself to improve by treating myself to something special whenever I make progress.”) self-control techniques are linked to optimizing well-being and decrease depression. The specific focus of the SCQ renders it unsuitable as a measure of Maladaptive Overcontrol specifically and perhaps even as a measure of self-control more broadly. In effect, it could more accurately be described as a measure of Coping strategies for depression rather than a self-control measure. Nonetheless, some items are related to dispositional attitudes of Maladaptive Overcontrol such as “Unless I set and reach very high goals, my efforts are likely to be wasted” related to perfectionism, or “How I feel about myself has a lot to do with what I'm accomplishing” related to workaholism.

The self-control subscale from Gough's California Personality Inventory (CPI) ([Gough, 1975](#)) has rarely been used in research pertaining to self-control due to its item heterogeneity and lack of face validity. This subscale is almost irrelevant to the construct of Maladaptive

Overcontrol. There seems to be some conceptual relationship with the construct of undercontrol as there are items pertaining to exhibitionism, e.g., “I would like to wear expensive clothes”, “A person needs to ‘show off’ a little now and then”, and narcissism, e.g., “I would like to be the center of attention”. However, other items are not related to undercontrolled tendencies and can only be indirectly relevant to overcontrol tendencies, e.g., “My way of doing things is apt to be misunderstood by others” (showing poor interpersonal functioning), whereas others are not related to either under or overcontrol, e.g., “My home life was always happy”.

The highly cited measure of self-control by [Tangney, Baumeister, and Boone \(2004\)](#) was based on a conceptualization of self-control as a self-regulation capacity, i.e., the ability to regulate internal experiences or behaviours. The scale was developed to capture cognitive control (e.g., forcing oneself to concentrate and overcome distractions), the ability to alter one’s emotions, resisting impulses which may lead to undesirable behaviour and achieving optimal performance. The items (e.g., “I engage in healthy practices”, “People would say that I have iron self-discipline”) reflect the adaptive conceptualization of self-control employed by the authors in which high self-control leads to favourable outcomes such as optimum psychological adjustment, well-being and high academic performance. Unsurprisingly, the studies utilising these measures generally concluded ‘*the more self-control the better*’ and failed to support a curvilinear effect. Interestingly, however, the curvilinearity hypothesis is dismissed as irrelevant to Tangney et al.’s construct of self-control, who suggest that their measure is closely linked to Block’s concept of ego-resilience ([Block & Kremen, 1996](#)). [Tangney et al. \(2004\)](#) acknowledge that overcontrolled individuals (e.g., those with obsessive or compulsive symptoms) are those who lack ability in self-control and cannot suspend their superior capacity to exert self-control when required, but this does not apply to their operationalization of self-control.

Based on a narrow conceptualization of self-control that has remained essentially the same over the past decades, these measures fail to capture the distinctive properties of Maladaptive OC. These include the notable Social Anxiety and detachment of individuals with Maladaptive OC, their extreme conscientiousness or their innate tendency towards detailed-orientated, as opposed to global, processing.

### 1.7.2 Limitations of Existing Measures of Concepts Related to Overcontrol

Although some self-report measures capture OC related tendencies, no measures have been developed and validated that can be used to assess the eight OC domains of the *Maladaptive OC* phenotype, which is a new construct. For example, the OC domain of Positive Affectivity resembles one of two dominant higher-order factors often described in normal-range personality and maladaptive variants, i.e., positive affectivity or extraversion. These can be measured by the Extraversion scales of the NEO-PI-R ([Costa & McCrae, 1992a](#)), the Positive Emotionality scales (PEM) of the Multidimensional Personality Questionnaire (MPQ) ([Tellegen, 1982](#)), or the Positive Temperament scale of the SNAP-2 ([Clark et al., 2014](#)). However, Positive Affectivity as conceptualized in Maladaptive OC is not a measure related to Extraversion. OC individuals often appear prosocial, but this is mainly driven by a sense of social obligation rather than a genuine desire to communicate their feelings.

Traditional measures of Positive Affect mentioned generally equate positive affect with extraversion. Therefore, a new Positive Affectivity scale that would achieve high construct validity ought to measure the specific lower-order traits that this domain is posited to encompass as manifested in OC individuals and should include items targeting behaviours stemming from spontaneous expression of positive affect and freely expressed relatedness in addition to items capturing optimism, joy, high energy and positive mood states that extant measures of Positive Affect/Extraversion have mostly focused on.

In a similar vein, as a result of the focus of personality theories and clinical research in the last decades, measurement of other broad domains of OC- such as the higher-order traits of Openness and Moral Certitude (associated with the FFM trait of conscientiousness) -is almost inherently problematic. For example, there has been little applicability of the Openness domain in psychopathology assessment as measured by the widely used NEO-PI-R ([Costa & McCrae, 1992a](#)) and the NEO- Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1989), the two psychometric measures that have almost exclusively been used to assess Openness to experience. However, this is explained by the fact that Openness in the Five Factor Model ([Digman, 1990](#)) has been conceptualized as a normal-range personality trait which comprises the facets of active imagination, aesthetic sensitivity, attentiveness to inner feelings, preference for variety, and intellectual curiosity. By focusing exclusively on the relationship between the FFM Openness conceptualisation and the DSM Personality

disorders, as opposed to exploring the links of Openness with transdiagnostic phenomena, researchers have failed to see a value of this trait in clinical assessment. Indeed, two meta-analytic reviews which have examined the relationships between each of the FFM dimensions and personality disorders (PDs) ([Samuel & Widiger, 2008](#); [Saulsman & Page, 2004](#)) concluded that the domain of Openness was by far the most under-represented of the five FFM dimensions in PD pathology.

In this thesis, I adopt the premise that normal and abnormal personality represent different levels of continuous dimensions. I also posit that certain behaviours, beliefs and attitudes, not captured adequately by the extant normal-range personality measures, may characterize specific disorders or a spectrum of disorders and therefore may be of utility in assessment and treatment formulation of the psychopathologies in question. It is argued that some dimensions of the Openness construct (e.g., *poor receptivity to feedback*) belong to the latter category. In a nutshell, there is more to the openness construct than its conceptualisation within the FFM model of normal personality.

Finally, although scales (or subscales) which may be used to measure specific aspects of OC have been developed, there are no measures that capture the facets within the OC personality domains outlined at the same time, while offering brevity and a high degree of specificity. The case of the Openness domain is, again, revealing. There are a number of self-report measures that ostensibly tap either related concepts, such as Experiential Avoidance ([Bond et al., 2011](#); [Gamez, Chmielewski, Kotov, Ruggero, & Watson, 2011](#)), or narrower aspects of Low Openness, e.g., Resistance to Change Scale (RCS) ([Oreg, 2003](#)), Personal Need for Structure (PNS), ([Neuberg & Newsom, 1993](#)), Need for Closure (NFC) ([Kruglanski, Atash, De Grada, Mannetti, & & Pierro, 2013](#)), Intolerance of Uncertainty Scale ([Carleton, Norton, & Asmundson, 2007](#)), as well as novelty seeking and harm avoidance measured by the Temperament and Character Inventory (TCI) ([Cloninger, Przybeck, & Svrakic, 1994](#)). However, these conceptually related measures focus on aspects or consequences of Lack of Openness and are not designed to measure the full domain of Openness and different manifestations of Openness as a characteristic of Maladaptive OC. In a nutshell, measurement of Openness to experience has either focused on the adaptive high end or the maladaptive low end of the dimension without adequately exploring the links between these two.

An alternative to developing new measures would be to use several extant measures to assess OC. However, in addition to these being largely inadequate in terms of screening, guiding treatment formulation and measurement of therapeutic change in OC /OCPD patients, as explained above, it is fair to conclude that administering a range of measures would be particularly cumbersome for patients in standard clinical settings and almost equally problematic in non-clinical research settings. Therefore, given the sound theoretical framework developed and the development of specific treatment approaches specifically tailored towards a range of patients suffering from Maladaptive OC (i.e., Radically Open Dialectical Behaviour Therapy (RO DBT) ([Lynch, 2018a](#); [Lynch, 2018b](#))) and the lack of measures that can assess OC, there is an urgent need for the development of measures high in both validity and clinical utility.

### **1.8 Brief Rationale of the Need for the Development of a New Measure of OCPD**

Obsessive Compulsive Personality or Overcontrolled (OC) personality has been linked to negative effects on the well-being and patients' quality of life including poor interpersonal functioning, social isolation, depression, marked, and persistent anxiety ([Hertler, 2013, 2014](#); [Reddy et al., 2016](#)). Mental health services have struggled with such difficult-to-treat, ego-syntonic, mental health problems of typically chronic course. Patients with personality disorders have increased health care utilization (both as outpatients and inpatients) and receive more psychopharmacological treatments when compared to patients with common disorders, such as depression ([Bender et al., 2001](#)). In turn, chronic intensive polypharmacy ([Zanarini, Frankenburg, Hennen, & Silk, 2004](#)) as well as high rates of comorbid mental disorders ([Coid, Yang, Tyrer, Roberts, & Ullrich, 2006](#); [Lenzenweger, Lane, Loranger, & Kessler, 2007](#)) pose additional problems for patients and services. The direct and indirect economic burden of personality disorders is well documented, with Obsessive Compulsive Personality Disorder (OCPD) claiming the highest costs matched only by Borderline Personality Disorder (BPD) ([Rendu, Moran, Patel, Knapp, & Mann, 2002](#); [Soeteman, Hakkaart-van Roijen, Verheul, & Busschbach, 2008](#)). Assessment influences the treatment and course of mental disorders. The importance of early and accurate evaluation for presence of a PD in individuals with a common psychiatric disorder is especially critical, because of clinicians' reluctance to give a PD diagnosis and because PDs by definition run a chronic course and can complicate recovery from comorbid mental illness ([Coid et al., 2006](#)).

Furthermore, existing measures of OCPD are inadequate and there is controversy on which maladaptive personality traits best capture the construct of OCPD ([Liggett, Sellbom, & Carmichael, 2017](#); [Samuel & Widiger, 2010](#)). As part of the DSM-5 Personality and Personality Disorders workgroup the 220-item, self-report Personality Inventory for the DSM-5 (PID-5) ([Krueger et al., 2012b](#)) was developed for assessment of personality disorders by means of the DSM-5 Section III dimensional personality traits. A diagnosis of OCPD requires that an individual has impairment in self and interpersonal functioning (Criterion A) and displays clinically elevated levels of the PID-5 facet of Rigid Perfectionism, as well as two of the facets of Perseveration, Intimacy Avoidance, and Restricted Affectivity (Criterion B). However, there is inconsistent evidence about the trait profile for OCPD. Three studies have been conducted with the specific aim of examining the trait-based profile of OCPD. [Liggett et al. \(2017\)](#) investigated whether the operationalization of OCPD in Section III of the DSM-5, by means of the PID-5, describes the same construct as the one described in Section II. They found that only three of the four facets (Rigid Perfectionism, Perseveration, and Intimacy Avoidance) explained 53% in the latent Section II OCPD while Anxiousness and (low) Impulsivity further increased the variance predicted. In a similar study by [Liggett and Sellbom \(2018\)](#) conducted with a sample of 214 individuals receiving mental health support for mood, anxiety and eating disorders only Rigid perfectionism significantly correlated with both self-reported OCPD, measured by an aggregate score of the PDQ-4 ([Hyler, 1994](#)) and the SCID-II-PQ ([First, Gibbon, Spitzer, Benjamin, & Williams, 1997](#)), and other informant OCPD measured by the Personality Inventory for DSM-5–Informant Report Form (PID-5-IRF) ([Markon, Quilty, Bagby, & Krueger, 2013](#)). The pattern of results for the other three OCPD traits was not clear. The contribution of five additional traits (Anxiousness, Hostility, Submissiveness, Suspiciousness, Impulsivity, and Workaholism) to the prediction of OCPD did not produce a clear pattern, either. Only Workaholism added to the prediction of self-report OCPD, and only Hostility contributed additional variance to other-informant OCPD. In the third study which investigated the DSM-5, Section III operationalization of OCPD in a clinical sample of 142 Danish adults meeting criteria for at least one mental disorder ([Liggett, Sellbom, & Bach, 2018](#)) Rigid Perfectionism produced the strongest association with the Section II OCPD, followed by Perseveration. Submissiveness, Suspiciousness, and Impulsivity which predicted individual Section II OCPD criteria.

As [Liggett et al. \(2018\)](#) point out, the implication from the above studies is that the literature is inconsistent regarding which traits are most relevant to the OCPD construct. Therefore, the necessity for a self-report measure that can optimally operationalise the OCPD construct remains unchanged. This thesis will use the novel conceptualization of Maladaptive Overcontrol ([Lynch, 2018a](#)) in order to develop and validate a self-report measure of OCPD that can ensure clinical relevance and applicability in mental health settings.



**Chapter 2: Development and Validation of the Brief Overcontrol Scale****2.1 Abstract**

The objective of Chapter 2 was to develop a brief self-report measure that can be used in clinical settings as a first screening measure for people high in Maladaptive Overcontrol. An adjective-based, Likert-type scale measure was developed that was administered in a community sample as part of Study 1. An Exploratory Factor analysis revealed a four-factor structure comprising the lower-order traits of Gratification delay, Volatility, Reservedness, and Conformity. In Study 2, university students completed the measure and additional measures to test the criterion validity of the scale. A Confirmatory Factor Analysis tested a second-order factor model which showed good fit, indicating that the four subscales can be conceptualized in terms of the higher-order factor of Overcontrol. Convergent, discriminant, and incremental validity all generally provided support for the construct validity of the measure. Limitations and future research are discussed.

## 2.2 Study 1

### 2.3 Objective

The aims of Study 1 were a) to identify the lower order traits of Maladaptive Overcontrol (OC) and to generate an initial pool of items that could be used to develop a self-report measure that assesses clinically significant OC and distinguishes it from Undercontrolled (UC) traits, and b) to select a final item pool and determine its factor structure and internal consistency.

### 2.4 Background

There is long-standing empirical support for the notion that chronicity in mental health problems reflects enduring Maladaptive Coping patterns at the level of personality. Lynch and colleagues ([Lynch & Mizon, 2010](#); [Lynch, 2018a](#); [Lynch, 2018b](#); [Lynch & Cheavens, 2008](#)) have argued that personality pathology that is associated with treatment resistance in a range of disorders is either Overcontrolled or Undercontrolled in nature ([Lynch, 2018a](#)). More specifically, Lynch argues that temperament is organised in three diatheses: temperamental threat sensitivity, temperamental inhibitory-control, and temperamental reward sensitivity- thus reflecting the model on temperament and psychopathology offered by [Clark \(2005\)](#). People with OC-disorders share high threat sensitivity and inhibitory control and low reward sensitivity. In terms of personality higher order traits Overcontrolled (OC) personality style is characterised by: 1) Low receptivity and openness 2) Low flexible-control 3) Inhibited emotional expression and 4) Lack of social connectedness ([Lynch, 2018a](#)). Each of these higher order traits is manifested-as per definition-by specific lower-order traits, i.e., Low receptivity and openness is manifested by high risk aversion, avoidance of novelty and disconfirming critical feedback and lack of social connectedness is manifested by the lower order traits of high envy, resentment, and low empathy (see Chapter 1: Section 1.1). Although the structure of these traits has not yet been empirically tested, several OC characteristics are related to a number of mental health problems ([Akiskal, Savino, & Akiskal, 2005](#); [De Caluwé, Rettew, & De Clercq, 2014](#); [Furnham, 2015](#); [Park et al., 2015](#); [Summerfeldt, Gilbert, & Reynolds, 2015](#)) and Maladaptive OC is posited to be associated with treatment resistance in mental health problems such as Anorexia Nervosa, Obsessive Compulsive Personality Disorder (OCPD) and chronic depression ([Aycicegi, Harris, & Dinn,](#)

2002; Lynch & Cheavens, 2008; Riso et al., 2003; Zucker et al., 2007). A recent study on the psychological mechanisms of overcontrol in patients with personality disorders concluded that perfectionism and emotional inhibition are maintaining factors in many PDs (Dimaggio et al., 2018) and urged for further research to address the problem of overcontrol. Indeed, whilst there is an abundance of research on UC personality and related disorders, studies on OC personality are lacking with OCPD being the most understudied personality disorder (Reddy et al., 2016).

Lynch argues that OCPD is the prototypical OC disorder (Lynch, 2018a). This is an argument akin to the case for an Obsessive-compulsive spectrum of disorders, brought forward by Hollander (1993) and adopted in the fifth edition of the DSM (APA, 2013) as Obsessive-Compulsive and Related Disorders (OCRDs), i.e., a group of disorders which share obsessional thoughts and compulsive behaviours. Just like OCRDs are part of the same spectrum to the extent they are similar to OCD, Maladaptive OC disorders or Obsessive-Compulsive Personality Disorders are part of the spectrum of OC disorders by virtue of their relationship with OCPD. However, unlike OCRDs, the rationale for Maladaptive OC disorders prioritizes transdiagnostic temperamental dispositions over behavioural phenotypes (Clark, 2005; Dimaggio et al., 2018). This leaves researchers and clinicians in ambiguity with regards to assessment of the spectrum of Maladaptive OC disorders.

On one hand, not all people with Maladaptive OC traits would meet diagnostic criteria of OCPD and relying on existing measures of OCPD to assess Maladaptive Overcontrol would be misguided. In fact, distinctive OC properties, such as low empathy and high need for structure, are absent from current diagnostic criteria and extant measures of OCPD (Ansell et al., 2011; Samuel & Widiger, 2010). On the other hand, existing measures of self-control assume that you can never have too much self-control, and equate high self-control with increased psychological well-being (Baumeister et al., 1994; Tangney et al., 2004) departing from the phenomenology of Maladaptive OC. In turn, this phenomenology was not developed to serve the needs of assessment but of therapy: Radically Open-Dialectical Behaviour Therapy (RO-DBT) is a treatment designed to address the cognitive, emotional, and behavioural constriction of OC and Lynch's conceptualisation was developed alongside, and as part of, this treatment.

The lower order traits of Excessive inhibitory control or Maladaptive OC are defined by a range of personality traits such as cognitive and behavioural rigidity, low openness to

new experiences, extreme cautiousness, low empathy, high moral certitude, and exaggerated need for order (see Chapter 1: Section 1.5).

This project's objective was to address the need in the field of OC disorders for the development and validation of a brief and easy to administer self-report measure of over-controlled tendencies with sufficient reliability to distinguish it from UC tendencies. Specificity was prioritized so that people who suffer from mental health problems related to OC can be readily and reliably assessed and offered treatment strategies which are fundamentally different from the therapies targeting high impulsivity, extreme sensation seeking, and emotional lability often found in UC disorders ([Bassett, 2012](#); [Conway, Hammen, & Brennan, 2012](#)).

## 2.5 Method

### 2.5.1 Item Construction and Development

The conceptual framework for item construction was provided by the work of Lynch and colleagues. It is posited that OC is linked to specific personality traits ([Lynch et al., 2016b](#); [Lynch, 2018a](#); [Lynch, Hempel, et al., 2015](#))- see Chapter 1 Section 1.5. Given that a primary aim of the Study was to develop a tool that would possess the maximum discriminatory power of OC versus UC, I focused on core lower-order facets that would capture subtle differences in the diverse OC phenotypical expressions while distinguishing between dispositions, attitudes, and behavioural expressions of OC and UC individuals. Therefore, items were written with a view to tap core traits of the OC phenotype with the maximum sensitivity and specificity while aiming for a brief measure using an adjective-based, simple format that could ensure the highest possible clinical utility.

An initial list of 80 items deemed to optimally represent the OC and UC domains as defined by ([Lynch, 2018a](#)) formed the basis for an extended pool of 200 items reflecting behaviours, emotions and thoughts associated with OC. Most of the items at this stage were written in pairs so that one of the adjective-pairs represented OC, and the other a true psychological opposite of OC, and therefore closely associated with UC. This item pool underwent an expert panel review, by three experts on the theory of Maladaptive Overcontrol including Thomas Lynch, and 185 items deemed to have strongest discriminatory power of OC versus UC were retained. Following a second expert panel review by twelve clinicians

practicing RO-DBT, five more items were abandoned as they were thought to possess high acquiescence bias. A seven-point Likert scale was adopted, with 1 indicating that the respondent disagrees completely with the statement applying to them and 7 indicating complete agreement with the statement. The final pool of 180 items for analysis and the instructions are presented in Appendix A.1

### 2.5.2 Participants

Participants were recruited for the study via the CrowdFlower (CF) platform, a web-based system used extensively to recruit participants for surveys and other psychological research. Participants were required to be either native speakers or very fluent speakers of English and over 18 years of age.

### 2.5.3 Materials

Participants who accessed the survey were asked to complete the following questionnaires:

**Demographics.** The Demographics section consisted of questions assessing the participant's age, gender, relationship status, education, and ethnicity; descriptives for these are shown in Section 2.6.1

**Brief Overcontrol Scale.** Participants completed 180 items of the Brief Overcontrol Scale (BOS). They were asked to indicate the degree to which they felt a certain word described them, using a Likert-type scale ranging from *1=not at all* to *7=extremely*. Example items include "obedient", "deviant", "compliant", "impulsive", "inhibited". Descriptive statistics for the items are shown in Appendix A.2

**Positive and Negative Affectivity.** The Positive and Negative Affect Scale (PANAS) ([Watson, Clark, & Tellegen, 1988b](#)) was used; a 20-item Likert-type scale ranging from *1=very slightly or not at all* to *5=extremely*. Example items include "interested", "distressed", "excited", "upset". The version administered included the instructions "*Indicate to what extent you generally feel this way, that is, how you feel on average*" with example items of positive and negative affectivity, "interested" and "distressed", respectively. In this Study, the Negative Affect subscale had a Cronbach's alpha of .90,  $M = 1.88$  ( $SD = .74$ ) and the Positive Affect subscale had a Cronbach's alpha of .87 and  $M = 3.20$ , ( $SD = .74$ ).

#### 2.5.4 Procedure

The study was approved by the Southampton Research Ethics Committee (22/03/2016) as well as the Insurance and Research Governance Office (23/03/2016). Participants were recruited via CrowdFlower (CF). A number of studies support the use of crowdsourcing research platforms for community sampling purposes and attest to the good quality of data obtained when compared to data collected via traditional sampling methods ([Ramsey, Thompson, McKenzie, & Rosenbaum, 2016](#)), especially when online research is planned well ([Peer, Brandimarte, Samat, & Acquisti, 2017](#)). Respondents were redirected to iSurvey, the University of Southampton online survey program, in order to conduct the survey after giving informed consent.

Pilot testing indicated that the survey took an average of 20 minutes to complete. CF respondents were offered \$1.50 for their time. After pilot-testing the survey I used the CF manual bonus system: offering respondents \$1 upon completion of the survey and \$0.50 if they passed the two-item random response scale incorporated into the survey: “I was born on the 30th of February” and “I completed the questions of this survey in a random manner, without really paying attention to the content”. The two-item random response scale was incorporated into the Brief Negative Evaluation Scale-R and followed the format of the latter (1=*Not at all characteristic of me*, 2=*A little characteristic of me*, 3=*Somewhat characteristic of me* 4=*Very characteristic of me* 5=*Entirely characteristic of me*). Only when participants replied 1=*Not at all characteristic of me* to both statements received the bonus of \$0.50 and their data was entered for analysis. Recruitment was carried out in March-April 2015. Participants were informed of the nature and purpose of the study and of their right to anonymity, withdrawal, and the procedures of storage and retention of data. After providing informed consent, participants were directed to the web page with the survey. The self-report questionnaires on the iSurvey platform were presented in randomized blocks (i.e., each block included one questionnaire) in order to limit item proximity and item order effects, i.e., biases resulting when items are presented in a standard order, thus potentially inducing similar patterns of responses due to the items proximity on the questionnaire and the items’ conceptual relationship ([Podsakoff, MacKenzie, & Podsakoff, 2012](#)). For the same reasons, within each randomized block, the questions were also randomly presented in smaller blocks of maximum 20 items/statements. Participants could pause and resume work at different times. After the end of the survey participants were debriefed and were given additional information about the research topic area. Contact details of international professional mental

health services were provided and participants were also given the contact information of the researchers so that they could ask questions and raise concerns.

## 2.6 Results

### 2.6.1 Sample Characteristics

In total, 705 respondents from the UK, Ireland, and USA accessed the survey, of which 630 respondents completed the survey and redeemed payment. The data was imported into SPSS version 23 and was examined for data cleaning purposes. I deleted the data of 84 respondents who failed the two random response items of the survey, i.e., participants who did not answer *I=Not at all characteristic of me* to either of the two statements a) “I was born on the 30th of February” and b) “I completed the questions of this survey in a random manner, without really paying attention to the content”. I further examined the patterns of missing data and uniform responding patterns among the remaining 546 respondents. I deleted 19 respondents who had more than 10% missing data in the BOS ([Kline, 2015](#)). No participant showed a uniform responding pattern, i.e., answered in the same way (e.g., option 1) to every question on a question block of 20 items. Of the remaining 527 I deleted the data of 7 respondents who completed the survey in less than 7 minutes, indicating that they did not take the time to respond carefully and thoughtfully. The mean time of completion was 19 minutes. The final sample size for analysis was 520. The mean age was 36.55 years old ( $SD=12.31$ ). Of these 51.16% were female participants aged between 20 and 71 (mean age = 39.24  $SD = 11.81$ ) and 48.83% male participants aged between 20 and 74 (mean age = 33.73,  $SD = 12.21$ ). Of those that answered the question about relationship status, 38.7% were married, 36.3% were single, 12.3% were living with partner, 6.2% were in an intimate relationship but not living together, 4% were divorced and 0.8% were widowed. Regarding education: 11.5% completed a postgraduate qualification, 41.2% completed a higher education course, 26.7% attended university or equivalent but have not (yet) finished, 19.8% finished school at 18, 2.5% finished school at 16 and 1.7% left school before 16 years of age. Most participants were American (54.0%), followed by British (22.7%), Irish (3.7%), and any other White background (3.3%).

### 2.6.2 Distribution Analysis of Items

In the final sample ( $N = 520$ ), I examined the distributions of all 180 statement items (see Appendix A.2) in order to reduce the number of items entered into the factor analysis. First, I inspected the skewness and kurtosis of each item (i.e., the extent to which it obtained a normal distribution; a major assumption of parametric analyses including factor analysis). I removed items that had a skew value of greater than  $|1|$  or a kurtosis of greater than  $|3|$  (Tabachnick & Fidell, 2001;2019). Fourteen items did not meet these criteria. I removed eight items (Act without thinking, Deviant, Impractical, Inattentive, Neglectful, Thoughtless, Uninspired, Unrealistic) and retained six items (Improper, Inappropriate, Incompliant, Intoxicated, Unsystematic), which, despite showing unbalanced distributions, conveyed important construct-relevant information and were significant from a clinical point of view.

Next, I screened for ceiling or floor effects in the items. A questionnaire must fulfil the basic psychometric criteria in terms of the variance of items. Items with significant floor or ceiling effects often demonstrate social desirability bias and are typically indicated by mean or median scores close to the end of the scale (e.g.,  $\leq 2$  or  $\geq 6$  on the 1-7 scale). Given the absence of a clinical sample to compare against at this stage, I did not remove items of overriding clinical significance, as it was necessary to retain in the analysis all important OC and UC markers. Thus, nine items that violated these mean or median values were removed (Careless, Gullible, Idle, Impervious, Lax, Naive, Overconfident, Unconcerned, Vacillating) and 12 were retained (Brash, Disinhibited, Glamorous, Hoarder, Law-abiding, Loose, Reckless, Short-lived, Showy, Unreactive, Volatile, Wild).

### 2.6.3 Influence of Negative/Positive Affect

I analysed the correlations between the remaining items and the traits of neuroticism/ negative affectivity and extraversion/ positive affectivity as measured by the Negative Affect (NA) and Positive Affect (PA) scale of the PANAS (Watson et al., 1988b). It should be mentioned that both PA and NA are higher order traits that are relevant to OC and self-control as conceptualised by Lynch (2018a); OC patients are posited to score high in NA and low in PA. However, to avoid replicating NA, PA or variants of these chronic tendencies to experience negative and positive emotions respectively (Watson & Clark, 1984; Watson et al., 1988b; Watson, Clark, & Harkness, 1994), I excluded items correlating .40 or higher with NA or PA. Despite this, I did not remove items that might serve as good markers of OC and

UC and might have clinical utility. Item redundancy was also taken into consideration in this process, aiming to delete from further analysis items whose content was represented by another item very close to its meaning. Overall, 19 items that correlated  $>.4$  with NA were removed (Apprehensive, Changeable mood, Clumsy, Complaining, Despondent, Disorganized Fearful, Fickle, Inappropriate, Inconsistent, Overemotional, Sloppy, Stable mood, Temperamental, Uninvolved, Unstable, Vulnerable, Wasteful, Wearied) while five items were retained (Chaotic, Erratic, Haphazard, Undisciplined, Volatile). Another 23 items had a correlation  $>.4$  with the PA scale of PANAS and were deemed to be strong PA markers; these were also removed (Accurate, Adventurous, Affectionate, Animated, Appropriate, Attentive, Bold, Calm, Clearheaded, Daring, Determined, Enduring, Enthusiastic, Extrovert, Fearless, Inspired, Lively, Loving, Passionate Playful, Sociable, Spontaneous, Talkative), while six items were retained (Consistent, Constant, Disciplined, Expressive, Hardworking, Self-controlled).

#### **2.6.4 Item Intercorrelations and Multivariate Normality**

Next, I analysed the correlations between the items to test for sufficient common variance (i.e., whether each item correlated above  $r = |.30|$  with at least one other item in the scale). If an item does not share variance with any other in the scale, it is inappropriate to enter it into factor analysis. Only one item of the measure did not correlate sufficiently with the rest and this was removed: Not easily impressed.

To determine which method of factor analysis would be most appropriate, I tested for multivariate normality: Maximum Likelihood (ML) is the preferable choice for normally distributed data and it offers among other advantages a range of goodness of fit indexes ([Fabrigar, Wegener, MacCallum, & Strahan, 1999](#); [Osborne & Costello, 2009](#)). When the assumption of a multivariate-normal distribution of the data is violated, Principal Axis Factoring (PAF) is the next best choice ([Fabrigar & Wegener, 2011](#); [Osborne & Costello, 2009](#)). Calculation of Mahalanobis distance based on the remaining items of the measure gave high values, indicating that the residuals were too high for ML. Although ML is quite robust to violations of normality I decided to use PAF in the exploratory analysis.

### 2.6.5 Sample Size

The larger the sample size, the more robust and likely to replicate the factor structure is. The final 118 items yielded a ratio of 4.34 participants per item. Many guidelines have been suggested based on the minimum ratio of sample size to the number of variables/items being analysed or the minimum necessary sample size or combinations of these ([Costello, Osborne, & Kellow, 2008](#)). In fact, whether the sample size is sufficient ought to be considered in terms of a number of different aspects of each individual study, e.g., level of communalities ([MacCallum, Widaman, Zhang, & Hong, 1999](#)), which was sufficiently high in the current study. Moreover, the N/variables ratio of the study (4.34) is representative of published studies in the field.

### 2.6.6 Exploratory Factor Analyses

#### 2.6.6.1 Factorability of the matrix and identification of optimal number of factors.

I conducted the first main PAF factor analysis on the 118 items that met the assumptions described above. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO test) was .910, thus above the criterion of .70, and Bartlett's' Test of Sphericity was  $\chi^2(6903) = 34407.81, p < .0001$ . Therefore, the correlation matrix differed sufficiently from an identity matrix and could be factor-analysed appropriately. The determinant of the correlation matrix was  $4.589 \times 10^{-32}$ , smaller than the recommended cut-off, however all items met the Measure of Sampling Adequacy criterion of  $> .50$ , suggesting that they correlated sufficiently with other variables.

In this first solution, the Kaiser's criterion suggested the presence of 26 factors. However this criterion would require fewer variables and an even larger sample size in order to produce a correct estimate of the number of factors to be retained; in cases with this participant per variable ratio the solution obtained typically overestimates the number of factors accounted for by the data ([Tabachnick & Fidell, 2001;2019](#)). The Scree plot is a more reliable criterion available for identifying the optimal number of factors ([Osborne & Costello, 2009](#)). In this case, the Scree plot indicated four factors. Using oblique rotation (i.e., Direct Oblimin,  $\delta = 0$ ) to allow for factors to correlate I conducted and examined the results of PAF analyses specifying 2, 3, 4, 5, 6, 7 factors. In each, I inspected variance in the data set

accounted for by the factors, level of communalities, number of high loading items on each factor, number of zero items and number of complex or cross loading items, i.e., items loading onto more than one factor using a cut-off  $> .32$  to get the cleanest factor structure. The four-factor solution was deemed most suitable; it retained the coverage of all important OC markers and was the most readily interpretable and theoretically relevant solution. The five and six-factor solutions were not optimum, yielding scales with few items and containing many complex items.

#### **2.6.6.2 Final solution.**

I proceeded by forcing a four-factor solution onto the data. My aim was for the final solution to meet all criteria of the simple structure as outlined by Thurnstone (1947b). I reduced the number of items by selecting those that loaded strongly onto the responding factor while inspecting and comparing item communalities, factor loadings, presence of complex items, total variance accounted for as well as retaining high face validity and removing redundant items. Retaining high construct validity meant that in addition to statistical criteria being met I retained items whose substantive content was closer to OC as outlined by Lynch (2018a) and I removed items that may have measured the more narrowly defined construct of self-control as this has been used in competing paradigms. In turn, this meant that I had to remove high-loading items, but this ensured that the subscales were theoretically and clinically relevant and the solution was meaningful.

The final four-factor solution explained 43.86% of the variance. The KMO measure gave a value of .819, therefore the data set was suitable for factor analysis as it is greater than the recommended cut-off of 0.50. Bartlett's test of sphericity was highly significant indicating that the assumption of specificity was met ( $\chi^2 = 2443.59$ ,  $df = 136$ ,  $p < .001$ ). The determinant was .008 while measures of Sampling Adequacy for the items were all  $> .5$ . The residuals between expected and reproduced correlations were 5%. This information allowed me to identify the factor model using PAF. Figure 2-1 shows the Scree plot, Table 2-1 shows the item distributions, Table 2-2 shows the loadings of items onto their respective factors and Table 2-3 the factor correlation matrix (the variance accounted for by each factor is provided in Appendix A.3). In the final solution, all the items load strongly on their respective factor and weakly on the rest of the factors with no complex items (Table 2-2). Factor correlations were small to moderate but sufficiently high to suggest the existence of a higher order factor that could account for the structure of the data. The four factors could be clearly interpreted

as: 1) Conformity (explained by four items) 2) Volatility (explained by five items) 3) Reservedness (four items) and 4) Gratification delay (four items).

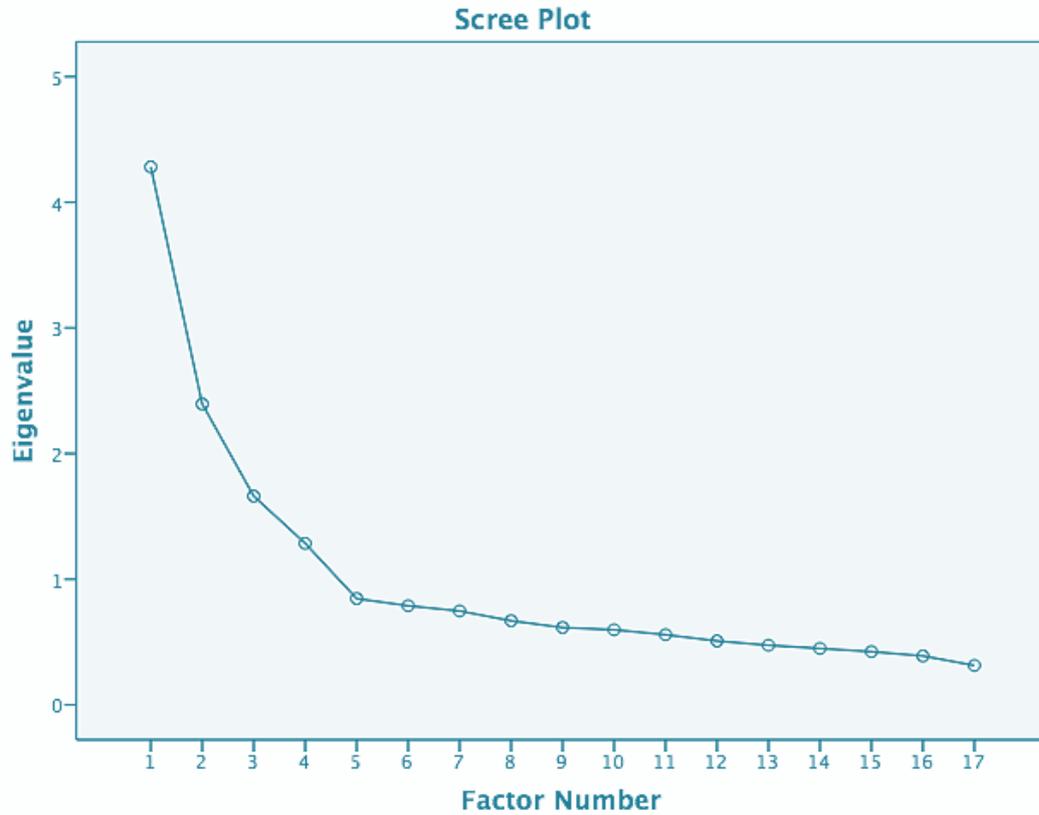


Figure 2-1 Scree plot of Exploratory Factor Analysis (EFA) in the online sample (N = 520).

Table 2-1 Descriptive Statistics of the Item Pool, Derived from Exploratory Factor Analysis (N = 520)

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Chaotic	2.40	1.36	.89	.23
Compliant	4.16	1.38	-.15	-.42
Conventional	3.87	1.42	.01	-.47
Erratic	2.54	1.41	.91	.41
Hard-working	4.99	1.44	-.47	-.33
Impulsive	3.08	1.46	.69	-.04
Loose	2.59	1.38	.65	-.20
Low-key	3.98	1.58	-.12	-.74
Obedient	4.22	1.41	-.22	-.39
Obeys the norm	4.25	1.50	-.26	-.53
Patient for reward	4.26	1.50	-.14	-.60
Quiet	4.45	1.68	-.27	-.80
Reserved	4.37	1.55	-.11	-.73
Restrained	3.94	1.44	-.03	-.57
Self-controlled	4.56	1.45	-.44	-.32

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Think before acting	4.67	1.56	-.45	-.52
Volatile	2.51	1.50	1.00	.47

Table 2-2 *Factor Loadings of the Exploratory Factor Analysis (EFA) (N =520). Loadings Below < .25 are Not Shown*

	Factor			
	1	2	3	4
Obedient	.792			
Obeys the norm	.781			
Compliant	.605			
Conventional	.534			
Erratic		.716		
Chaotic		.703		
Volatile		.667		
Impulsive		.607		
Loose		.520		
Reserved			-.730	
Quiet			-.713	
Restrained			-.490	
Low-key			-.450	
Self-controlled				.677
Hard-working				.601
Patient for reward				.550
Thinks before acting				.530

Table 2-3 *Factor Correlation Matrix*

Factor	1	2	3	4
1	1.00	-.12	-.36	.50
2	-.12	1.00	.15	-.27
3	-.36	.15	1.00	-.25
4	.50	-.27	-.25	1.00

**2.6.6.3 Factor correlations, internal consistency and distribution.**

The factors had moderate to high internal consistency given their small number of items per factor retained: Cronbach’s alpha scores were Conformity ( $\alpha = .782$ ), Volatility ( $\alpha = .784$ , Reservedness ( $\alpha = .711$ ), Gratification delay ( $\alpha = .712$ ). Alpha scores of this range are acceptable (Clark & Watson, 1995). Most of the items displayed a normal distribution (Table 2-1) while items that belonged to the volatility factor exhibited skew. In such cases where one factor’s distribution may affect the total score of a scale it is possible to standardize the

variables and subscales to form a composite score. Inspection of the correlation matrix (Table 2-3) for each of the factors computed shows that the correlations are small to moderate, confirming the choice of an oblique rotation of the factor matrix and suggesting that all factors are conceptually related.

## 2.7 Study 2

### 2.8 Objective

Given the good properties of the factor solution in Study 1, I conducted a second study to cross validate the measure in a separate sample using a Confirmatory Factor Analysis (CFA). The aims of the second study were

a) to confirm the structure of the measure using CFA in a student sample, and to examine its dimensionality. The following hypotheses were tested:

- **Hypothesis 1:** items of each subscale would load strongly onto their respective factor indicating that they are appropriate indicators of the corresponding factor
- **Hypothesis 2:** the separate subscales would constitute a higher-order latent factor (OC) as indicated by a good model fit.

b) to investigate the convergent validity, discriminant validity, and predictive validity of the final solution, i.e., obtaining psychometric properties that would attest to the construct validity of the scale. Convergent validity is accomplished by demonstrating a positive correlation between two measures. Although there is no absolute cut-off, correlation coefficients are usually recommended to be between .50 and .70 ([Carlson & Herdman, 2012](#)). Discriminant validity is achieved by showing that correlation between two measures is non-significant or sufficiently low to demonstrate that the constructs that measures capture are unrelated ([Hinkin, 1998](#)). For these analyses I chose the following scales and subscales:

The Five-Factor Obsessive–Compulsive Inventory (FFOCI) ([Samuel, Riddell, Lynam, Miller, & Widiger, 2012a](#)) is a 120-item scale developed to assess OCPD traits in both normal and clinical populations which includes 12 facets. This range of lower order traits allowed us to test for convergent and discriminant validity of the gratification delay, compliance, and reservedness subscales of the BOS. Moreover, the overall score of the FFOCI was employed to determine the predictive validity of the BOS against an established

measure of OC/OCPD pathology, validated in a student population. The Schedule for Nonadaptive and Adaptive Personality (SNAP-2) Disinhibition subscale was chosen to test the convergent validity of the volatility subscale of the BOS. For the divergent validity of the volatility scale the Behavioural inhibition (BIS) scale was chosen.

Regarding convergent and divergent validity, the hypotheses were:

- **Hypothesis 3:** Gratification delay will correlate  $>.5$  with the Workaholism and Doggedness FFOCI subscales
- **Hypothesis 4:** Gratification delay will have non-significant or very small correlations with the Detached Coldness and Emotionally Constricted FFOCI subscales
- **Hypothesis 5:** Volatility will correlate positively and  $>.5$  with the SNAP-2 Disinhibition subscale
- **Hypothesis 6:** Volatility will have a non-significant or very small correlation with the BIS scale
- **Hypothesis 7:** Reservedness will correlate positively  $>.5$  with the FFOCI Detached Coldness subscale
- **Hypothesis 8:** Reservedness will have non-significant or very small correlations with the Workaholism and Doggedness FFOCI subscales
- **Hypothesis 9:** Conformity will correlate  $>.5$  with the FFOCI Punctiliousness subscale
- **Hypothesis 10:** Conformity will have non-significant or very small correlations with the FFOCI Detached Coldness and Emotionally Constricted subscales

The predictive validity of the BOS was investigated by testing whether the scale could account for OC variance as measured by the Total score of the FFOCI, over and above the effect of the Depression Anxiety Stress Scales (DASS-21) subscales. Our hypothesis was:

- **Hypothesis 11:** The BOS will account for variance of OC pathology (FFOCI total score) over and above the effect of stress, depression, and anxiety (DASS-21).

## 2.9 Method

### 2.9.1 Participants

Participants for the second study were students at the University of Southampton. The final sample size for analysis was 309 participants with a Mean age of 20.16 ( $I = 2.84$ ). Most participants in the validation sample (80.40%) were female participants with a mean age 20.09 ( $SD = 2.77$ ). Male participants had a mean age 20.43 ( $I = 3.11$ ). Regarding relationship status, 44.7% of the sample were single, 35.9% in an intimate relationship but not living together, 6.1% living with a partner, 1% married, 0.6 % divorced, and 0.3 % separated. Most participants were British (76.1%), with some participants indicating their ethnicity as ‘Any other White background’ (9.2%), Indian (3.3%), or Bangladeshi (1.6%).

### 2.9.2 Materials

The study included the following self-report questionnaires (descriptive statistics are reported in Table 2-5):

**Demographics.** The questionnaire administered consisted of questions on the participant’s age, gender, relationship status, ethnicity;

**Brief Overcontrol Scale.** The 17 item Brief Overcontrol Scale (BOS) that was developed in Study 1. Descriptive statistics for the BOS items are shown in Table 2-4.

**Disinhibition.** The Disinhibition scale of the Schedule for Nonadaptive and Adaptive Personality (SNAP-2) ([Clark, Simms, Wu, & Casillas, 2008](#)) was used to assess divergent validity of the volatility subscale of the BOS. The SNAP-2 Disinhibition subscale is a 35-item True/False scale comprising of 19 items from the SNAP-2 primary scales tapping impulsivity (e.g., “I am not an "impulse buyer." Reverse coded), manipulation (e.g., “Lying comes easily to me.”) and exhibitionism (e.g., I like to show-off) as well as 16 additional items developed to capture the higher-order trait of disinhibition. Disinhibition scale has a highly robust factor structure and strong construct validity ([Dindo, McDade-Montez, Sharma, Watson, & Clark, 2009](#); [Eaton et al., 2011](#))

**Threat Sensitivity-Inhibition.** The Behavioural Inhibition System Scale (BIS) ([Carver & White, 1994](#)) was used as a measure of convergent validity with the BOS total score. The BIS is 7-item self-report measure rated on a scale of 1 (*very true for me*) to 4 (*very false for*

*me*). The BIS assesses the tendency to act with avoidance against unpleasant stimuli across different contexts, reflecting the behavioural inhibition system. Example items include “I worry about making mistakes” and “I feel worried when I think I have done poorly at something important.” The BIS is valid and widely used measure of dispositional Threat Sensitivity ([Cools et al., 2005](#); [Meyer, 2001 #771](#); [Cooper, Gomez, & Aucote, 2007](#); [Meyer, Olivier, & Roth, 2005](#)) which captures the dimensions of Trait Anxiety and Fear ([Gray, Hanna, Gillen, & Rushe, 2016](#); [Perkins, Kemp, & Corr, 2007](#)).

**State depression and anxiety.** The 21-item version of the DASS-21 consists of three subscales; Depression, Anxiety, and Stress. The DASS-21 asks participants to indicate how much each statement applied to them over the past week based on a rating scale of 0 (= *did not apply to me at all*) to 3 (= *applied to me very much or most of the time*) has shown excellent psychometric properties in both clinical ([Lovibond & Lovibond, 1995](#)) and non-clinical populations ([Henry & Crawford, 2005](#)) and all subscales are excellent candidates for assessing the predictive validity of the scales developed on Study 1 in all important clinical dimensions. Example items include “I found it difficult to work up the initiative to do things” for depression, “I experienced trembling e.g., in the hands” for anxiety and “I found myself getting agitated” for the stress subscale.

**Obsessive Compulsive Personality Disorder traits.** The Five-Factor Obsessive–Compulsive Inventory (FFOCI); ([Samuel et al., 2012a](#)) is a 5-point Likert-type scale (ranging from 1 = *strongly disagree* to 5 = *strongly agree*) developed to assess obsessive–compulsive traits as maladaptive variants relevant to OCPD facets of the Five-factor model ([McCrae & Costa, 2003;2013](#)). The FFOCI has good reliability and is mostly associated with the FFM dimension of Conscientiousness ([Crego, Samuel, & Widiger, 2015b](#)). It consists of 12 subscales: Perfectionism, Fastidiousness, Punctiliousness, Workaholism, Doggedness, Ruminative Deliberation, Detached Coldness, Risk Aversion, Excessive Worry, Constricted, Inflexibility and Dogmatism. Example items of the FFOCI subscales that were used for convergent and divergent validity are presented below:

- Detached Coldness: “People consider me a rather serious and reserved person”, “I tend to be serious around others”
- Emotionally Constricted: “Strong emotions are not that important in my life”, “I am not a person who is into how people feel about things.”

- Punctiliousness: “I firmly believe that you should always play strictly by the rules”, “Knowing the proper etiquette in all situations is very important for me.”
- Workaholism: “I get so caught up in my work that I lose time for other things”, “While others are playing, I'm getting ahead”
- Doggedness: “I am to the maximum dogged, determined, and disciplined”, “I have a strong, perhaps at times even excessive, single-minded determination”

Descriptive statistics for the scales and subscales above as well as for age are shown in Table 2-5.

Table 2-4 *Descriptive Statistics (Raw Scores) of Brief Overcontrol Scale (BOS)*  
*Items in the Cross-validation, Student Sample (N = 309)*

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Chaotic	2.84	1.46	.64	-.34
Compliant	4.40	1.35	-.36	-.20
Conventional	4.04	1.32	-.29	-.29
Erratic	2.80	1.40	.40	-.81
Hard-working	5.04	1.24	-.62	.45
Impulsive	3.43	1.55	.28	-.72
Loose	3.17	1.48	.19	-.80
Low-key	3.92	1.48	-.03	-.78
Obedient	4.62	1.38	-.53	-.18
Obeys the norm	4.51	1.41	-.60	-.11
Patient for reward	4.23	1.54	-.27	-.71
Quiet	3.69	1.63	.18	-.82
Reserved	3.93	1.45	-.12	-.83
Restrained	3.64	1.32	.07	-.49
Self-controlled	4.59	1.28	-.53	.29
Thinks before acting	4.72	1.51	-.45	-.46
Volatile	2.61	1.33	.50	-.46

Table 2-5 *Descriptive Statistics for Age and Measures Used in the Cross-Validation Sample Student*  
*Sample (N = 309)*

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	Cronbach's alpha
Age	20.16	2.84	5.16	38.93	
SNAP2 Disinhibition	11.68	6.19	.56	-.12	.85
BIS	1.90	.55	.59	.32	.84
DASS21 Stress	13.73	4.95	.58	-.50	.88
DASS21 Depression	12.52	5.18	.89	-.19	.92
DASS21 Anxiety	12.05	4.89	1.00	.21	.88
Excessive Worry	3.53	.82	-.59	-.07	.90
Detached Coldness	2.30	.59	.55	.68	.82
Risk Aversion	2.87	.70	.13	-.13	.82
Constricted	2.16	.59	.79	1.23	.84

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	Cronbach's alpha
Inflexible	2.57	.64	.27	-.25	.84
Dogmatism	2.49	.57	.23	.25	.77
Perfectionism	3.12	.72	.04	-.53	.87
Fastidiousness	3.13	.75	.01	-.63	.88
Punctiliousness	3.06	.62	.11	-.16	.81
Workaholism	2.93	.47	.29	-.27	.63
Doggedness	2.91	.66	-.02	.00	.84
Ruminative Deliberation	3.12	.68	-.05	-.26	.63
FFOCI Total Score	2.85	.46	.15	.15	.93

### 2.9.3 Procedure

The Study was given approval by the Southampton Research Ethics Committee (4/11/2015) and Insurance and Research Governance Office (17/11/2015). The Study was part of a larger study which sought to conduct a Confirmatory Factor Analysis (CFA) and estimate the criterion validity of the BOS and the more comprehensive personality scale (the latter is the focus of Chapter 3). Participants were recruited by placing adverts on notice boards at the University of Southampton. The Study was also advertised on e-folio, a web-based system used to recruit participants for research within the Faculty of Social, Human and Mathematical Sciences at the University of Southampton. For this Study eligible participants were all students who have attended a psychology module in the academic year 2015-2016. Participants were directed to the iSurvey software, the University of Southampton platform for conducting surveys and other research. All participants were fully informed of the nature and aims of the study and were asked to give their consent before proceeding to the survey. All scales used in the Study were presented randomly. Each scale was further presented in random order of a maximum of 20 items/statements. As part of the Study participants had to pass a 5-item random response scale which was incorporated in the personality scale validated as part of the study outlined in Chapter 3. This was the Likert-type format: 1 = *disagree completely*, 2 = *disagree strongly* 3 = *disagree somewhat* 4 = *agree somewhat* 5 = *agree strongly* 6 = *agree completely*. The five items of the random response scale were also presented randomly and were: a) "I have won an Olympic gold medal"; b) "I own an original painting by Leonardo Da Vinci"; c) "I have not used a computer or a phone in the last two years"; d) "I have never watched TV"; and e) "I have a very good chance of becoming an astronaut". After completing the survey participants were debriefed.

## 2.10 Results

In total, 766 students accessed the survey of which 467 completed it. The data of these participants was imported into SPSS version 23 and was examined for data cleaning purposes. I deleted the data of 54 respondents who completed the survey in less than 40 minutes, indicating that they did not take the time to respond carefully. I also deleted the data of 84 respondents who failed at least one of the five item random response scale of the survey, i.e., participants who did not reply 1 = *disagree completely* or 2 = *disagree strongly* to any of the statements. I further examined the missing data and patterns of uniform responding among the remaining 320 respondents. No participant showed a uniform responding pattern (e.g., having all “agree strongly” responses). I deleted 11 respondents who had more than 10% missing data in the BOS measure. Results are reported for the final sample of  $N = 309$  participants.

A missing value analysis was carried out for all variables in the study to find percentages and potential unique patterns of missing data. Overall, only 0.22% of all values in the data set were missing with no variable having more than 1.6% of its values missing. Patterns of missing values were consistent across variables. In the validation sample the distributions of the 17 items of the BOS were again examined. Based on suggested cut-offs for normality ((Skewness > 2, Kurtosis > 7; ([Cohen, Cohen, West, & Aiken, 2014](#))) the data did not violate univariate normality assumptions. However, the level of skew exhibited suggested that multivariate normality might not be met. Moreover, I inspected outlying scores for each item ( $Z > |3.29|$ ), because extreme values skew subscales and total scores computed, and can influence statistical analysis. One outlying score for the item “volatile” was found to have an extreme value of 3.294. I also assessed for outliers the Study’s variables that would be entered into the analyses. Three scores of gender, three scores of the FFOCI constricted subscales, one score of the FFOCI detached coldness subscale, one score of the DASS-21 scale, and one score of the BIS were outliers. All outlying scores, i.e., Z scores greater than 3.29 or less than  $-3$  were replaced with the value of  $Z = \pm 3.29$  ([Tabachnick & Fidell, 2001;2019](#)).

### 2.10.1 Confirmatory Factor Analysis (CFA)

The aim of the analysis was to confirm the structure of the four factors produced in Study 1 and test the unidimensionality of the measure using data from students. Analyses

were conducted using IBM SPSS AMOS 22.0 ([Arbuckle, 2010](#)). In line with my theory, a second-order model in which the four factors loaded onto a single higher-order factor was the most appropriate way of conceptualising the four-factor solution produced in Study 1.

I examined the distribution of the items to determine the appropriate estimation procedure for the four-factor model. Normal theory Maximum likelihood is the standard estimation procedure for CFA ([Curran, West, & Finch, 1996](#)) in Structural Equation Modelling (SEM) and it assumes multivariate normality. Skewness and kurtosis with critical ratios are shown in Appendix B.1. I used Mardia's coefficients of multivariate skewness and kurtosis to assess the multivariate normality assumption of ML. Mardia's coefficient had a score of 55.638 (CR 19.240) indicating mild multivariate non-normality. I investigated the presence of outliers by estimating Mahalanobis d-squared distance for each case. The pattern of cases with the highest d-squared distance, did not justify deletion of outliers. However, ML estimation is robust to mild skewness and AMOS supports the use of bootstrapping which is an efficient way to ensure that models are reliable and produce accurate results by creating data sets that simulate the model tested. In CFA, bootstrapping tests the accuracy of the model producing adjusted standard errors and bias corrected confidence intervals of the regression weights (i.e., factor loadings). There is evidence ([Nevitt & Hancock, 1998](#)) that ML estimation with bootstrapping is superior to alternative methods of estimation such as the correction methods proposed by Albert Satorra ([Satorra & Bentler, 2010](#)) which are used when data deviate from normality ([Curran et al., 1996](#)). Therefore, I proceeded with ML estimation and confirmed the final results using the bootstrapping technique.

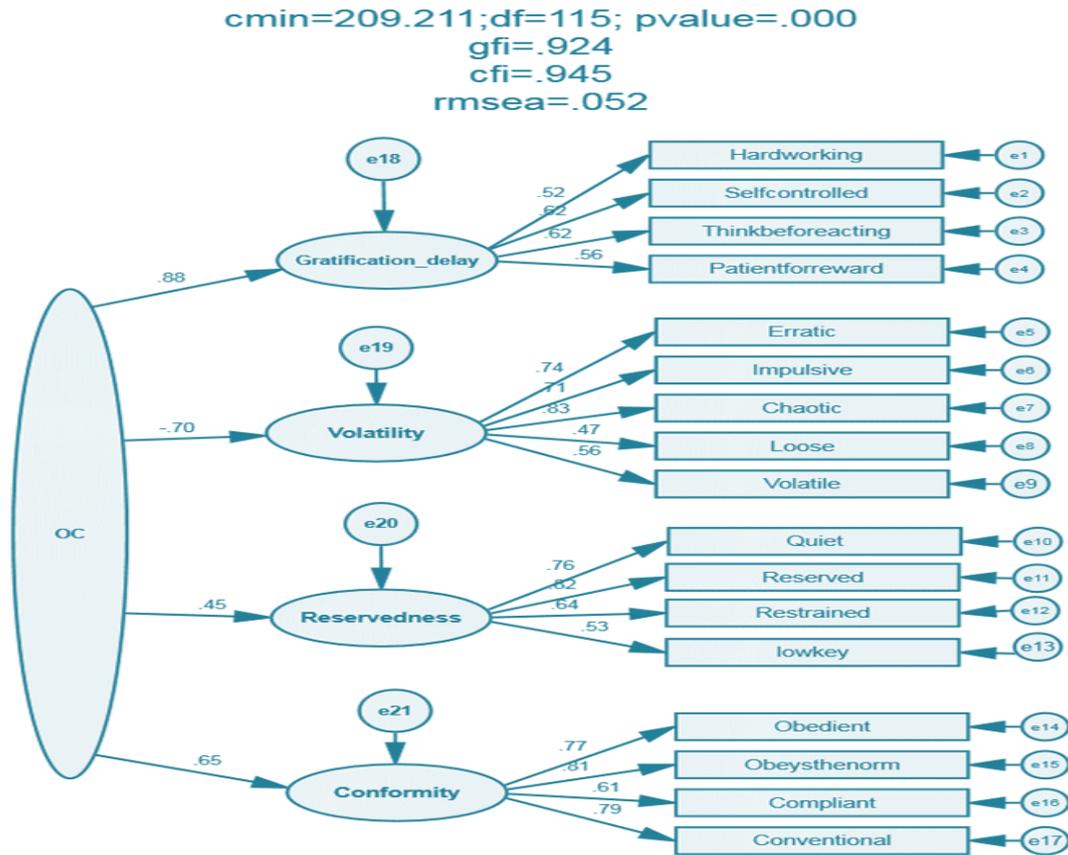
The percentage of missing data was very small (under 3%). Further to a missing value analysis, missing data were handled by mean imputation. In the Confirmatory Factor Analyses (CFA) employed each trait was modelled as a latent factor with the individual items as observed indicators and all four latent factors were modelled onto the higher order second factor of OC. A restricted factor analysis model was used to identify the model in which the indicators derived from EFA were scaled by constraining a path from each factor to one of the factor's indicators, i.e., by assigning a regression weight of 1 to the indicator. The most reliable indicator was used to constrain the model following on the EFA results.

In terms of model fit I used the Discrepancy Chi Square, a standard global fit index measure which produces a non-significant p-value for good-fitting models. However, the Chi Square is very sensitive to size and discrepancies from normality in the data ([West, Finch, &](#)

[Curran, 1995](#)). Under such cases of estimation, the chi-square test may reject the model. Thus, as recommended by others ([Kline, 2015](#); [Marsh, Balla, & Hau, 1996](#)), I used a combination of additional fit indices as follows:

- The Comparative fit index (CFI; [Bentler \(1990\)](#)) with values ranging from 0 (poor fit) to 1.00 (perfect fit) and a value of 0.9 or more higher indicating good fit.
- The Standardized Root Mean Square Residual (SRMR) with values <.08 indicating adequate fit, <.05 good fit and a value of 0 indicating perfect fit.
- The Goodness of Fit Index (GFI); values of the GFI should exceed 0.90 for the model to have good fit ([Byrne, 1994](#)).
- The Root Mean Squared Error of Approximation (RMSEA; [Steiger \(1990\)](#)) a parsimony adjusted measure, i.e., it penalizes for the lack of parsimony in the model. Values of .08 or less indicate adequate fit. [Hu and Bentler \(1999\)](#) suggested  $\leq .06$  as a stricter cut-off for a good model fit.

The resulting model can be seen in Figure 2-2. The model consists of five interrelated constructs, i.e., the four first-order factors of Gratification delay, Volatility, Reservedness, and Conformity and the second order factor of Maladaptive Overcontrol (OC). Using the default Maximum Likelihood estimator, the final CFA yielded a fit of  $\chi^2(115, N = 309) = 209.21, p < .001, GFI = 0.920, CFI = 0.940, RMSEA = 0.52$  (90% confidence interval [CI] = [.04, .063]), SRMR = 0.540. Therefore, the results confirmed the first two hypotheses: **Hypothesis 1** was confirmed as items loaded on their respective factor strongly (Figure 2-2); **Hypothesis 2** was also confirmed by demonstrating that the subscales were facets of a common latent 2<sup>nd</sup> order factor.



*Note.* The observed variables (i.e., the indicators) are represented by rectangles; ellipses represent the unobserved or latent variables and the circles represent measurement error. The arrows between the unobserved variables and the observed variable represent regression paths and its numbers represent the standardized regression weights. Similarly, the arrows between the second order factor of OC and the four first-order factors represent path coefficients. The arrows between the circles and the observed variables represent measurement error term.

Figure 2-2 Second order model of Maladaptive Overcontrol (OC) derived from Confirmatory Factor Analysis (CFA) (N = 309).

As some of the indicators were skewed, reflected in the value of Mardia's coefficient of multivariate normality (55.638 [CR 19.240]), I performed bootstrapping to confirm the CFA solution. Bootstrap standard errors (using 3000 samples) of estimates and significance values with confidence intervals of estimates for the SEM analysis are shown in Table 2-6 and Table 2-7. The standard errors of estimates were very small (Table 2-6) and therefore the hypothesis that there is a difference between the original mean estimate and bootstrap mean estimate is rejected. Standard errors of bias and confident intervals did not cross zero (Table 2-7) which means that the hypothesis the parameter is equal to zero is rejected (Byrne, 2008). Therefore, the bootstrap sample re-confirmed the results of the analysis.

Table 2-6 *Bootstrap Samples: Standard Errors of Regression Weights*

Parameter		<i>SE</i>	<i>SE-SE</i>	<i>M</i>	Bias	<i>SEBias</i>
Gratification delay	OC	***	***	1.00	***	***
Volatility	OC	.24	.003	-1.29	.024	.004
Reservedness	OC	.29	.004	1.01	.022	.005
Compliance	OC	.21	.003	1.21	.025	.004
Hardworking	Gratification delay	***	***	1.00	***	***
Thinks before acting	Gratification delay	.28	.004	1.47	.025	.005
Patient for reward	Gratification delay	.20	.003	1.34	.015	.004
Erratic	Volatility	***	***	1.00	***	***
Impulsive	Volatility	.10	.001	1.07	.005	.002
Chaotic	Volatility	.09	.001	1.17	.006	.002
Loose	Volatility	.10	.001	.67	.007	.002
Quiet	Reservedness	***	***	1.00	***	***
Reserved	Reservedness	.08	.001	.95	.005	.002
Restrained	Reservedness	.08	.001	.68	.006	.002
Obedient	Conformity	***	***	1.00	***	***
Obeys the norm	Conformity	.10	.001	1.08	.005	.002
Compliant	Conformity	.08	.001	.77	.001	.001
Volatile	Volatility	.07	.001	.71	.003	.001
Low-key	Reservedness	.07	.001	.63	.002	.001
Conventional	Conformity	.09	.001	.99	.006	.002
Self-controlled	Gratification delay	.19	.002	1.23	.016	.003

\*\*\**p* < .001

Table 2-7 *Bootstrap Samples: Confidence Intervals of Unstandardized Regression Weights*

Parameter		URW	Lower	Upper	<i>p</i>
Gratification delay	OC	1.00	1.00	1.00	***
Volatility	OC	-1.26	-1.68	-.93	.001
Reservedness	OC	.98	.59	1.55	.001
Compliance	OC	1.18	.87	1.54	.001
Hardworking	Gratification delay	1.00	1.00	1.00	***
Think before acting	Gratification delay	1.45	1.08	1.99	.001

Parameter		URW	Lower	Upper	<i>p</i>
Patient for reward	Gratification delay	1.32	1.03	1.68	.001
Erratic	Volatility	1.00	1.00	1.00	***
Impulsive	Volatility	1.06	.91	1.23	.001
Chaotic	Volatility	1.16	1.02	1.33	.001
Loose	Volatility	.66	.58	.83	.001
Quiet	Reservedness	1.00	1.00	1.00	***
Reserved	Reservedness	.95	.82	1.08	.001
Restrained	Reservedness	.67	.54	.81	.001
Obedient	Conformity	1.00	1.00	1.00	***
Obeys the norm	Conformity	1.08	.94	1.26	.001
Compliant	Conformity	.77	.63	.89	.001
Volatile	Volatility	.71	.59	.83	.001
Low-key	Reservedness	.63	.52	.73	.001
Conventional	Conformity	.99	.86	1.14	.001
Self-controlled	Gratification delay	1.22	.95	1.55	.001

Note URW = Unstandardized Regression Weight

\*\*\*  $p < .001$

The factors exhibited good internal consistency with Cronbach's alpha scores: a) Gratification delay  $\alpha = .669$ ; b) Volatility  $\alpha = .794$ ; c) Reservedness  $\alpha = .780$ , and d) Conformity  $\alpha = .832$ . The final version of the measure with instructions is shown in Appendix B.2. Descriptive statistics of the subscales for female and male participants is shown in Table 2-8. Due to the higher skewer of some of the items (Table 2-4) and subscales (Table 2-8), in line with standard psychometric practice ([DiStefano, Zhu, & Mindrila, 2009](#)), I standardized all the items in the final solution into t scores. The subscales and total score were computed by taking the mean of standardized items. Standardization ensures that the subscales' weightings to the overall composite are not biased by distribution of the items. It was also deemed necessary to investigate the role of gender and age. Previous research in children and adolescents have shown a significant difference in the distribution of the gender in the overcontrolled type ([Akse, Hale, Engels, Raaijmakers, & Meeus, 2004](#); [Scholte, van Lieshout, de Wit, & van Aken, 2005](#); [Weisz & Weiss, 1991](#)). Female gender appears to be overrepresented in the overcontrolled type compared to male. Also, a significant interaction between type membership and age has been shown ([Akse et al., 2007](#); [Asendorpf & van Aken, 1999](#); [Morizot & Le Blanc, 2005](#); [van Aken & Semon Dubas, 2004](#)) in line with

evidence that personality changes over the life course ([Roberts, Walton, & Viechtbauer, 2006](#)). Based on these findings the associations between variables of interest with age and gender were examined. Statistically significant associations with age and gender are shown in Table 2-9 and Table 2-10, respectively. As age and gender produced significant correlations with variables of interest, subsequent analyses reported below controlled for age and gender.

Table 2-8 *Descriptive Statistics (raw scores) of the BOS Subscales and Total Score per Gender in the Cross-validation, Student Sample (N =309)*

		Gratification Delay	Volatility	Reservedness	Conformity	BOS Total
<i>M</i>	F	18.77	14.43	15.29	18.14	77.76
	M	17.72	16.62	14.85	15.28	71.23
<i>SD</i>	F	3.86	5.27	4.53	4.26	12.50
	M	4.31	5.39	4.83	4.52	13.84
Skewness	F	-.39	.38	.08	-.50	-.06
	M	-.06	.29	-.19	-.08	-.21
Kurtosis	F	.01	-.25	-.57	.23	.09
	M	.05	-.67	-.78	.52	-.02
Range	F	20.00	25.00	22.00	24.00	72.00
	M	20.00	22.00	19.00	23.00	66.00

Table 2-9 *Correlations (Pearson's r) of Age with Criterion Validity Variables and BOS Subscales*

	<i>r</i>	<i>p</i>
Worry	-.11	.053
Detached Coldness	-.01	.768
Risk Aversion	.06	.294
Constricted	.04	.448
Inflexibility	-.06	.283
Dogmatism	.02	.761
Perfectionism	.08	.141
Fastidiousness	.03	.657
Punctiliousness	.05	.371
Workaholism	.13	.020
Doggedness	.11	.059
Ruminative Deliberation	.05	.382
FFOCI Total Score	.04	.501

	<i>r</i>	<i>p</i>
DASS-21 Stress	-.05	.389
DASS-21 Depression	-.07	.245
DASS-21 Anxiety	-.09	.140
DASS-21 Total Score	-.07	.203
BIS	.08	.182
SNAP-2 Disinhibition	-.10	.081
Gratification Delay	.10	.080
Volatility	-.09	.103
Reservedness	-.03	.611
Conformity	-.13	.023
BOS Total Score	.02	.774

Table 2-10 *Effect of Gender on Criterion Validity Variables and BOS Subscales*

	Gender	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	95% CI	
						Lower	Upper
Worry	F	86.60	7.60	5.68	***	4.14	8.53
	M	80.26	8.58				
Detached Coldness	F	49.47	10.07	-1.70	.091	-5.20	.38
	M	51.88	9.29				
Risk Aversion	F	50.81	9.84	2.86	.004	1.27	6.85
	M	46.75	10.21				
Constricted	F	48.67	9.52	-4.70	***	-9.04	-3.70
	M	55.04	9.35				
Inflexibility	F	50.41	9.95	1.27	.206	-1.00	4.62
	M	48.60	10.18				
Dogmatism	F	50.09	10.07	.55	.585	-2.03	3.59
	M	49.30	9.60				
Perfectionism	F	50.51	9.91	2.07	.040	.14	5.69
	M	47.59	9.68				
Fastidiousness	F	50.88	10.04	3.25	.001	1.81	7.35
	M	46.30	9.06				
Punctiliousness	F	50.81	10.09	3.15	.002	1.66	7.20
	M	46.38	8.72				
Workaholism	F	50.69	9.95	2.61	.010	.90	6.47
	M	47.00	9.61				
Doggedness	F	50.26	10.39	.92	.358	-1.50	4.15
	M	48.94	8.43				

	Gender	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	95% CI	
						Lower	Upper
Ruminative	F	51.01	9.77	3.94	***	2.75	8.21
Deliberation	M	45.53	9.50				
FFOCI Total Score	F	50.68	9.98	2.57	.011	.86	6.44
	M	47.04	9.66				
Stress	F	50.68	10.16	2.25	.025	.41	6.05
	M	47.46	8.99				
Depression	F	50.26	9.96	.74	.457	-1.77	3.92
	M	49.18	10.28				
Anxiety	F	50.48	10.22	1.54	.125	-.62	5.06
	M	48.26	9.06				
DASS-21 Total	F	50.51	10.11	1.64	.103	-.48	5.19
	M	48.16	9.42				
BIS	F	48.13	8.89	-7.06	***	-11.85	-6.68
	M	57.39	10.24				
SNAP-2 Disinhibition	F	48.48	9.20	-5.55	***	-10.30	-4.90
	M	56.08	10.97				
Gratification Delay	F	50.49	9.73	1.86	.064	-.15	5.45
	M	47.85	10.86				
Volatility	F	49.22	9.86	-2.89	.004	-6.88	-1.30
	M	53.31	10.08				
Reservedness	F	50.20	9.85	.70	.483	-1.81	3.82
	M	49.19	10.66				
Conformity	F	51.26	9.57	4.64	***	3.70	9.16
	M	44.84	10.17				
BOS Total Score	F	50.53	5.16	3.63	***	1.25	4.23
	M	47.79	5.72				

\*\*\**p* < .001

### 2.10.2 Convergent, Discriminant and Predictive Validity

Convergent validity refers to the extent a measure is similar to other measures that tap closely related constructs. Discriminant validity refers to the degree a measure is dissimilar to measures of construct it should not be related to, e.g., an anxiety measure should converge with conceptually similar constructs of anxiety and should diverge from measures of depression. For the purpose of this Study, FFOCI subscales and the SNAP-2 Disinhibition subscale were selected to measure convergent validity while the BIS for the volatility BOS subscale and the FFOCI subscales were selected as measures of divergent validity. The

FFOCI subscales exhibited mild non-normality, with skewness ranging from -0.008 to -0.792 and kurtosis from 0.004 to 1.225 (Table 2-5). However, gender, SNAP-2, BIS, and the DASS-21 subscales exhibited higher skew (Table 2-5). Therefore, for analyses on convergent, discriminant, and predictive validity all variables were standardized.

In reference to convergent validity, the Study hypotheses were confirmed in terms of direction but not all reached the level of > 0.05 (Table 2-11). In terms of divergent validity of the subscales all the Study’s hypotheses were confirmed (Table 2-11)-coefficients of BOS subscales with all study variables are shown in Appendix B.3. More specifically **Hypothesis 3** was partially confirmed; Gratification delay had a significant positive correlation with the Doggedness FFOCI subscale and the Workaholism scale. **Hypothesis 4** regarding divergent validity of the Gratification delay subscale was fully confirmed; correlation of the Gratification delay subscale and the Detached Coldness and Constricted subscales were not significant. **Hypothesis 5** and **Hypothesis 6** about the convergent and divergent validity of the Volatility subscale were also fully confirmed; Volatility yielded a significant positive correlation with the SNAP-2 Disinhibition subscale and had a non-significant correlation with the BIS scale. Similarly, **Hypotheses 7** and **8** about the convergent and divergent validity of the Reservedness subscale were confirmed; Reservedness had a significant positive correlation with the FFOCI Detached Coldness subscale, it displayed a positive but very small correlations with the Workaholism subscale and a non-significant correlation with the Doggedness FFOCI subscale. **Hypothesis 9** was also confirmed in terms of direction; Conformity correlated significantly with the FFOCI Punctiliousness subscale. Finally, **Hypothesis 10** was confirmed; Conformity had non-significant correlations with the FFOCI Detached Coldness and Emotionally Constricted subscales.

Table 2-11. *Correlations (Pearson’s R) Showing Convergent and Discriminant Validity of The BOS Subscales*

	Gratification Delay	<i>p</i>	Volatility	<i>p</i>	Reserved	<i>p</i>	Conformity	<i>p</i>
Detached Coldness	-0.04	.477	-0.04	.449	0.56	***	0.06	.340
Constricted	-0.04	.538	-0.04	.506	0.23	***	-0.02	.787
Punctiliousness	0.47	***	-0.31	***	0.28	***	0.41	***
Workaholism	0.44	***	-0.15	.009	0.13	.031	0.15	.011
Doggedness	0.53	***	-0.29	***	0.11	.053	0.24	***

	Gratification Delay	<i>p</i>	Volatility	<i>p</i>	Reserved	<i>p</i>	Conformity	<i>p</i>
SNAP-2	-0.56	***	0.51	***	-0.34	***	-0.35	***
Disinhibition								
BIS	-0.10	.099	0.07	.234	-0.32	***	-0.23	***

\*\*\**p* < .001

A three-stage hierarchical multiple regression was conducted to assess the predictive validity of the BOS, with the FFOCI total score as the dependent variable. Age and gender were entered at stage one of the regression, the mean score of DASS-21 subscales was entered at stage two and the BOS mean score was entered at stage three to determine the increment of prediction it offered. As shown in Table 2-12 the *R*<sup>2</sup> change from Model 2 to Model 3 was statistically significant; the BOS score accounted for a notable portion of the variance in the dependent variable after controlling the effect of age, gender and DASS-21. Therefore, **Hypothesis 11** was confirmed.

Table 2-12. *Summary of Hierarchical Regression Analysis for Variables Predicting Maladaptive Overcontrolled Traits*

Model		$\beta$	<i>t</i>	<i>p</i>	$\Delta R^2$	95.0% CI	
						Lower	Upper
1	(Constant)		15.50	.000	.020	2.60	3.36
	Gender	-.14	-2.47	.014		-.29	-.03
	T Age	.02	.34	.728		-.01	.01
2	(Constant)		9.29	***	.103	1.69	2.60
	Gender	-.11	-2.07	.039		-.25	-.01
	T Age	.04	.76	.447		.00	.01
	T DASS-21 Total	.32	5.89	***		.01	.02
3	(Constant)		-.82	.412	.267	-.79	.33
	Gender	-.01	-.29	.775		-.12	.09
	T Age	.03	.83	.409		.00	.01
	T DASS-21 Total	.34	7.43	***		.01	.02
	T BOS Total	.53	11.38	***		.04	.05

\*\*\**p* < .001

## 2.11 Discussion

The BOS was designed in order to be used as the first step in assessing OC and as a screening measure of OCPD, followed by more detailed assessment ([Lynch et al. \(2016b\)](#)). Therefore, while brevity and sensitivity remained the primary aim in development and validation of the tool, I was especially mindful to achieve high specificity, i.e., to validate a measure that could distinguish OC individuals from people who have a UC personality style who would benefit from alternative treatments. To achieve all three aims of brevity, high sensitivity, and sufficient specificity I aimed to produce a measure consisting of a small number of adjectives to be administered with clear instructions in a simple Likert-type format. Some of the adjectives were strong OC markers while others were indicators that OC individuals would be unlikely to endorse. An Exploratory Factor Analysis (EFA) in Study 1 produced four correlating factors with good internal consistency. One of the factors (Volatility) correlated negatively with the other three, i.e., it consisted of the equivalent of negatively worded items capturing low OC and stronger UC tendencies. It is worth noting that negative wording items and reverse coding have been criticised lately in such terms specifically: these items tend to load on a separate factor which may be the result of method variance, i.e., a spurious factor ([Brown, 2014](#); [Schmitt & Stults, 1985](#)). However, it is not likely that the factor produced was a methodological artefact in this specific data set: this is because of the large number and serial position of the negatively worded items. Moreover, it was easy to determine empirically whether the single factor consisting of negatively scored items reflects a methodological side-effect or true property of the latent construct (Maladaptive OC in this case). This was accomplished by examining the correlations of the factor with other variables which was carried out in Study 2 as part of determining the construct validity of the scale and subscales.

Exploring the factor structure of the measure using a confirmatory approach was an advantage in evaluating the construct validity of the BOS. In order to form the subscale scores and the overall composite score, I used factor score weights produced as part of the CFA. This is preferable to more traditional unit weighted methods, particularly with items loading strongly on their respective factors and when the overall stability of the model is replicated in separate samples ([DiStefano et al., 2009](#)). The hypotheses about the latent structure of the factors produced by the EFA in Study 1 were confirmed by the CFA. In addition, the indicators had high loadings onto their respective factors yielding regression

weights of .47 to .83, with most items having a factor loading exceeding .60. Moreover, Study 2 supported a unifactorial representation of the factors as a single second-order latent variable, allowing for a total score of the measure to be computed and used. As expected, the Chi Square Test was not significant: for samples larger than 200 cases the value of the Chi Square is almost always not statistically significant ([Hu & Bentler, 1999](#)). Despite this, all other fit indexes showed a very good fitting model. Crucially, three subscales, Conformity, Volatility and Gratification delay, all loaded onto the higher order factor of  $OC > |.65|$ , while Reservedness only loaded .46. Although more than 20% of the variance of the latter subscale is explained by the model, this is a limitation indicating that there are residual covariances unaccounted for by the model. It is possible that the content validity of the subscale could have been increased with the inclusion of additional items. Overall, however, internal consistency was good and the small number of items per factor I opted for maximising the parsimony of the final model with RMSA below 0.6, while producing a shorter measure of each lower-order trait. Therefore, the two factor-analytic approaches employed in two separate samples provided strong evidence of a robust structure inherent in the items. This was confirmed using Bootstrapping. Biases of standard errors of estimates were very low and all estimates fell into 90% of the confidence interval.

The results of the predictive validity are noteworthy. BOS predicted OC pathology above and beyond the effect of state stress, anxiety, and depression. The size of the  $R^2$  change from Step 2 to Step 3 in the hierarchical regression was high and indeed notable given that all indicators that correlated  $>.4$  with negative affect had been removed from the analysis and therefore were not part of the final solution. This is a finding of importance, which confirms that the BOS is a *trait* measure and it captures a construct that cannot be accounted for by the higher-order factors of Negative and Positive affect. Moreover, the results are in line with the theoretical framework of Maladaptive OC ([Lynch, 2018a](#); [Lynch, 2018b](#)). The four factors could be clearly interpreted and reflect prototypical qualities associated with Maladaptive OC ([Lynch et al., 2016a](#); [Lynch, 2018a](#)).

Reservedness has been associated with various forms of psychopathology ([Bessette, 2005](#); [Kunce & Newton, 1989](#); [Worling, 2001](#)) and has been specifically linked with interpersonal difficulties and anxiety ([Carlson, Feng, & Harwood, 2004](#); [Hartup, 1976](#); [Hitchcock, Chavira, & Stein, 2009](#); [Pourabdolisardroud, 2011](#); [Swickert, Rosentreter, Hittner, & Mushrush, 2002](#))

The results of Study 2 showed that Reservedness was the only one of the four subscales of the BOS that correlated significantly with all FFOCI facets (Appendix B3, correlations of  $r = .15$  to  $.57$ ) as well as the SNAP-2 Disinhibition and BIS subscales (Appendix B3). It is noteworthy that Reservedness was the only BOS facet to produce a positive significant correlation ( $r = .56$ ) with the FFOCI subscale of Detached Coldness, a facet which includes items pertaining to a fearful, inward-looking social orientation e.g. “I enjoy getting to know people on a personal level –(Reverse-coded)”, “I don't really know my close friends that well”. These findings are in line with the theory of OC disorders and the OC trait of “Affiliation Avoidance” (as described in Chapter 1); overcontrolled individuals are posited to perceive social situations as threatening, they tend to be self-conscious, avoid the limelight, and keep away from behaviours that call for public displays of emotion or behaviours that might attract attention ([Lynch, 2018a](#)). Reservedness, as operationalized in the BOS, was not designed to capture the social interaction anxiety posited to characterise maladaptive Overcontrol ([Lynch et al., 2016a](#); [Lynch, 2018a](#)). However, it has, plausibly, been argued that different forms of social anxieties exist along a continuum, and that related constructs, such as reservedness span from normal and high normal to pathological levels of social anxiety ([Hitchcock et al., 2009](#); [McNeil, 2001](#)). Such conceptualization of Reservedness as part a social anxiety spectrum is also consistent with empirical studies reporting high prevalence of related constructs, i.e., social phobia and social inhibition among OC-related disorders ([Godart, Flament, Lecrubier, & Jemmet, 2000](#); [Kaye, Bulik, Thornton, Barbarich, & Masters, 2004](#)) including OCPD ([Pinto et al., 2018](#); [Solomonov, Kuprian, Zilcha-Mano, Muran, & Barber, 2020](#); [Widiger, 2012](#)). Study 5 explores the hypothesis that Social Anxiety is a key feature of OCPD, which has been overlooked in self-report measures including the Personality Inventory for DSM–5 ([Krueger, Derringer, Markon, Watson, & Skodol, 2012a](#)).

The construct of Gratification Delay has traditionally been studied within a positive paradigm ([Mischel, 1974](#); [Mischel, Shoda, & Rodriguez, 1989](#); [Shimoni, Asbe, Eyal, & Berger, 2016](#)) whereby it has been equated with increased behavioural control and successful outcomes. Indeed, postponing immediate gratification and persisting in goal-directed behaviour in order to attain later rewards is a predictor of academic achievement ([Herndon, 2011](#); [Mischel, Shoda, & Peake, 1988a](#)), physical health ([Caleza, Yañez-Vico, Mendoza, & Iglesias-Linares, 2016](#); [Schlam, Wilson, Shoda, Mischel, & Ayduk, 2013](#)), and social development ([Mischel et al., 2011](#)). Moreover, lower levels of Gratification Delay have been associated with poor mental health outcomes such as depression ([Privitera, McGrath,](#)

[Windus, & Doraiswamy, 2015](#)) and addiction ([Kekic et al., 2020](#); [Kirby, Petry, & Bickel, 1999](#)). However, it appears that the tendency to delay gratification, just like that of self-control, is a concept which has an inverse U relationship with mental health so that distress/delay intolerance and distress/ delay over-tolerance are equally harmful ([Gorey, Rojas, & Bornovalova, 2018](#); [Lynch & Mizon, 2011](#)). The results of Study 2 confirmed a strong convergent validity for the Gratification Delay subscale, which correlated  $>.4$  with Workaholism and Doggedness as well as Risk Aversion, Perfectionism, Fastidiousness, and Ruminative Deliberation. To my knowledge, this is the second study after [Pinto, Steinglass, Greene, Weber, and Simpson \(2014\)](#) to report an association of Gratification Delay with maladaptive traits typical of OCPD, although the potentially maladaptive nature of Gratification Delay has also been reported in patients with Anorexia Nervosa ([Decker, Figner, & Steinglass, 2015](#); [Steinglass et al., 2012](#)). The pattern of results lend support to the biosocial theory of OC whereby the tendency to choose later larger rewards instead of immediate but smaller rewards may act as hindrance rather than an advantage in high OC individuals, e.g., rendering them especially prone to working extremely long hours and feeling exhausted and burned out as a result-see [Lynch \(2018a\)](#) for a discussion of the cognitive costs of Gratification Delay and its relationship with approach coping in individuals with overcontrolled disorders. Overall, the construct of Gratification Delay seems to serve well the role of a useful heuristic as part of a non-intrusive, adjective-based measure of OC.

As expected, Volatility correlated  $>.5$  with the SNAP2 Disinhibition scale. In contrast to the emotional lability of Undercontrolled (UC) disorders such as Bipolar Disorder or Borderline Personality disorder (BPD), Maladaptive OC is posited to be characterised by a stable low mood and chronic anhedonia (see Chapter 4). Lack of volatility is mostly associated with the superior inhibitory capacity of OC individuals as well as blunted affect and high levels anhedonia, with very little reaction to emotionally arousing situations: this is in essence the phenotypic profile of Dysthymic Disorder ([Akiskal, 1994](#)) and also a key feature of OCPD ([Kosti et al., 2008](#)) and Treatment Resistant Depression ([McMakin et al., 2012](#)). Therefore, the subscale of volatility appears to serve well the role of increasing the specificity of the measure while contributing equally to its sensitivity.

Excessive Conformity has been linked with Anorexia nervosa ([Halmi, 2004](#); [Strober, 2004](#)) and most pertinently Obsessive Compulsive Personality Disorder ([Pfohl & Blum, 1991](#); [Samuel & Griffin, 2012](#)). From my point of view Conformity is primarily linked to fear and the maladaptive trait of Obstinacy and it is best captured by both a highly conformist

attitude across situations and contexts and avoidance of disagreement or demonstration of opposition. Analysis of convergent validity partially supported such conceptualization but additional research that employs closely related concepts is required to further establish this subscale's construct validity.

In a similar vein, there are areas that need to be addressed in future research. Despite the finding that the BOS subscales can predict OC tendencies in a community and a student sample it remains unclear whether the BOS is an important predictor of psychopathology in the clinical setting. Such investigation would offer another important index of construct validity and would demonstrate that the measure should be routinely included in diagnostic assessment of Maladaptive OC in specialist settings. Evidence suggesting that diagnoses or psychological symptoms associated with OC and UC are related to different scores in BOS subscales (and total score) is essential in order to strengthen the measure's potential clinical utility. This is indeed necessary because as noted one of the measures primary functions is to distinguish OC from UC individuals.

To sum up, Studies 1 and 2 offered initial evidence on the factor structure and psychometric properties of the BOS. It is re-iterated that this thesis approaches OC/OCPD personality pathology from the standpoint of dimensional trait theory. The current best evidence suggests that the distinction between normal and abnormal personality is a useful cut-off point on a continuum, i.e., a difference in degree rather than kind ([Fulford et al., 2013](#); [Trull & Durrett, 2005](#)). Indeed, the argument that normal and abnormal are qualitatively distinct has been questioned empirically not only with regard to personality ([Krueger & Eaton, 2010b](#); [Widiger & Simonsen, 2005b](#)), including obsessive personality ([Aelterman, Decuyper, & De Fruyt, 2010](#)), but also with respect to disorders such as depression ([Clark, 2005](#); [Fulford et al., 2013](#)). In this respect, the thesis is in agreement with the conceptualization of personality pathology as described in Section III of the DSM-5 which explicitly subsumes general and maladaptive personality traits into a common structure. This conceptualization of clinical and subclinical personality pathology lying on a continuum with normality entails that the internal reliability and construct validity of the BOS, as shown in Studies 1 and 2, should also hold in clinical samples ([Cronbach & Meehl, 1955a](#); [O'Leary-Kelly & J. Vokurka, 1998](#); [Samuel, Simms, Clark, Livesley, & Widiger, 2010](#); [Smith & Combs, 2010](#); [Thompson & Daniel, 1996](#)). Therefore, establishing the factor structure and norms of the BOS in the general population is a necessary component of the validation process and a prerequisite of extracting meaningful clinical cut-off scores. The next step in

the process is cross-validation of the factor structure and psychometric properties of the BOS in clinical samples, using expert diagnoses, to address the limitations posed by exclusive reliance on self-report measures. This requires Sponsor (University of Southampton) Indemnity and Ethics approval, Independent Ethics approval by a Research Ethics Committee (REC), Health Research Authority (HRA) and local R&D approval. These have all been obtained (REC Reference 17/LO/1803) but the time-consuming nature of obtaining REC/HRA approval in the UK ([Galbraith, Hawley, & De-Souza, 2006](#); [Thompson & France, 2010](#)) meant that the next step in the process which is adoption by the NIHR portfolio has not been feasible within the PhD time frame and this remains a work in progress. In this next phase, I am to cross validate the properties of the BOS and derive clinical norms in a study with people who meet criteria for OC disorders (e.g., Anorexia Nervosa and OCPD) judged by clinical opinion and standardized interviews. Finally, given its trait nature, it is also necessary to investigate the consistency of the stability of the BOS over-time.



### **Chapter 3: Obsessive Compulsive Personality Disorder Inventory (OC-PDI): Development and Validation of a New Self-Report Measure of OCPD**

#### **3.1 Abstract**

The aim of Chapter 3 was the development and initial validation of a new measure of Obsessive-Compulsive Personality Disorder (OCPD) in line with the recent shift from the categorical classification of personality disorders (PDs) to a dimensional trait model. The development of the Obsessive Compulsive Personality Disorder Inventory (OC-PDI) was largely based on the conceptual framework of Maladaptive Overcontrol proposed by Lynch and colleagues ([Lynch et al., 2016a](#); [Lynch, 2018a](#)) but it has also taken into account the influential phenomenological work of Hertler ([Hertler, 2015b](#), [2015c](#), [2015d](#)). The chapter starts with a brief description of past and current knowledge on the conceptualization of the construct of OCPD and it involves two studies. Study 3 focused on the first essential steps in the development of a valid measure a) the *conceptualisation* of the construct of OCPD and its facets and b) the *development of an item pool* that captures the core traits of OCPD. These are followed by c) an Exploratory Factor Analysis (EFA) which was carried out to test the *operationalisation* of the OCPD construct in distinct traits. Study 4 aimed to a) test the measure's *internal* validity: Confirmatory Factor Analysis was used to test the scale's factor structure in a different sample and the subscales' internal validity was investigated; and b) offer initial empirical evidence of the measure's external validity by use of associations with constructs relevant to OCPD.

## 3.2 Study 3

### 3.3 Background

OCPD is often cited as the most prevalent personality disorder ([Grant et al., 2004](#); [Jackson & Burgess, 2000](#); [Torgersen, 2005](#)) with high rates found among both the general population ([Ekselius et al., 2001](#); [Lenzenweger, 2008](#); [Samuels, 2011](#)) and clinical samples ([Zimmerman et al., 2005](#)). People with OCPD are three times more likely to receive treatment than patients with major depression ([Bender et al., 2001](#); [Bender et al., 2006](#)), and they suffer chronic impairment in psychosocial functioning ([Skodol et al., 2005](#)).

The construct of OCPD as defined in the official classification system of DSM is marked by a history of successive changes in core aspects of the disorder ([Diedrich & Voderholzer, 2015](#)). Therein lies the first difficulty and a key issue that needs to be resolved in order to develop a valid measure of OCPD. A precise conceptualisation of the OCPD construct is needed, and a clear definition ultimately entails that the concept of OCPD is embedded in a sound theoretical framework which is clearly articulated. This requirement is at odds with the categorical diagnostic system in DSM which is posited to be purely descriptive and atheoretical despite the shortcomings of such approach ([Follette & Houts, 1996](#); [Hjørland, 2016](#)).

In response to the criticisms about the categorical models of personality disorders ([Widiger & Sanderson, 1995a](#); [Widiger & Mullins-Sweatt, 2005](#)) and the general consensus that dimensional approaches to personality pathology offer a more reliable and valid classification system ([Costa & Widiger, 1994](#); [Heumann & Morey, 1990](#); [Livesley, Schroeder, Jackson, & Jang, 1994](#)) the DSM-5 Personality and Personality Disorders workgroup DSM-5 adopted a hybrid approach to classification of personality disorders. In line with this, section II of the DSM-5 operationalised OCPD by use of the same diagnostic criteria as DSM-IV-TR (any four out of a total of eight criteria need to be met). On the other hand, Section III of the manual introduced the Personality Inventory for DSM-5 (PID-5) ([Krueger et al., 2012b](#)), a measure of 25 personality traits, whereby a diagnosis of OCPD is made if the Rigid Perfectionism and two or more of the pathological traits of Perseveration, Intimacy Avoidance, and Restricted Affectivity are elevated ([APA, 2013](#)).

### 3.3.1 Evidence on the Validity of the Personality Inventory for DSM-5 (PID-5)

Empirical evidence, to date, has questioned the validity of the trait-based operationalization of OCPD in Section III of the DSM-5. For example, [Hopwood, Thomas, Markon, Wright, and Krueger \(2012\)](#) evaluated the validity of the hybrid model and found that only two OCPD PID-5 Personality Traits correlated positively with the DSM-IV construct (of eight criteria); Perfectionism and Perseveration (correlations even for these traits were of moderate size), followed by Anxiousness and Emotional Lability. [Anderson, Snider, Sellbom, Krueger, and Hopwood \(2014\)](#), compared DSM-5 Personality Traits with DSM-IV Personality Disorders (measured with the SCID-II-PQ), and found that Hostility yielded the strongest positive correlation with OCPD followed by Rigid Perfectionism and Anxiousness while correlations of Perseveration, Intimacy Avoidance, and Restricted Affectivity were lower than those traits purported to be unrelated to OCPD (e.g., Submissiveness). [Fossati, Krueger, Markon, Borroni, and Maffei \(2013\)](#) examined the reliability and validity of the Italian version of the PID-5. Only three facets were significant predictors of OCPD measured with the PDQ-4 ([Hyler, 1994](#)): Rigid Perfectionism followed by Perseveration and Suspiciousness. In a sample of 600 Flemish participants ([Bastiaens, Smits, De Hert, Vanwallegem, & Claes, 2016](#)) it was Rigid Perfectionism, Perseveration, Depressivity and Anxiousness which correlated positively with OCPD measured by the Assessment of DSM-IV Personality Disorders ((ADP-IV; [Schotte, de Doncker, Vankerckhoven, Vertommen, and Cosyns \(1998\)](#))).

Three studies have focused explicitly on OCPD traits and criteria. Two of these used a clinical sample but none used participants with an OCPD diagnosis or participants scoring high in OCPD traits. Hierarchical latent regression in [Liggett et al. \(2017\)](#) showed that Rigid Perfectionism, Perseveration, and Intimacy Avoidance (but not Restricted Affectivity) accounted for 53% of the variance of the latent DSM-5 Section II OCPD variable with Anxiousness and (low) Impulsivity increasing the prediction of the Section OCPD II construct. In a sample of 214 participants with mood disorders, anxiety disorders, and eating disorders [Liggett and Sellbom \(2018\)](#) reported that Rigid Perfectionism, Rigid Perfectionism, Workaholism, Perseveration and Hostility were the most relevant traits to the OCPD construct. The authors suggested that Workaholism, measured in their study by the Computerized Adaptive Test of Personality Disorder (CAT-PD)–Static Form, ([Simms et al., 2011](#)) should be included in Section III of the DSM-5 as an OCPD trait. In the clinical study by [Liggett et al. \(2018\)](#) Rigid perfectionism and Perseveration correlated with OCPD

measured by the SCID-II ([Gibbon, Spitzer, Williams, Benjamin, & First, 1997](#)), while Restricted Affectivity and Intimacy avoidance yielded bivariate correlations of  $r = .00$ . Finally, only in the clinical sample studied by [Morey, Benson, and Skodol \(2016\)](#) OCPD trait facets of the DSM-5's alternative, dimensional model (Rigid perfectionism, Perseveration, Restricted affectivity, Intimacy avoidance) had higher correlations with OCPD as measured by diagnostic criteria compared to the rest of PID indicators.

Because the target construct, OCPD, was captured using various assessment instruments and was measured with independent samples, some variation in coefficients reported should be expected. Nevertheless, obtaining measurements from distinct instruments offers an excellent assessment of convergent validity, which, for OCPD, was sufficiently high only for the trait of Rigid Perfectionism. This inference becomes more plausible when considering that operationalisation of the OCPD construct in most of the studies outlined above, was based on the same DSM-IV (polythetic) diagnostic criteria. Therefore, though it may have accounted for some of the variability, method variance cannot explain the poor convergence obtained.

Regarding the discriminant validity, the reported correlations of the OCPD scale with PID-5 traits pose some interesting issues that have not yet been explored in depth. The highest and most consistent correlation is with Anxiousness: This is a trait that is plausibly present or even elevated in most PDs. OCPD is characterised by marked and enduring anxiety ([Hertler, 2015c](#)). But very few studies ([Liggett et al., 2017](#); [Liggett & Sellbom, 2018](#); [Liggett et al., 2018](#)) have investigated whether addition of this trait to PID-5 OCPD scales can improve the Section III OCPD construct validity. On the other hand, traits not traditionally associated with OCPD (Emotional Lability, Suspiciousness) yielded stronger associations than one would expect: these are results which are hard to explain conceptually and show that the discriminant validity of the PID-5 OCPD is substandard. It should be noted that an advantage of the PID-5 is that it claims to measure personality disorders by use of a low number of core traits – as opposed to a greater number of symptoms. However, the lack of congruence in assessment in a low number of key traits equates to a decrease in sensitivity. It can be hypothesised that the effect of method variance- discriminant validity-is problematic and the PID-5 does not appear to solve the well-established problem of diagnostic co-occurrence ([Tyrer, Reed, & Crawford, 2015](#)). From the above it can be concluded that the current operationalization of OCPD by means of the PID-5 has shown weak construct validity.

### 3.3.2 Measurement of OCPD in Personality Inventories

In addition to PID-5, several self-report measures of OCPD have been designed and developed as part of personality inventories: the OCPD scales of the OMNI Personality Inventory ([Loranger, 2001](#)), the Wisconsin Personality Inventory- IV (WISPI-IV) ([Klein et al., 1993](#); [Smith, Klein, & Benjamin, 2003](#)), the Personality Diagnostic Questionnaire – 4 (PDQ-4) ([Hyler et al., 1988](#)) but these are in their vast majority based on the DSM-IV criterion-based approach and, therefore, obsolete. In addition, in the most comprehensive review of (eight) DSM-IV based OCPD self-report scales, [Samuel and Widiger \(2010\)](#) concluded that the measures varied considerably in their coverage of DSM-IV diagnostic criteria and had considerable differences with respect to representation of the five-factor model of personality (FFM), which was used as an external point of reference.

### 3.3.3 Validity of the Five-Factor Obsessive-Compulsive Inventory (FFOCI) and the Pathological Obsessive-Compulsive Personality Scale (POPS)

By wide consensus the assessment of OCPD as blocks of closely related trait dimensions is a significant improvement over the DSM categorical based system ([Clark, 2007](#); [Krueger & Eaton, 2010a](#); [Widiger & Simonsen, 2005a](#)). In addition to the PID-5 OCPD scales, two measures are trait-based and are therefore worth considering in more detail. The first is the short form of the Five-Factor Obsessive-Compulsive Inventory (FFOCI) ([Crego et al., 2015b](#); [Griffin et al., 2018](#)) which in addition to being based on dimensional traits, is formulated around a widely accepted theoretical framework of normal personality. Based on the original 120 item FFOCI ([Samuel, Riddell, Lynam, Miller, & Widiger, 2012b](#)), the FFOCI-SF is a 48-item, self-report inventory of OCPD which was developed using the basis of the conceptual framework of the Five-Factor Model (FFM) of personality ([Costa & McCrae, 1992b, 2009](#)) and captures maladaptive variants of facets of the NEO-based operationalisation of the FFM that are purportedly relevant to OCPD. However, the measure's convergent validity is moderate, and it has not been validated using a clinical sample. Moreover, too many items appear to capture traits which are not maladaptive despite being treated as such. For example, the Perfectionism items: "I take great pride in the quality of my work" "I take great pride in being efficient and effective". Additionally, some of the facets' relationship to OCPD is highly inferential. For instance, the Detached Coldness facet suffers from the typical misunderstanding in OCPD literature that people with OCPD do not experience emotions intensely or do not experience a wide range of emotions. Example

items include “Strong emotions are not that important in my life”, “I don’t experience a particularly wide range of emotions or feelings”. The psychometric properties of the long version (120-item) of the FFOCI are better, but, similar to the short form, several items are erroneously associated with OCPD and the results on the convergent validity with FFM facets do not support the claim that FFOCI aspects are maladaptive variants of FFM facets ([Crego, Samuel, & Widiger, 2015a](#)) e.g., “How people feel deep down inside is important to me”, “I take great pride in the quality of my work”, “I take great pride in being efficient and effective”. The 120-item scale is in any case too lengthy to use in clinical and research settings.

The second measure is the Pathological Obsessive Compulsive Personality Scale (POPS) developed by [Pinto, Ansell, and Wright \(2011\)](#). The POPS is a 49-item (rated on a six-point Likert scale ranging from *strongly disagree* to *strongly agree*), five-factor, dimensional measure of maladaptive OCPD traits including *Difficulty with Change*, *Emotional Over-Control*, *Maladaptive Perfectionism*, *Rigidity*, and *Reluctance to Delegate*. However, the POPS has been shown to have methodological shortcomings: the rigidity factor was redundant in the (bifactor) model which gave the best fit to data and OCPD correlated with borderline, antisocial, and impulsivity scales, i.e., associations which are hard to explain ([Pinto et al., 2011](#)).

### 3.3.4 Conclusion

Empirical research ([Thomas et al., 2013](#)) suggests that the 25 traits of the PID-5 are organised in five higher order factors which reflect the domains of the well-validated Five-Factor Model (FFM) ([Costa & McCrae, 2009](#); [De Fruyt, De Clercq, De Bolle, Markon, & Krueger, 2012](#); [Gore & Widiger, 2013](#)) of normative personality with the possible exception of the FFM openness to experience vs. the PID-5 higher order domain of Psychoticism ([Suzuki, Samuel, Pahlen, & Krueger, 2015](#)). Evidence also partly supports that the PID-5 shares the same lower order structure with measures of FFM at the facet level ([Griffin & Samuel, 2014](#)). However, convergence of the PID-5 with the FFM either at the higher order domain or the lower trait level does not validate the allocation of PID-5 traits into specific Personality Disorders. It is also true, from the review of the research outlined above that the trait-based operationalization of OCPD fails to measure the construct of OCPD reliably and importantly that there is still confusion over which dimensional traits represent the characteristic features of OCPD. Finally, I believe that the assessment and operationalisation

of a Personality Disorder measure should be guided by a theory which can explain the aetiopathology of the disorder and which can adequately link aetiopathology to phenomenology. With regard to OCPD the theory that offers a comprehensive aetiology successfully linked to phenomenology is that by [Lynch \(2018a\)](#). Based on the theory of Lynch and colleagues ([Lynch et al., 2016a](#); [Lynch, 2018a](#)) I conducted two studies. The aim of Study 3 was to operationalise the lower order traits of OCPD, whether these translated in emotional, cognitive, or behavioural patterns (and combinations of these); and to develop a self-report measure of OCPD that would offer the maximum sensitivity and specificity. The theory and psychometric practices in developing the self-report measure were based on [Nunnally \(1994\)](#) and [Loevinger \(1957\)](#). Rotation and extraction of factors in the exploratory factor analyses were based on the seminal work of Thurstone ([Thurstone, 1931, 1940, 1947a](#)) whereby a clear factor structure is defined by a set of principles which the solution must meet: each item should have at least one zero loading; every pair of factors should have several items with zero loadings for one factor but not the other; every pair of factors should have items with nonzero loadings in both factors etc. In practice, zero loadings are not possible and weights of .20 are typically treated as zero ([Tabachnick, Fidell, & Ullman, 2007](#)).

The hypotheses for Study 3 were as follows:

- **Hypothesis 1:** The Exploratory Factor Analysis (EFA) will demonstrate a clear factor structure.
- **Hypothesis 2:** The measure will produce subscales which are internally consistent (as evidenced by Cronbach's alpha > .7 ([Clark & Watson, 1995](#))).
- **Hypothesis 3:** OC-PDI scales will correlate positively with the Negative Affect (NA) and negatively with Positive Affect (PA) scale.
- **Hypothesis 4:** OC-PDI scales will correlate positively with Depression and Stress as measured by the DASS scales of these constructs.
- **Hypothesis 5:** OC-PDI scales will correlate negatively with the BIDR-16 Impression subscale.

The objective of Study 4 was to confirm the factor structure of the measure and test its construct validity. The hypothesis for Study 4 were the following:

- **Hypothesis 1.** The OC-PDI will show a seven-factor structure with good fit.
- **Hypothesis 2.** The OC-PDI will exhibit convergent relationships with existing OCPD scales, as demonstrated by correlations of moderate to large effect size.
- **Hypothesis 3.** The OC-PDI will exhibit divergent validity with measures not theoretically related to OCPD, i.e., other personality disorders, as demonstrated by correlations of small magnitude.
- **Hypothesis 4.** The OC-PDI will predict OCPD pathology over and above general NA.
- **Hypothesis 5.** The OC-PDI will predict well-being over and above general NA.
- **Hypothesis 6.** The OC-PDI will predict state depression over and above general NA.
- **Hypothesis 7.** The OC-PDI will show good external validity, as shown by its higher predictive value of well-being, depression and decentering compared to other OCPD scales and other personality disorders.

### 3.4 Method

#### 3.4.1 Item Construction and Development

. The theoretical framework for the item construction and content validity was provided by the work of Lynch ([Lynch et al., 2016a](#); [Lynch, 2018a](#); [Lynch, 2018b](#)) and the operationalization of maladaptive Overcontrol. It should be noted that that certain core assumptions of the theory lack empirical justification. For example, Lynch argues that the OC/UC distinction reflects the distinction between internalizing and externalising disorders. However, from the point of view maladaptive personality traits there is no empirical evidence to support that the internalizing factor translates into or is manifested by the taxonomy proposed by Lynch as operationalized by the non-validated Global Prototype Rating Scale ([Lynch, 2018a, pp. 385-400](#)) and the Clinician-Rated OC Trait Rating scale ([Lynch, 2018a, pp. 181-183](#)) which assesses OC in terms of “eight prototypical OC features” ([Lynch, 2018a, p. 181](#)). Indeed, If one captured the entire spectrum of internalising disorders in personality traits they would come up with likely blends of personality domains and traits which would

constitute a far more heterogeneous structure ([Eaton et al., 2013](#); [Krueger & Markon, 2006](#))- see also [Zachar and Krueger \(2013\)](#) for a discussion on the nature of personality traits and pathology in personality disorders. Another strong claim is related to the “Detail-focused processing” temperamental disposition. In Chapter 1 I presented evidence which point to certain difficulty in processing sensory information and pattern recognition for autism and Anorexia Nervosa ([Happé & Frith, 2006](#); [Lopez, Tchanturia, Stahl, & Treasure, 2008](#)). However, this is different from suggesting that this tendency is a temperamental disposition or higher order trait and it is inconsistent with current theories of personality disorders ([Millon & Davis, 1996](#); [Widiger & Costa Jr, 2013a](#); [Zachar & Krueger, 2013](#)). Moreover as shown in Table 1 there is inconsistency in the eight prototypical qualities operationalized by the two non-validated measures developed by Lynch. Therefore the, otherwise, sound aetiopathological theory of OCPD by Lynch was revisited and re-conceptualized (Table 2) in order to be consistent with current evidence on structural model of personality pathology. Additionally, the DSM and ICD manuals as well as empirical research on the operationalization of DSM-5 alternative model of personality disorders, reviewed in Section 3.3.1, was also considered. The phenomenology of OCPD provided in the work of Hertler ([Hertler, 2013, 2014, 2015c](#)) was also taken into consideration in instances that it converged with the theory of Lynch. For example, in developing the OC-PDI item pool I took care not only to ensure that the items present valid instances of their respective facets but also that they reflect, what is here posited to be their common underlying structure, increased threat perception ([Green & Phillips, 2004](#); [Lynch, 2018a](#); [Lynch, 2018b](#); [Muris, Rapee, Meesters, Schouten, & Geers, 2003](#)) and by association, a chronic state of alert. This is a point of importance wherein Hertler’s conceptualization of the OCPD construct is consistent with the theory of Lynch. Finally, of great significance to the item pool development was to include items which capture maladaptive traits (e.g. Rigidity) and not adaptive ones (e.g. conscientiousness) as this has been a problematic aspect in OCPD questionnaires ([Samuel & Widiger, 2010](#)).

*Table 3-1 Operationalization of Maladaptive Overcontrol by Thomas Lynch*

<b><u>Operationalization 1</u></b>	<b><u>Operationalization 2</u></b>
<b>Lynch (2018, pp 385-400)</b>	<b>Lynch (2018, pp 181-3)</b>
<b>“OC Global Prototype Rating Scale “</b>	<b>“Clinician Rated OC Trait Rating Scale”</b>
<b>Receptivity and Openness</b>	<b>1. Trait Negative Emotionality</b>

<u>Operationalization 1</u>	<u>Operationalization 2</u>
<b>Lynch (2018, pp 385-400)</b>	<b>Lynch (2018, pp 181-3)</b>
<b>“OC Global Prototype Rating Scale “</b>	<b>“Clinician Rated OC Trait Rating Scale”</b>
<ol style="list-style-type: none"> <li>1. Hypervigilant for stimuli perceived to be threatening, critical, discrepant</li> <li>2. b) Discounts critical feedback</li> </ol>	<ol style="list-style-type: none"> <li>2. Trait Positive Emotionality</li> <li>3. High Detail-focused Processing</li> </ol>
<b>Flexible control</b>	
<ol style="list-style-type: none"> <li>3. Compulsive needs for structure and order</li> <li>4. Compulsive planning and/or rehearsal</li> </ol>	<ol style="list-style-type: none"> <li>4. Openness to experience</li> </ol>
<b>Emotional Expression and Awareness</b>	
<ol style="list-style-type: none"> <li>5. Diminished emotional experience and awareness</li> <li>6. Masks inner feelings</li> </ol>	<ol style="list-style-type: none"> <li>5. Inhibited Emotional Expressivity</li> <li>6. Affiliation needs</li> </ol>
<b>Social Connectedness and Intimacy</b>	
<ol style="list-style-type: none"> <li>7. Has an aloof, distant interpersonal style</li> <li>8. Highly values achievement &amp; performance</li> </ol>	<ol style="list-style-type: none"> <li>7. Compulsive Striving</li> <li>8. Moral certitude</li> </ol>

*Table 3-2* Reconceptualized framework of Maladaptive Overcontrol

Lynch Disorders of Overcontrol	Thesis Disorders of Overcontrol	Lynch OC Temperament	Thesis OC Temperament	Lynch OC Lower order traits	Thesis Lower order traits
OCPD	OCPD	Threat Sensitivity	Threat Sensitivity	Inconsistent selection of Cluster A and Cluster C traits	OCPD traits , informed by Lynch’s theory and OCPD literature
Anorexia nervosa	Anorexia nervosa	Reward Sensitivity	Reward Sensitivity	Operationalized by OC Global Prototype Rating Scale (Form 3.2 in Lynch, 2018 p 385-400)	

Lynch Disorders of Overcontrol	Thesis Disorders of Overcontrol	Lynch OC Temperament	Thesis OC Temperament	Lynch OC Lower order traits	Thesis Lower order traits
Autistic Spectrum Disorders	Aspergers syndrome	Inhibitory Control	Inhibitory Control	Operationalized by Clinician-Rated OC Trait Rating scale (Form 3.2 in Lynch, 2018 p 383)	
Treatment-Resistant Anxiety disorders	OCD	Detail-focused Processing			
Paranoid PD					
Avoidant PD					
Schizoid PD					
Schizotypal PD					
Internalizing disorders					

Based on the above, I developed an extensive pool of 939 items (Appendix C.1). I further produced two subsequent drafts in order to reduce the number of items and to produce a version which reflected more closely the theory of Maladaptive Overcontrol. These drafts underwent an expert panel review led by Thomas Lynch, on the basis of familiarity with the theory on Maladaptive Overcontrol ([Lynch et al., 2016a](#); [Lynch, 2018a](#)). Subsequently, I produced a fourth item pool in order to ensure a) that the items applied to the most representative dimensions of the construct of OCPD, as opposed to the more general construct of Maladaptive Overcontrol, and b) to retain a number of items that would be sufficient to produce a clear factor structure. The fourth item pool underwent another expert panel review led by a qualified clinical psychologist with over a decade of experience in assessing and treating personality disorders which resulted in the final item pool which consisted of 108 items and a minimum of 7 lower order traits relevant to OCPD: Indecisiveness, Fear of Failure, Constricted Expressivity, Risk Aversion, Obstinacy, Compulsive Striving, and Social Anxiety.

. The 108-item OC-PDI with instructions is shown in Appendix C.2.

### 3.4.2 Participants

Participants were both undergraduate psychology students from the University of Southampton and community members recruited using the CrowdFlower (CF) platform, a web-based system used extensively to recruit participants for surveys and other psychological research. Participants were required to be either native speakers or very fluent speakers of English, over 18 years of age. The final sample consisted of 525 participants (445 students and 80 CF contributors) who passed the random response scale of the survey. The mean age of participants was 22.57 years old ( $SD = 7.69$ ). Of these 131, 25.05% of the sample were male participants (age  $M = 24.75$ ,  $SD = 8.96$ ) and 74.95% of the sample were female participants (age  $M = 21.85$ ,  $SD = 7.09$ ), with two missing values. Of the participants that answered the question about relationship status, 6.67% were married, 49.90% were single, 7.81% were living with a partner, 34.29% were in an intimate relationship but not living together, 0.38% were separated, 0.95% were divorced and 0.19% were widowed. Regarding education when asked to tick all that apply: 2.10% of the participants had completed a postgraduate qualification, 3.05% reported that they had completed a university course or equivalent, 76.57% attended university or equivalent, 24.95% finished school at 18, 3.06% finished school at 16 and 0.76% left school before 16 years of age. Most participants were British (63.43%), followed by any other White background (12.95%), Indian (4.19%), Asian background (3.3%), and Chinese (2.10%).

### 3.4.3 Procedure and Materials

The study was approved by the Southampton Research Ethics Committee (22/03/2016) and received governance approval by the Insurance and Research Governance Office (23/03/2016). The CrowdFlower (CF) platform was used to recruit participants from the community. Evidence supports the use of online research platforms for community sampling purposes and shows that the quality of data obtained is equal to data collected via traditional sampling methods ([Peer et al., 2017](#); [Ramsey et al., 2016](#)). Participants were university students who responded to an advert about the study placed on the University of Southampton or the CF online repository of surveys. The study advertised participation in an online survey about developing a personality questionnaire. All potential participants were asked to give full informed consent online before they were redirected to iSurvey, the online survey software of the University of Southampton. Participants were informed of the nature and purpose of the study and of their right to anonymity, withdrawal, and the procedures of

storage and retention of data. The contact information of the researchers was also provided for participants to ask questions and raise concerns. The survey was piloted tested with ten participants and took on average 45 minutes to complete. Recruitment was carried out in March-April 2016. The order of the self-report questionnaires on the iSurvey platform was randomized. The order of the items within each self-report instrument used was also presented in randomized blocks (i.e., each block included 20 items/statements) in order to limit item proximity/order effects; this biases results when items are presented in a standard order, leading to similar replies due to the items' proximity on the questionnaire and the items' conceptual relationship ([Podsakoff et al., 2012](#)). Participants were advised to pause and resume the survey at standard intervals to avoid fatigue. After the end of the survey participants read a debriefing statement which included additional information about the research. University students received research credits and CF contributors received £2 for taking part in the study.

Participants completed the following questionnaires:

**Demographics.** The Demographics section consisted of questions assessing the participant's age and gender, ethnicity and education.

**Obsessive Compulsive Personality Inventory (OC-PDI).** The 108 items of the OC-PDI were included. Participants were asked to indicate the degree to which they felt a certain statement applied to them, using a six-point Likert-type scale ranging from 1 = *strongly disagree* to 6 = *strongly agree*. Example items include: "When I fail in a task I feel that I am a total failure", "I am not at ease in the company of others", "I carefully consider all possibilities before taking any chances", "My mind often goes blank when I have to speak about my feelings", "I am often unable to make decisions and feel stuck." The full list of items is shown in Appendix C.2

**Positive Affect (PA) and Negative Affect (NA) Scales (PANAS).** The PANAS is a self-report questionnaire that consists of two 10-item scales to measure PA and NA, indicating a chronic tendency to experience positive and negative emotions, respectively ([Watson, Clark, & Tellegen, 1988a](#)). Participants are asked to rate adjectives pertaining to PA and NA on a scale ranging from 1 = *very slightly or not at all* to 2 = *extremely*. Example items include "excited", "proud", "irritable", and "nervous". In this study participants were asked to indicate the extent they generally feel this way, that is, how they feel on the average. The higher order factors of Positive and NA are negatively correlated but independent basic

dimensions of mood ([Diener & Emmons, 1984](#); [Watson & Tellegen, 1985](#)) and the PANAS has been used extensively in non-clinical ([Crawford & Henry, 2004](#); [Leue & Beauducel, 2011](#); [Merz & Roesch, 2011](#)) and clinical populations ([Abercrombie et al., 1998](#); [Bakhshipour & Dezhkam, 2006](#); [Ostir, Smith, Smith, & Ottenbacher, 2005](#)).

**Depression Anxiety and Stress Scales 21 (DASS-21).** The DASS-21 is a short form of the 42-item DASS developed by [Lovibond and Lovibond \(1996\)](#) to measure state stress, anxiety and depression. Participants are asked to indicate how much each statement applied to them over the past week. The DASS-21 is rated on a four-point Likert scale ranging from 0 = *did not apply to me at all* to 3 = *applied to me very much, or most of the time*. Example items of the stress and depression seven-item subscales, used in this Study, include: “I found it hard to wind down”, “I found it difficult to relax”, “I felt that life was meaningless”, and “I couldn’t seem to experience any positive feeling at all”. The DASS-21 has shown good psychometric properties in clinical ([Caplan et al., 2017](#); [Clara, Cox, & Enns, 2001](#); [Lovibond & Lovibond, 1995](#)) and non-clinical populations ([Henry & Crawford, 2005](#); [Osman et al., 2012](#); [Sinclair et al., 2012](#)).

**Balanced Inventory of Desirable Responding Short Form (BIDR-16).** The BIDR-16, developed by [Hart, Ritchie, Hepper, and Gebauer \(2015\)](#), is a 16-item Likert type scale (1 = *totally disagree* to 8 = *totally agree*) derived from the 40-item Balanced Inventory of Desirable Responding (BIDR) of [Paulhus \(1998\)](#). The short form retains the two-factor structure of the original BIDR, Deceptive Enhancement which captures overly self-deceptive, positive responding and Impression Management which captures responding which is consciously given to create a socially desirable image. The BIDR-16 has been used to control for desirability bias in the development of other psychometric tools ([Gracia et al., 2018](#); [Margolis, Schwitzgebel, Ozer, & Lyubomirsky, 2018](#); [Thomas et al., 2019](#)) as well as in experimental investigations and randomised control trials ([Jacques-Hamilton, Sun, & Smillie, 2018](#); [Miller, McBain, & Raggatt, 2018](#)). Here only the Impression Management (IM) subscale was used. Example items of the IM subscale include: “I don't gossip about other people's business”, “When I hear people talking privately, I avoid listening”, and “I never cover up my mistakes”.

**Random Response Scale:** Random response scales are important for developing the quality of survey data and reducing careless responding of participants ([Beach, 1989](#); [Meade & Craig, 2012](#)). A five item Likert type random response scale was interspersed throughout

the survey: 1) Please select the answer choice disagree completely, 2) I have never watched TV, 3) I was born on the 30th of February, 4) I have not used a computer in the last two years, and 5) Please select the answer choice I agree completely. The items of the scale were introduced in the OC-PDI and therefore followed the same six-point Likert-type scale (ranging from 1 = *strongly disagree* to 6 = *strongly agree*) of the OC-PDI. For the 2nd, 3rd and 4th items of the scale the strongly disagree option was deemed as the correct reply.

### 3.5 Results

#### 3.5.1 Data Cleaning and Final Sample Characteristics

The data of 905 participants was imported into SPSS version 24 and was examined for data cleaning purposes. One participant showed a uniform responding pattern, i.e., answered questions in the same way (e.g., all option 1) to every question of at least one question block of 20 items. Three participants had more than 10% missing data in the OCPD Scale ([Kline, 2015](#)) and were excluded. Thirteen participants completed the survey in less than 30 minutes, indicating that they did not take the time to respond thoughtfully. The data of the 17 participants reported were deleted and the data of the remaining 888 participants were examined for random responses. Of the 888 participants, 525 participants responded correctly to all questions of the random response scale. Data of the remaining 363 participants were deleted.

#### 3.5.2 Sample Size and Distribution Analysis of Items

Several guidelines have been suggested based on the minimum ratio of sample size to the number of variables/items being analysed or the minimum necessary sample size or combinations of these ([Costello et al., 2008](#)). In fact, whether the sample size is sufficient ought to be considered in terms of a number of different aspects of a study, e.g. level of communalities ([MacCallum et al., 1999](#)) which was sufficiently high in the current study (communalities were  $> 4$ ). The final 1056 items yielded a ratio of 4.95 participants per item which is representative of published studies in the field.

In the final sample ( $N = 525$ ), I examined the distributions of all 108 items. Three items (“I have at least one meaningful and fulfilling intimate relationship”, “Being open to new experiences is for the foolish or the immature”, “There are many ways to live, behave or

think”) had a skew value of greater than  $|2|$  or a kurtosis of greater than  $|7|$  ([Cohen et al., 2014](#)) and were removed from further analysis. Next, I analysed the correlations between the items to test for sufficient common variance (i.e., whether each item correlated above  $r = .30$  with at least one other item in the scale). All items correlated sufficiently with the rest. The descriptive statistics for the final item pool of 105 items are shown in Appendix C.3

To determine which method of factor analysis would be most appropriate, I tested for multivariate normality: Maximum Likelihood (ML) is the preferable choice for normally distributed data and it offers among other advantages a range of goodness of fit indexes ([Fabrigar et al., 1999](#); [Osborne & Costello, 2009](#)). When the assumption of a multivariate-normal distribution of the data is violated, Principal Axis Factoring (PAF) is the next best choice ([Fabrigar & Wegener, 2011](#); [Osborne & Costello, 2009](#)). Calculation of Mahalanobis distance determined multivariate outliers; the Mahalanobis distances of the remaining items had high values, indicating that many items were outliers. Although ML is quite robust to violations of normality the use of PAF in the exploratory analysis was preferred over ML

### 3.5.3 Factorability of the Matrix and Identification of Optimal Number of Factors

The data set did not include any missing items. I conducted the first main PAF factor analysis on the 105 items that met the assumptions described above. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO test) was .954, thus above the criterion of .70, and Bartlett’s Test of Sphericity was  $\chi^2(5460) = 34740.82$   $p < .001$ . Therefore, the correlation matrix differed sufficiently from an identity matrix and could be factor-analysed appropriately. The Determinant of the correlation matrix was  $1.239 \times 10^{-31}$ , smaller than the recommended cut-off, however all items’ Anti-image correlation matrix diagonals met the Measure of Sampling Adequacy criterion of  $> .50$  suggesting that they correlated sufficiently with other variables. This data confirmed the factorability of the matrix.

Both overextraction and underextraction of factors can have negative effects on the results. Therefore, several criteria have been proposed for identifying the correct number of factors. However, there is wide consensus ([Brown, 2015](#); [Jaccard & Jacoby, 2019](#); [Kim & Mueller, 1978](#); [Velicer & Jackson, 1990](#)) that the number of factor to be retained must, ultimately be guided by the extent to which the data meet the principles of simple structure as defined by Thurstone ([Thurstone, 1931, 1940, 1947a](#)). In practice, simple structure means

uniformly high communalities without cross loadings, plus several variables loading strongly on each factor and clearly interpretable factors ([Costello & Osborne, 2005](#)).

In the first solution obtained, the Kaiser's criterion suggested the presence of 16 factors. However, this criterion is the least accurate and would require fewer variables and an even larger sample size in order to produce a correct estimate of the number of factors to be retained ([Tabachnick & Fidell, 2001;2019](#)). The Scree plot is more reliable than the Kaiser criterion ([Osborne & Costello, 2009](#)) and indicated (Figure 3-1) one factor. Parallel analysis (PA) was also conducted ([Horn, 1965](#)) as this is the most accurate method of determining the number of factors to extract ([Jaccard & Jacoby, 2019](#); [Ledesma & Valero-Mora, 2007](#)); in this case parallel analyses of 1000 permutations of the raw data set were used to compute principal axis eigenvalues, i.e., eigenvalues based solely on the shared variance among the variables. Figure 3-2 shows that 13 factors can be extracted. This is seen more clearly in Table 3-3. However, Parallel analyses of matrices tend to overestimate the number of factors ([Buja & Eyuboglu, 1992](#)). Moreover tools such as the Scree Plot and Parallel Analysis can help in determining how many factors can be extracted if and only if the extracted factors lead to a simple factor structure and clearly interpretable factors ([Costello & Osborne, 2005](#); [Osborne, 2014](#)). Therefore in the very typical case that criteria differ in the number of factors to be retained the researcher must set manually the number of factors (from the minimum to the maximum obtained by the prior analyses) and run multiple factor analyses in order to compare and choose the solution that offers the cleanest factor structure that leads to a theoretically interpretable factor solution ([Costello & Osborne, 2005](#); [Osborne, 2014](#)). Using oblique rotation (i.e., Direct Oblimin,  $\delta = 0$ ) to allow for factors to correlate the results of PAF analyses specifying 1-14 factors were assessed. Each of the solutions were examined for the variance in the data set accounted for by the factors, the level of communalities, the number of high loading items on each factor, the number of zero items and the number of complex or cross loading items, i.e., items loading onto more than one factor using a cut-off  $> .32$  ([Costello & Osborne, 2005](#); [Tabachnick et al., 2007](#)) to get the cleanest factor structure as per the Thurnstone principles ([Thurstone, 1931, 1940, 1947a](#)). The seven-factor solution was deemed to be the most suitable based on the criteria employed; it was also the only readily interpretable and theoretically relevant solution.

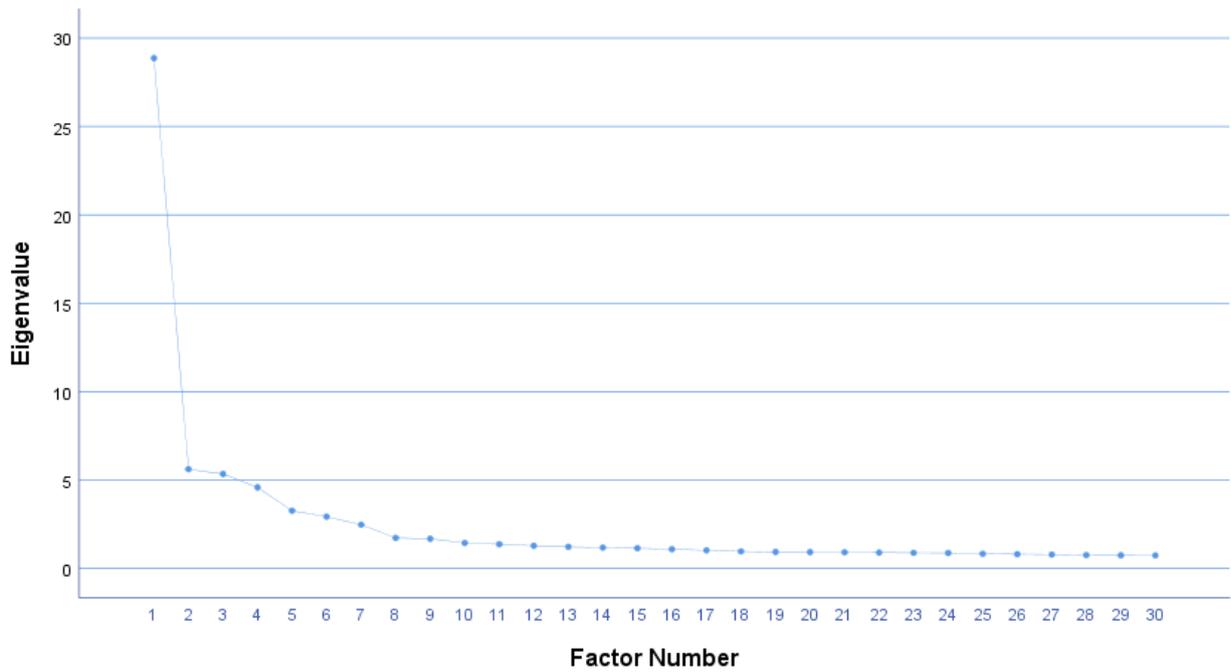


Figure 3-1 Eigenvalues (y axis) of extracted factors (x axis)

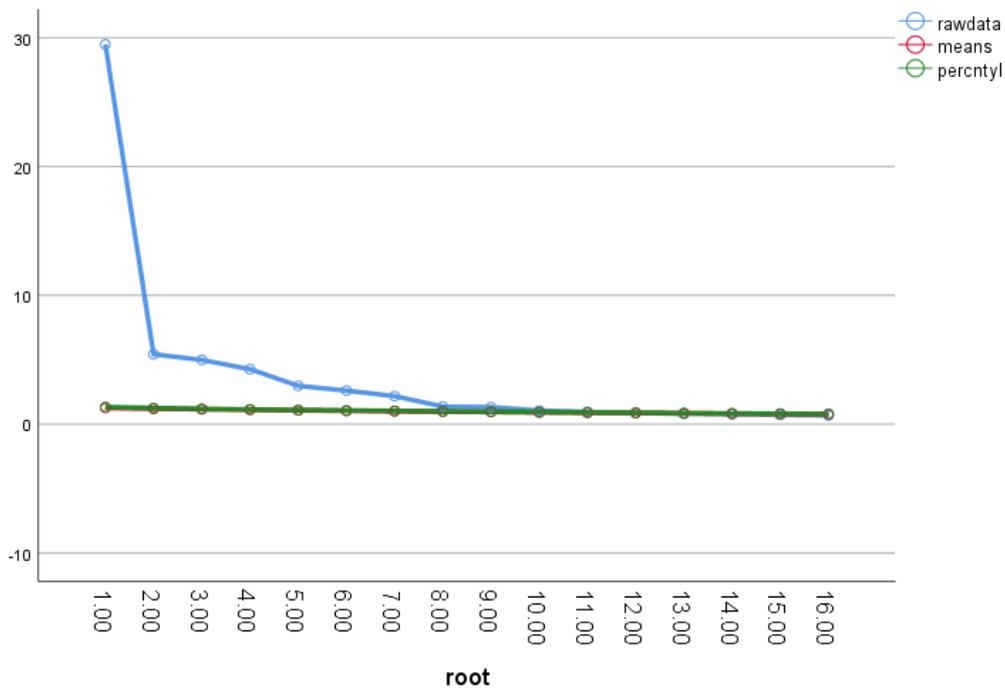


Figure 3-2 Eigenvalues for raw and simulated data

Table 3-3 Raw Data Eigenvalues, & Mean & 95th Percentile Random Data Eigenvalues

Root	Raw Data	<i>M</i>	Percentile
1.000000	14.463131	.917498	.989034
2.000000	4.279434	.851731	.902574
3.000000	3.182952	.802780	.847177
4.000000	2.931253	.758882	.798460
5.000000	2.106329	.721294	.760302
6.000000	1.952042	.687881	.722240
7.000000	1.415057	.655842	.688819
8.000000	1.329834	.625869	.659240
9.000000	1.053377	.596192	.627378
10.000000	.938954	.568473	.597469
11.000000	.679969	.541600	.570340
12.000000	.615821	.517230	.545851
13.000000	.529761	.492040	.520017
14.000000	.429305	.467823	.494927
15.000000	.385150	.444691	.471369

### 3.5.4 Final solution

A seven-factor solution with Oblimin rotation was fitted to the data. The KMO measure, Bartlett's test of sphericity, and Determinant of the correlation matrix had the same values as the ones reported in Section 3.5.3. Similarly, all items of the Anti-image correlation matrix diagonals met the Measure of Sampling Adequacy criterion of  $> .50$ . The residuals between expected and reproduced correlations were only 9%. Appendix C.3 shows the item distributions and Appendix C.4 shows the variance accounted for by each factor. Table 3-4 shows the Pattern matrix with the items included in the final form of the questionnaire (in bold). The factors are clearly interpretable: Fear of Failure, Social Anxiety, Risk aversion, Obstinacy, Compulsive Striving, Constricted Expressivity, and Indecisiveness. Two of these traits, Compulsive Striving and Obstinacy/Rigidity of ideas are linked to the theory of Maladaptive Overcontrol ([Lynch et al., 2016a](#); [Lynch, 2018a](#)) but they are also based on the DSM tradition and are strongly related to DSM diagnostic criteria. Items capturing the traits of Constricted Expressivity and Risk Aversion are alluded to in clinical descriptions of OCPD included in the DSM as well as in studies on the phenomenology and/or diagnosis of OCPD and personality disorders; but they were never included as criteria in the official diagnostic manual. However, they have been described in the OCPD literature and have been

operationalised as part of the development of questionnaires ([Crego et al., 2015b](#); [Reddy et al., 2016](#)). Items capturing the traits Social Anxiety/Avoidance, Fear of Failure, and Indecisiveness are found neither as part of DSM criteria nor as factors or facets of OCPD measures but they correspond to factors identified by my original content analysis of the OCPD construct and the theory by [Lynch \(2018a\)](#). . Therefore **Hypothesis 1** was confirmed; a clear exploratory factor structure was identified

## OCPD: NEW CONCEPTUALIZATION AND DEVELOPMENT OF TWO MEASURES

Table 3-4 Pattern Matrix And Variance Explained Per Factor

	Factor/% variance explained						
	FF/ 16.81	SA/10.22	RA/10.30	OB/10.30	CS/12.37	CE/15.93	IN/13.96
I am so upset when I fail that I often make the failure seem worse than it is	<b>.76</b>	.06	.02	-.01	-.07	.13	.06
When I fail in a task I feel that I am a total failure	<b>.75</b>	.03	.02	-.01	-.12	.09	.02
After a failure I feel that I am completely worthless	<b>.75</b>	.00	.00	-.01	-.11	.12	-.02
It takes me a lot of time to recover from failures	<b>.73</b>	-.04	.01	.06	-.08	.01	.10
I feel that I cannot cope with failure	<b>.72</b>	-.02	-.05	.10	-.10	-.05	.09
I feel that the worst thing that could ever happen to me is failure	<b>.62</b>	.01	.01	.15	-.12	-.01	.03
I find it very hard to put my failures into perspective	<b>.62</b>	.03	-.04	.15	-.08	.02	.12
I often feel that I live my life in fear of failure	<b>.61</b>	-.07	-.02	.08	-.08	.11	.10
I am not afraid to fail	<b>-.59</b>	-.03	.11	.02	-.09	.00	-.10
When I make a serious mistake I am so upset that I am often unable to put it behind me and get on with my life	<b>.57</b>	-.06	.01	.13	-.08	.04	.16
Failing makes me worry that people will lose interest in me.	<b>.56</b>	-.01	.02	.12	.00	.17	.18
I am very critical of myself when I am not succeeding.	<b>.55</b>	.13	-.09	-.10	-.18	.19	.02
I am generally forgiving and tolerant with myself when I make mistakes	<b>-.48</b>	.15	-.02	-.04	.09	.00	-.01
I often see the funny side of my failures	<b>-.48</b>	.14	.20	.04	.11	.12	.06

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	Factor/% variance explained						
	FF/ 16.81	SA/10.22	RA/10.30	OB/10.30	CS/12.37	CE/15.93	IN/13.96
I worry more than I care to admit	<b>.33</b>	.03	-.05	-.13	-.12	.31	.22
I always love socializing and interacting with people.	.01	<b>.72</b>	.09	-.03	.01	-.11	.00
I feel relaxed and comfortable around other people	-.15	<b>.66</b>	-.02	.03	-.08	-.22	-.15
I am naturally relaxed and sociable with those around me	-.16	<b>.64</b>	.03	-.02	-.09	-.13	-.15
I find most social interactions unrewarding or unpleasant	-.01	<b>-.63</b>	-.05	.20	-.04	.18	.02
I am not at ease in the company of others	-.02	<b>-.62</b>	-.05	.06	-.06	.25	.12
I am always on the lookout for opportunities to socialize and connect with other people	-.01	<b>.57</b>	.23	-.02	-.02	-.08	.12
I am relaxed and pleasant with people around me	-.17	<b>.55</b>	-.01	-.09	-.09	-.10	-.17
Some people might describe me as a hermit	-.08	<b>-.48</b>	-.08	.09	-.12	.26	.02
I find prolonged social interactions emotionally draining	.02	<b>-.41</b>	-.08	.04	.00	.34	.18
Having to be around others for long periods of time is exhausting	.06	<b>-.41</b>	-.04	.00	.02	.36	.21
If I'm invited to a party I usually attend out of obligation, not because I expect it to be fun	-.06	<b>-.40</b>	-.11	.22	-.10	.16	.05
People have often told me that I come across as serious and reserved	-.01	<b>-.30</b>	-.15	.11	-.10	.27	-.04
I enjoy the excitement of taking risks	-.07	.17	<b>.74</b>	.01	.02	.13	.14
I avoid risky behaviours	.11	-.03	<b>-.67</b>	-.03	-.01	.04	-.04
I like to take chances	-.13	.16	<b>.66</b>	.04	.00	.10	.05

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	Factor/% variance explained						
	FF/ 16.81	SA/10.22	RA/10.30	OB/10.30	CS/12.37	CE/15.93	IN/13.96
My ideal life would be free from any risk	.07	-.01	<b>-.61</b>	.14	.00	.03	.06
People tell me I always play safe	-.06	-.02	<b>-.59</b>	.07	-.12	.04	.17
I regularly step outside my comfort zone to take risks	-.09	.18	<b>.57</b>	.08	-.12	.03	.00
I am not willing to take risks that stretch my comfort level	.13	-.01	<b>-.52</b>	.20	.02	-.02	.13
I carefully consider all possibilities before taking any chances	-.04	.16	<b>-.50</b>	-.01	-.03	.23	.12
I am not the kind of person that engages in risky business ventures	-.02	-.04	<b>-.45</b>	-.08	.00	.05	.11
I am generally spontaneous in social interactions	.06	.40	<b>.43</b>	.09	.06	.01	-.05
Rules are there to be followed especially mine.	-.03	.14	<b>-.34</b>	.25	-.19	.11	.03
Behaving correctly is the most important thing in life.	-.15	.13	<b>-.32</b>	.17	-.23	.11	.12
Despite being given repeated feedback that something is wrong I know my opinion is right	-.14	.02	-.02	<b>.74</b>	-.03	.04	.06
I frequently believe that I am right about something, no matter what the person says or how things seem.	-.06	.06	.00	<b>.71</b>	.00	.01	.09
People have often told me that I refuse to appreciate their point of view	-.04	-.18	.08	<b>.65</b>	-.05	-.04	.04
I find it hard to question my point of view	.05	.00	-.04	<b>.63</b>	-.01	-.04	.00
People have often told me that I cannot appreciate another person's viewpoint	.00	-.24	.11	<b>.62</b>	-.03	-.06	.04
I find it difficult to truly pause and consider the possibility that I may be wrong and I need to change	.07	-.01	-.05	<b>.62</b>	-.02	-.07	.04

## OCPD: NEW CONCEPTUALIZATION AND DEVELOPMENT OF TWO MEASURES

	Factor/% variance explained						
	FF/ 16.81	SA/10.22	RA/10.30	OB/10.30	CS/12.37	CE/15.93	IN/13.96
It doesn't matter what you say or how things seem, when I am right about something I know I am correct.	-.01	.06	-.07	<b>.62</b>	.02	.14	-.04
I find it difficult to accept that someone is right even when I know they are	.12	-.02	.03	<b>.54</b>	.02	.00	.17
I sometimes find it difficult to even temporarily let go of my point of view	.11	.02	-.07	<b>.52</b>	-.05	.05	.04
I enjoy hearing other people's points of view	-.09	.26	.08	<b>-.43</b>	.02	.17	.10
Caring others have often suggested in the past that I should change but I have resisted.	.02	-.07	.05	<b>.42</b>	-.12	.16	.06
I am often unable to change my perspective when facing new situations or problems.	.19	-.02	-.21	<b>.42</b>	.00	-.05	.15
Some people might describe me as being very opinionated	.08	.12	.06	<b>.42</b>	.01	.04	-.17
I am always open to new ideas	-.21	.24	.20	<b>-.35</b>	-.05	.13	.02
I have to sacrifice my time and energy to get it right because others are incompetent.	.01	.02	-.06	<b>.34</b>	-.26	.11	.05
People who know me well have told me that I am rigid	.01	-.25	-.16	<b>.34</b>	-.16	-.01	-.03
I am not really a particularly warm or affectionate person, although I often give that impression	-.07	-.16	.13	<b>.31</b>	-.09	.26	.10
People call me stubborn	.17	-.03	.00	<b>.29</b>	.03	.11	-.05
I am usually so overcommitted that I hardly ever have any spare time	-.06	.04	.04	.05	<b>-.76</b>	-.03	.01
I have often been given feedback that I work too hard or that I need to relax	.01	.00	-.03	.02	<b>-.72</b>	-.07	-.06
I can't help spending too many hours on my work and having too little time for myself.	-.01	.03	-.04	.06	<b>-.69</b>	-.02	-.02

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	Factor/% variance explained						
	FF/ 16.81	SA/10.22	RA/10.30	OB/10.30	CS/12.37	CE/15.93	IN/13.96
I rarely relax just to relax	-.06	-.11	.02	.06	<b>-.62</b>	-.02	.09
When it comes to work good is never good enough for me	.21	.08	.02	.01	<b>-.57</b>	.10	-.06
People often tell me that I am too strict with myself	.18	-.02	-.12	-.07	<b>-.55</b>	.00	-.02
There are never enough hours in the day to finish my work and be content with the result	.15	.03	.03	-.06	<b>-.55</b>	.16	.03
Often, I feel so exhausted from working too hard for too long that I am unable to concentrate or I completely neglect my well-being	.21	.03	.10	-.03	<b>-.50</b>	.16	.06
I find it hard to self soothe, relax, or experience pleasure without guilt	.18	-.16	.13	.05	<b>-.50</b>	-.05	.21
No matter how hard I work I always feel like I have not been doing enough.	.23	-.01	.10	-.10	<b>-.48</b>	.18	.00
I believe that relaxing, playing, or recreation must be earned	.06	.08	-.03	-.03	<b>-.45</b>	.01	.05
I always make time for enjoyment or fun	-.06	.42	.05	.02	<b>.44</b>	.12	.09
People have often told me that I take matters too seriously	.14	-.16	-.09	.10	<b>-.35</b>	-.03	.11
If I dont do it myself then it will never get done or done properly.	-.05	.01	-.22	.14	<b>-.30</b>	.24	-.03
I feel extremely anxious when I realise I may not be able to do what I promised I would do	.18	.14	-.14	-.12	<b>-.22</b>	.17	.22
I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	.03	.05	-.08	.02	.00	<b>.81</b>	-.07
I often mask or hide my inner feelings from others	.08	-.06	.00	-.04	.02	<b>.79</b>	-.01
Most people never really know how much I am not telling them about myself	.04	-.03	.01	.08	-.01	<b>.73</b>	.01

## OCPD: NEW CONCEPTUALIZATION AND DEVELOPMENT OF TWO MEASURES

	Factor/% variance explained						
	FF/ 16.81	SA/10.22	RA/10.30	OB/10.30	CS/12.37	CE/15.93	IN/13.96
When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	.15	.03	-.03	.05	.11	<b>.73</b>	.01
I downplay my emotions when I am around other people	.11	.00	-.03	-.04	.00	<b>.71</b>	.01
I think twice before revealing my true emotions to others	.00	.03	-.12	-.05	-.05	<b>.69</b>	-.09
The outward expression of my emotions often doesn't match what's going on inside me	.05	-.08	.04	-.02	-.07	<b>.67</b>	-.01
Very few people know the real me	.02	-.28	.02	.02	-.02	<b>.57</b>	.06
Often, I feel the need to be honest with others about my feelings but something is holding me back	-.01	.03	-.05	-.04	-.06	<b>.56</b>	.13
I am a I hard to read person	-.01	-.16	.05	.04	.00	<b>.56</b>	-.09
It is hard for others to know how I feel even when I am experiencing an intense emotion	-.06	-.13	.08	.11	-.11	<b>.49</b>	.11
My mind often goes blank when I have to speak about my feelings	.04	-.18	-.01	.02	.01	<b>.49</b>	.11
I am often stressed out, but no one knows it	.19	-.08	.09	-.10	-.17	<b>.44</b>	.19
On the surface I appear calm, but inwardly I am often fearful or irritable	.20	-.10	.00	.03	-.12	<b>.44</b>	.23
Very few people know that I can have an explosive temper	-.03	-.02	.01	.27	.05	<b>.41</b>	.08
I come across as sociable and outgoing but in reality I need a lot of time alone	.04	-.13	.06	.04	-.13	<b>.33</b>	.02
For me, the process leading up to taking a decision is long and painful	.12	-.02	-.09	.04	.01	.06	<b>.72</b>
Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	.10	-.01	-.04	.07	-.12	.03	<b>.68</b>

## OCPD: NEW CONCEPTUALIZATION AND DEVELOPMENT OF TWO MEASURES

	Factor/% variance explained						
	FF/ 16.81	SA/10.22	RA/10.30	OB/10.30	CS/12.37	CE/15.93	IN/13.96
Finding answers to dilemmas has always been a huge struggle for me	.08	-.02	-.10	.09	.02	-.03	<b>.66</b>
I am often unable to make decisions and feel stuck	.20	-.08	-.10	-.06	.11	-.03	<b>.63</b>
Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	.15	.01	.01	.15	-.04	.08	<b>.60</b>
Making the right decision is often such a demanding task for me that when I have finally made up my mind I feel exhausted	.08	-.02	.00	.08	-.15	.09	<b>.54</b>
One of the worst experiences in life is struggling with the uncertainty of making the right choice	.23	.09	-.11	.07	-.03	.05	<b>.49</b>
Decision making has always been easy for me: I just follow my gut feeling.	-.09	.17	.08	.23	-.01	.10	<b>-.47</b>
I struggle with uncertainty	.30	.04	-.28	.06	.01	.06	<b>.38</b>
I often feel I have no options to choose from when dealing with a problem	.19	-.06	-.05	.18	.01	.08	<b>.36</b>
Very often, I examine so carefully all possible options in order to minimize risk that I end up feeling exhausted	.02	.00	-.26	.10	-.14	.07	<b>.35</b>
My anxiety often interferes with my ability to hear what another person is saying	.16	-.25	.11	.04	-.15	.17	<b>.33</b>
When I am with other people I am very cautious for fear of saying the wrong thing	.07	-.13	-.13	-.08	-.12	.31	<b>.32</b>
I have always been extremely uncomfortable with uncertainty	.24	.02	-.28	.11	-.08	.02	<b>.31</b>
I am sometimes so open to new ideas that people have described me as naive or gullible	-.10	.02	.23	.00	-.13	.03	<b>.30</b>
Often I feel so anxious that I find it hard to find the right words to say	.24	-.22	.00	.03	-.09	.19	<b>.30</b>
I am often stuck in the same ways of dealing with new circumstances	.26	-.03	-.13	.23	.09	.07	<b>.30</b>



Inspection of the correlation matrix (Table 3-5) for each of the factors showed that the correlations are small to moderate, confirming the choice of an oblique rotation of the factor matrix and demonstrating that all factors capture distinct constructs which are conceptually related. A possible exception was the correlation between the 1<sup>st</sup> (Fear of Failure) and 7<sup>th</sup> factor (Indecisiveness). This was flagged to be revisited in the Confirmatory Factor Analysis.

Table 3-5 Correlation of Factors Extracted by the EFA (N =525)

Factor	1	2	3	4	5	6	7
1	1.00	-0.24	-0.28	0.20	0.33	0.30	0.43
2	-0.24	1.00	0.22	-0.20	-0.11	-0.24	-0.21
3	-0.28	0.22	1.00	-0.19	-0.16	-0.14	-0.21
4	0.20	-0.20	-0.19	1.00	0.25	0.27	0.16
5	0.33	-0.11	-0.16	0.25	1.00	0.37	0.31
6	0.30	-0.24	-0.14	0.27	0.37	1.00	0.38
7	0.43	-0.21	-0.21	0.16	0.31	0.38	1.00

My aim was to produce a final version of the measure consisting of seven, seven-item subscales. The subscales were clearly interpretable, conceptually related with the construct of OCPD and consistent with the lower traits that informed our original pool of items. Careful consideration was given to naming the factors with sufficient clarity to avoid confusion with related but different traits. For example, I preferred the term Constricted Expressivity over the similar but distinct concepts of Constricted Emotion or Emotional Constriction. As shown in the Pattern Matrix, seven factors were retained, of seven items each, making sure to retain those items that loaded strongly onto their factor, to dispense with complex items (i.e., items cross-loading on two or more factors), and to retain where possible a mix of reverse and non-reverse scored items ([Bandalos & Finney, 2018](#); [Osborne, Costello, & Kellow, 2016](#)). In addition to statistical criteria being met the content validity of the items was considered: those items were retained which clearly belonged to their corresponding factor as well as items offering sufficient breadth in the meaning of the construct/factor. I proceeded by examining factor correlations, internal consistency and face validity of a 49-item scale.

### 3.5.5 Internal Consistency and Convergent Validity of the 49-Item Solution

A reliability analysis was carried out, after recoding reverse-scored items- in order to assess the internal consistency of the questionnaire’s factor analytically derived seven-item subscales, i.e., the extent to which the items on the subscales all reliably measure the same construct. Cronbach’s alpha scores ranged from 0.837 for Compulsive Striving to 0.904 for

Fear of Failure; therefore all subscales showed sufficiently high internal consistency ([Cortina, 1993](#); [Cronbach, 1951](#)) and **Hypothesis 2** was confirmed.

Table 3-6 shows that most items were worthy of retention, resulting in a decrease in the subscale's alpha if deleted. Only two items appeared to warrant further investigation (in bold in Table 3-6): "I am not the kind of person that engages in risky business ventures" (Risk Aversion) "Decision making has always been easy for me: I just follow my gut feeling" (Indecisiveness). However, neither of the two items appeared to be deviating from their respective subscale in terms of content validity. Therefore, both items were retained for further investigation in the Confirmatory Factor Analysis.

Table 3-6 *Internal Consistency of OC-PDI Traits in the EFA Sample (N = 525)*

Factor	Item	Item-Total Correlation	Alpha
Fear of failure	When I fail in a task I feel that I am a total failure	0.78	0.90
	It takes me a lot of time to recover from failures	0.80	
	I feel that I cannot cope with failure	0.79	
	I often feel that I live my life in fear of failure	0.74	
	I am not afraid R	0.57	
	I am very critical of myself when I am not succeeding.	0.63	
	When I make a serious mistake, I am so upset that I am often unable to put it behind me and get on with my life	0.72	
Social Anxiety	I always love socializing and interacting with people R	0.76	0.90
	I feel relaxed and comfortable around other people	0.74	
	I am naturally relaxed and sociable with those around me R	0.72	
	I find most social interactions unrewarding or unpleasant	0.77	
	I am not at ease in the company of others	0.77	
	I am always on the lookout for opportunities to socialize and connect with other people	0.60	
	Some people might describe me as a hermit	0.63	
Risk Aversion	I enjoy the excitement of taking risks R	0.68	0.84
	I like to take chances R	0.67	
	My ideal life would be free from any risk	0.62	
	People tell me I always play safe	0.57	
	I am not willing to take risks that stretch my comfort level	0.61	

Factor	Item	Item-Total Correlation	Alpha
	<b>I am not the kind of person that engages in risky business ventures</b>	0.43	
Obstinacy	I regularly step outside my comfort zone to take risks R	0.58	0.85
	Despite being given repeated feedback that something is wrong I know my opinion is right	0.68	
	I frequently believe that I am right about something, no matter what the person says or how things seem.	0.67	
	People have often told me that I refuse to appreciate their point of view	0.56	
	I find it hard to question my point of view	0.60	
	I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	0.58	
	It doesn't matter what you say or how things seem, when I am right about something I know I am correct.	0.58	
	I find it difficult to accept that someone is right even when I know they are	0.55	
Compulsive Striving	I am usually so overcommitted that I hardly ever have any spare time	0.68	0.84
	I have often been given feedback that I work too hard or that I need to relax	0.60	
	I can't help spending too many hours on my work and having too little time for myself.	0.63	
	I rarely relax just to relax	0.58	
	When it comes to work good is never good enough for me	0.62	
	There are never enough hours in the day to finish my work and be content with the result	0.58	
	I believe that relaxing, playing, or recreation must be earned	0.43	
	I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	0.74	
Social Anxiety	I often mask or hide my inner feelings from others	0.77	0.88
	When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	0.70	
	I think twice before revealing my true emotions to others	0.63	
	The outward expression of my emotions often doesn't match what's going on inside me	0.69	

Factor	Item	Item-Total Correlation	Alpha
Indecisiveness	I am a hard to read person	0.55	0.89
	My mind often goes blank when I have to speak about my feelings	0.58	
	For me, the process leading up to taking a decision is long and painful	0.80	
	Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	0.76	
	Finding answers to dilemmas has always been a huge struggle for me	0.69	
	I am often unable to make decisions and feel stuck	0.68	
	Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	0.70	
	One of the worst experiences in life is struggling with the uncertainty of making the right choice	0.64	
	<b>Decision making has always been easy for me: I just follow my gut feeling R</b>	0.47	



### 3.5.6 Convergent and Divergent Validity

Positive and NA, DASS depression scores, and DASS anxiety scores were used to assess the convergent validity of the OC-PDI subscales. I expected that the OC-PDI subscales would demonstrate positive correlations of small to moderate magnitude with measures of NA and the DASS subscales and negative correlations with PA. Table 3-7 shows the correlations obtained for the solution’s subscales. In line with **Hypotheses 3 and 4** correlations with NA, stress and depression were positive and of small to moderate magnitude. Correlations of the OC-PDI scales with PA were also of the right direction and magnitude. Therefore **Hypothesis 3 and 4** were confirmed.

Table 3-7 also shows the correlations of the OC-PDI scales with the Impression Management subscale of the BIDR-16. Correlations were of small magnitude but were all significant and negative except for the Risk Aversion subscale. **Hypothesis 5** was partly confirmed.

Table 3-7 *Correlations of OC-PDI traits with NA, PA, Stress, Depression and Impression Management*

OC-PDI factor	NA	DASS21 Stress	DASS21 Depression	PA	BIDR-16 IM
Fear of failure	.46	.53	.53	-.32	-.32
Social Anxiety/Avoidance	.43	.40	.46	-.43	-.14*
Risk aversion	.19*	.25	.18*	-.28	.07**
Obstinacy	.22	.25	.23	-.16*	-.19*
Compulsive Striving	.30	.42	.28	-.09**	-.02**
Constricted Expressivity	.34	.34	.43	-.31	-.28
Indecisiveness	.45	.47	.44	-.35	-.33

*Note.* All correlations are measured at  $p < .001$  unless otherwise reported here: \* $p < .05$ , \*\* $p > .01$

### 3.6 Study 4

#### 3.7 Objective

Given the good psychometric properties of the final factor solution by EFA, a second study was carried out to cross validate the self-report instrument in a separate sample using a Confirmatory Factor Analysis (CFA). The aims of the second study were a) to confirm the structure of the OC-PDI using CFA with a different sample, and b) to investigate the convergent validity, divergent validity, and predictive validity of the final solution, i.e., obtaining psychometric properties that would attest to the construct validity of the scale.

Convergent validity is achieved by demonstrating a positive correlation between two measures. Although there is no absolute cut-off criterion above which the relationship is considered to be indicating convergent validity, the correlation coefficients between measures of converging constructs is typically between .50 and .70 ([Carlson & Herdman, 2012](#)). A correlation coefficient  $<.50$  demonstrates that the measures do not capture the same construct.

Discriminant validity is achieved by showing that the correlation between two measures is sufficiently low to demonstrate that the constructs that measures capture are conceptually unrelated (typically either  $<.5$  or  $<.3$ ) ([Hinkin, 1998](#)).

Finally, in psychometrics, predictive validity is shown by the extent to which a scale predicts scores on some external related criterion measure ([Cronbach & Meehl, 1955b](#)). In this sense predictive validity is part of the measure's external validity and therefore a necessary element of a measure's construct validity ([Murphy & Davidshofer, 1988](#)).

Hypothesis 1 of Study 4 predicted that the OC-PDI would show a seven-factor profile with good fit. Hypothesis 2 predicted that the OC-PDI would produce correlations with existing OCPD scales of moderate to large effect size. Hypothesis 3 predicted that the OC-PDI would produce correlations of small magnitude with measures of other personality disorders. Hypotheses 4 stated that the OC-PDI would predict OCPD pathology over and above general NA. Hypothesis 5 stated that the OC-PDI would predict well-being over and above general NA. Hypothesis 6 stated that the OC-PDI would predict state depression over and above general NA. Finally, Hypothesis 7 stated that the OC-PDI would have higher predictive value of well-being and depression compared to other OCPD scales and would be

a better predictor of the same constructs (well-being and depression) compared to other personality disorders.

### 3.8 Method

#### 3.8.1 Participants

Participants were contributors in the crowdsourcing platform, Figure Eight, and were required to be over 18 years of age and to be native speakers or have a good knowledge of English. The participants were mostly female ( $n = 63, 46\%$ ), with a mean age of 33.19 years ( $SD = 10.33$ ) against 36.51 years ( $SD = 11.70$ ) of male participants.

A missing value analysis was conducted to determine whether missing values in the data set were random. Figure 3-3 shows the overall summary of missing values for the 49 items of the OC-PDI. Approximately half of the variables had missing data, clustering around only 22 of the cases. The percentage of values with missing data represented a very small part (0.128%) of the complete data set. Missing values did not follow a pattern, which was confirmed by the absence of a systematic bias in the missing values patterns of Figure 3-4. Therefore, no imputation was performed and missing values were replaced with the series mean (Pigott, 2001).

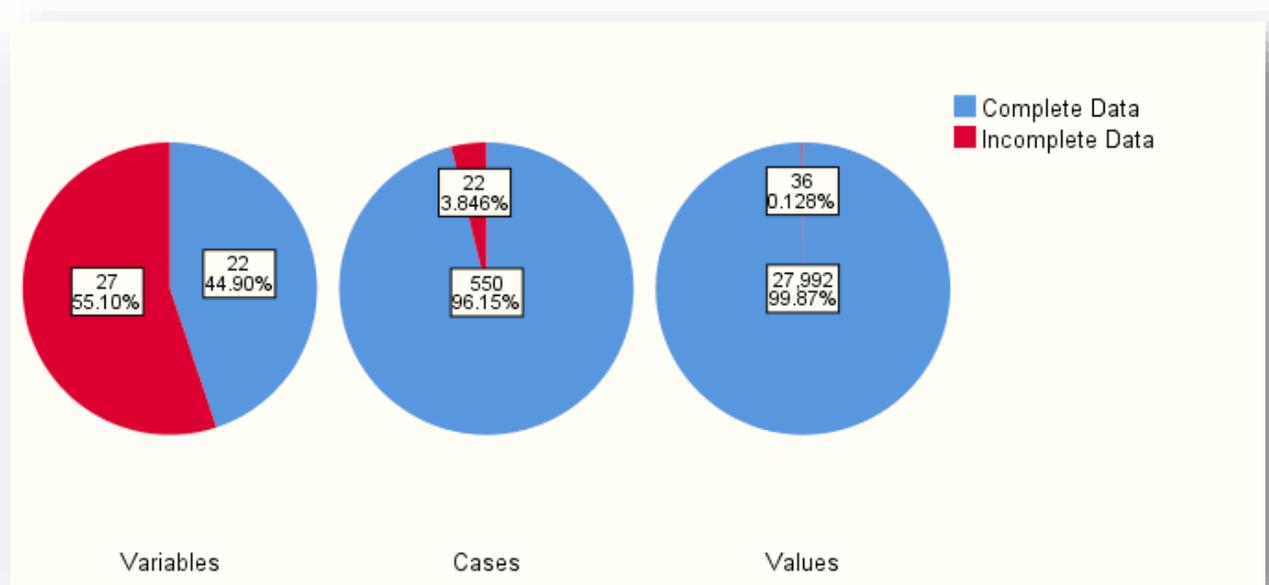


Figure 3-3 Overall pattern of missing values in the variables of the OC-PDI ( $N = 572$ )

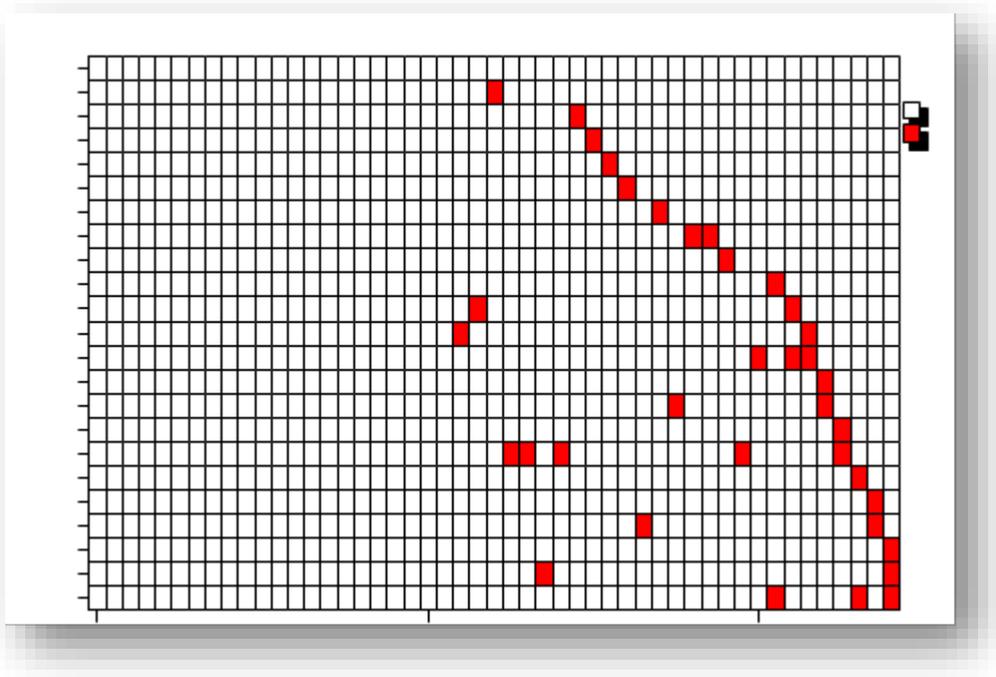


Figure 3-4 Missing value patterns for the OC-PDI items ( $N = 572$ )

### 3.8.2 Materials

The study included a number of self-report questionnaires, as follows.

**Obsessive Compulsive Personality Inventory (OC-PDI).** The 108 items of the OC-PDI were included. Participants were asked to indicate the degree to which they felt a certain statement applied to them, using a six-point Likert-type scale ranging from 1 = *strongly disagree* to 6 = *strongly agree*. Example items include: “When I fail in a task I feel that I am a total failure”, “I am not at ease in the company of others”, “I carefully consider all possibilities before taking any chances”, “My mind often goes blank when I have to speak about my feelings”, “I am often unable to make decisions and feel stuck.” The full list of items with descriptive statistics is shown in Appendix D.1

**Personality Inventory for DSM-5 (PID-5).** The PID-5 ([Krueger et al., 2012a](#)) is a 220-item, self-report personality trait assessment scale for people aged 18 and older, of Likert type format (0 = *None of the time* to 3 = *All of the time*). It operationalises the DSM-5 Section III Personality Trait Model of personality disorders ([APA, 2013, pp. 773-774](#)) and it covers 25 lower-order trait facets organised around five higher order personality domains - Negative Affectivity (vs. Emotional Stability), Detachment (vs. Extraversion), Antagonism (vs. Agreeableness), Disinhibition (vs. Conscientiousness), and Psychoticism (vs. Lucidity).

According to the DSM-5, the five broad personality domains are posited to reflect maladaptive variants or polar opposites ([APA, 2013, p. 773](#)) of the five (adaptive) domains of personality, a model of individual differences of personality replicated in psychological studies and meta-analyses ([Digman, 1990](#)) and thought to represent the basic structure of personality. The PID-5 is administered in its entirety (ideally scored also by someone who knows the participant well) and elevations on scales are used to guide the diagnosis of personality disorders. A diagnosis of OCPD requires a specific profile of elevated traits, i.e., elevated scores in Rigid Perfectionism and in two or more of the pathological traits of Perseveration, Intimacy Avoidance, and Restricted Affectivity ([APA, 2013](#)). The four PID-5 OCPD traits were administered in this Study. Example items include: “I’ve been told that I spend too much time making sure things are exactly in place” of Rigid Perfectionism, “It is hard for me to stop an activity, even when it’s time to do so” of Perseveration, “When it comes to my emotions, people tell me I’m a “cold fish”” of Restricted Affectivity, and “I prefer to keep romance out of my life” of Intimacy Avoidance.

**Nonadaptive and Adaptive Personality (SNAP-2) OCPD.** The SNAP-2 ([Clark et al., 2014](#)) is true-false self-report questionnaire that was developed on the basis of the Big-Three tradition ([Clark, 2007](#); [Cloninger, Przybeck, & Svrakic, 1991](#); [Eysenck, 1994](#)). It assesses three broad temperament domains (Negative Affectivity, Positive Affectivity, and Disinhibition- Constraint) and 12 maladaptive personality trait dimensions. However, it also contains items to assess the PD criteria in the fourth edition of the Diagnostic and Statistical Manual ([APA, 1994, 2000](#)), which were passed on into the Section II of the fifth edition of the Manual ([APA, 2013](#)). The SNAP-2 OCPD Scale is a 25-item subscale which captures the eight diagnostic criteria of the DSM-IV OCPD construct. Example items include: “I prefer taking each day as it comes, rather than having some major goals set for my life” which measures the criterion of preoccupation with details, rules, lists, etc. so that the major point of the activity is lost, “People say that I drive myself hard” which captures the criterion of excessive devotion to work and productivity to the exclusion of leisure activities and friendships, and “It irritates me greatly when I am asked to do something I don't want to do” which measures rigidity and stubbornness.

**International Personality Disorder Examination Screening questionnaire (IPDE-SQ).** The IPDE Screening Questionnaire ([Loranger, Janca, & Sartorius, 1997](#)) is brief, self-report measure used to assess personality disorders according to the ICD-10 classification system. It includes 59 items to which participants respond in a True/False format. The IPDE-

SQ has strong psychometric properties and is a valid screener of personality disorders in both clinical and non-clinical populations ([Lewin, Slade, Andrews, Carr, & Hornabrook, 2005](#); [Martin, Walcott, Clarke, Barton, & Hickling, 2013](#); [Schroeder, Andresen, Naber, & Huber, 2010](#); [Slade & Forrester, 2013](#)). Given the currently evolving debate and empirical work on the reliability, factor structure, and construct validity of the PID-5 ([Al-Dajani, Gralnick, & Bagby, 2016](#); [Bastiaens, Claes, et al., 2016](#)) as well as the inconclusive evidence about the optimum DSM-5 Section III OCPD trait profile ([Liggett et al., 2017](#); [Liggett et al., 2018](#)), it was important to test the convergent and divergent validity of the OC-PDI against a measure which is not based on the DSM-5. Moreover, the inclusion of the IPDE-SQ in the Study served the scope of this thesis to offer empirical evidence on the optimum conceptualization of the construct of OCPD. Example items of the IPDE-SQ include: “I’ve held grudges against people for years” for Paranoid Personality Disorder, “When I am praised or criticised I don’t show my reaction” for Schizoid Personality Disorder, “I’ve never been arrested” for Dissocial Personality Disorder, “I take chances and do reckless things” for Emotionally Unstable Personality Disorder, Impulsive Type, “I often feel “empty” inside” for Emotionally Unstable Personality Disorder, Borderline Type, “My feelings are like the weather, they’re always changing” for Histrionic Personality Disorder, “I’m not fussy about little details” for Anankastic Personality Disorder, “A lot of things seem dangerous to me that don’t bother most people” for Anxious (Avoidant) Personality Disorder, and “I often seek advice or reassurance about everyday decisions” for Dependent Personality Disorder.

**PANAS-X Negative Affect (NA).** The NA scale of the PANAS-X ([Watson & Clark, 1999](#)) is a 60-item, expanded version of the original 20 item PANAS ([Watson et al., 1988a](#)). Based on research identifying two independent higher order dimensions of mood ([Diener & Emmons, 1984](#); [Watson & Tellegen, 1985](#)) the NA scale captures stable over time emotional experiences of anxiety, anger, and distress that are stable over time. The novelty of the extended version, which is used here, is the development and validation of specific affect scales pertaining to the higher order scales, which measure 11 lower order traits: Fear, Sadness, Guilt, Hostility, Shyness, and Fatigue, specific to NA. It is a Likert type scale with five categories (1 = *very slightly* or not at all, to 5 = *extremely*). Example statements include: “Bashful” for Shyness, “Sluggish” for Fatigue, “Downhearted” for Sadness, “Dissatisfied with self” for Guilt, “Scornful” for Hostility, “Jittery” for Fear. The instructions given to participants of the current Study were “Indicate to what extent you feel this way in general”.

**Patient Health Questionnaire (PHQ-9).** The PHQ-9 ([Kroenke, Spitzer, & Williams, 2001](#)) is a widely used brief screening measure for depression, with excellent test-retest reliability ([Lowe, Unutzer, Callahan, Perkins, & Kroenke, 2004](#)) and good specificity/sensitivity ([Lowe, Kroenke, Herzog, & Grafe, 2004](#); [Manea, Gilbody, & McMillan, 2012](#)). The scale consists of nine items developed to capture the nine criteria of the DSM-IV-TR depressive disorders rated on four-point Likert Scale (1 = *not at all* to 4 = *nearly every day*). Participants rate how they felt in the last two weeks. Example items include “Little interest or pleasure in doing things” and “Feeling down, depressed, or hopeless”.

**Warwick-Edinburgh Mental Well-being scale (WEMWBS).** The 14-item WEMWBS ([Tennant et al., 2007](#)) was used to assess mental well-being. The WEMWBS is rated on a 5 point Likert scale (1 = *none of the time* to 5 = *all of the time*), it has shown very good psychometric properties in both general population-based ([Lloyd & Devine, 2012](#)) and clinical samples ([Bass, Dawkin, Muncer, Vigurs, & Bostock, 2016](#)), and has proven its utility as an excellent indicator of overall mental health and well-being ([Bartram, Yadegarfar, Sinclair, & Baldwin, 2011](#)). Example items include “I’ve been dealing with problems well”, and “I’ve been able to make up my own mind about things”.

**Experiences Questionnaire (EQ)-Rumination.** The 20-item Experiences Questionnaire (EQ) was developed by [Fresco et al. \(2007\)](#) to measure both decentering ability (14 items) and rumination (6 items) rated on a 5-point Likert scale (1 = *never* to 5 = *all the time*). Example items of the Decentering subscale include: “I can actually see that I am not my thoughts” and “I have the sense that I am fully aware of what is going on around me and inside me”. Example items include “I think over and over again about what others have said to me” and “I think about the ways in which I am different from other people”.

**Random Response Scale.** As part of the study participants had to pass a four-item random response scale which was incorporated in the personality scales of the survey. The items of the scale included: “I was born on the 30th of February” (True/False) which was part of the SNAP-2 scale and “Please select the option agree slightly” as part of the OC-PDI scale. All four items were presented in random order as per the randomization of items of the scales included in the survey.

### 3.8.3 Procedure

The study was given approval by the Southampton Research Ethics Committee and Insurance and Research Governance Office. Participants were adult, English speaking contributors in the Figure Eight crowdsourcing platform. Participants were redirected to the i-Survey software, an online platform hosting surveys and other research conducted by University of Southampton students and staff. Participants read an online information sheet describing the Study and the nature of participation. Participants were encouraged to contact the researcher for clarifications or concerns before giving their consent to proceed to the online survey. The sequence of the self-report questionnaires was randomised. Individual items of the questionnaires were also presented, in random order, in blocks of 20-25 statements per web-page. Participants were awarded \$0.10 and a bonus amount of \$2.00 if they had correctly answered all four random response items. After completing the survey participants were debriefed.

All participants completed the survey within time enough to indicate that they took the time to reflect on their responses, i.e. in time > 20 minutes. No participant showed a uniform responding pattern, i.e., answering all questions in the same way (e.g., option 1) for at least one question block of 20 items.

Overall, 572 participants completed the survey and passed the random response scale (i.e., had answered correctly in all four statements of the scale; when a participant has provided a blank response to any of the random response scale items, this response was considered incorrect). The data of these participants was downloaded and entered into IBM SPSS Version 25 for analysis.

## 3.9 Results

### 3.9.1 Confirmatory Factor Analysis (CFA)

CFA was used to assess the factorial structure of the measure. In the validation sample the distributions of the 49 items of the OCPD scale were again examined to determine the appropriate estimation procedure. Based on suggested cut-offs for normality ((Skewness > 2, Kurtosis > 7; [Cohen et al. \(2014\)](#)) the data did not violate univariate normality assumptions.

Outlying scores for each item ( $Z > |3.29|$ ) were examined, because extreme values may skew subscales and total scores, and can influence statistical analysis. No outlying scores were found for any of the variables. No transformations were performed ([Tabachnick & Fidell, 2001;2019](#)).

Normal theory Maximum likelihood is the standard estimation procedure for CFA ([Curran et al., 1996](#)) in Structural Equation Modelling (SEM) and it assumes multivariate normality. Although, distributions of the items were within the acceptable limits, the level of skew exhibited by items suggested that multivariate normality might not be met. To assess multivariate normality the Mardia's coefficient of multivariate skewness and kurtosis was used. Mardia's coefficient had a score of 557.921 (CR 94.37) indicating mild multivariate non-normality. The presence of multivariate outliers was investigated by estimating Mahalanobis d-squared distance for each case. The pattern of cases with the highest d-squared distance (see Table 3-6 for aggregate results) justified the deletion of data by 54 participants. The Mardia's coefficient for the final sample ( $N = 518$ ) had a score of 330.14 (CR 53.14) suggesting a substantial reduction in multivariate normality of the data. Appendix D.2 shows the descriptive statistics of the OC-PDI items in the CFA sample

Table 3-8 *Calculation of Mahalanobis Distance for (N =572)*

	Minimum	Maximum	<i>M</i>	<i>SD</i>
Predicted Value	19.5	50.6	34.4	5.36
Std. Predicted Value	-2.8	3.0	0.0	1.00
Standard Error of Predicted Value	1.2	5.4	2.9	0.73
Adjusted Predicted Value	18.2	52.9	34.5	5.48
Residual	-30.1	37.4	0.0	9.56
Std. Residual	-3.0	3.7	0.0	0.96
Stud. Residual	-3.1	3.9	0.0	1.00
Deleted Residual	-31.5	40.1	0.0	10.49
Stud. Deleted Residual	-3.1	3.9	0.0	1.00
Mahal. Distance	6.9	165.2	48.9	25.45
Cook's Distance	0.0	0.0	0.0	0.00
Centered Leverage Value	0.0	0.3	0.1	0.05

### 3.9.2 Confirming the Factor Structure of the OC-PDI

ML estimation is robust to mild skewness and AMOS supports the use of bootstrapping which is an efficient way to ensure that models are reliable and produce accurate results by

creating data sets that simulate the model tested. In CFA, bootstrapping tests the accuracy of the model producing adjusted standard errors and bias corrected confidence intervals of the regression weights (i.e., factor loadings). There is evidence ([Nevitt & Hancock, 1998](#)) that ML estimation with bootstrapping is superior to alternative methods of estimation such as the correction methods proposed by Satorra ([Satorra & Bentler, 2010](#)) which are used when data deviate from normality ([Curran et al., 1996](#)). Therefore, I proceeded with ML estimation and confirmed the final results using the bootstrapping technique. The CFA took into account the following points.

In the model each trait was modelled as a latent factor with the individual items as observed indicators. A restricted factor analysis model was used to identify the model in which the indicators derived from EFA were scaled, by constraining a path from each factor to one of the factor's indicators, i.e., by assigning a regression weight of 1 to the indicator.

In assessing whether the model conceptualises the OCPD construct adequately I considered the factor loadings of the observed variables as well as the square of the factor loadings, which is the variance of the observed variable accounted for by the construct measured. For a solution to be defined as acceptable it was expected that most factor scores should have a value of  $\geq .40$  ([Costello et al., 2008](#); [Osborne et al., 2016](#)).

Model fit was assessed by means of the Discrepancy Chi Square, a standard global fit index measure which produces a non-significant p-value for good-fitting models. The Chi Square is very sensitive to sample size and discrepancies from normality in the data ([West et al., 1995](#)). Under such cases of estimation, the chi-square test may reject the model. Thus, as recommended by others ([Kline, 2015](#); [Marsh et al., 1996](#)) I used a combination of additional fit indices as follows: The Comparative Fit Index (CFI; [Bentler \(1990\)](#)) with values ranging from 0 (poor fit) to 1.00 (perfect fit) and a value of 0.9 or more higher indicating good fit. The Standardized Root Mean Square Residual (SRMR) with values  $< .08$  indicating adequate fit,  $< .05$  good fit, and a value of 0 indicating perfect fit. The Root Mean Squared Error Of Approximation (RMSEA; [Steiger \(1990\)](#)) a parsimony adjusted measure, i.e., it penalizes for the lack of parsimony in the model. Values of .08 or less indicate adequate fit ([Hu & Bentler, 1999](#)) suggested  $\leq .06$  as a stricter cut-off for a good model fit. I proceeded by testing and analysing the fit of the model consisting of the 7 inter-correlating factors identified in the EFA (Model A). The resulting model can be seen in Figure 3-5.

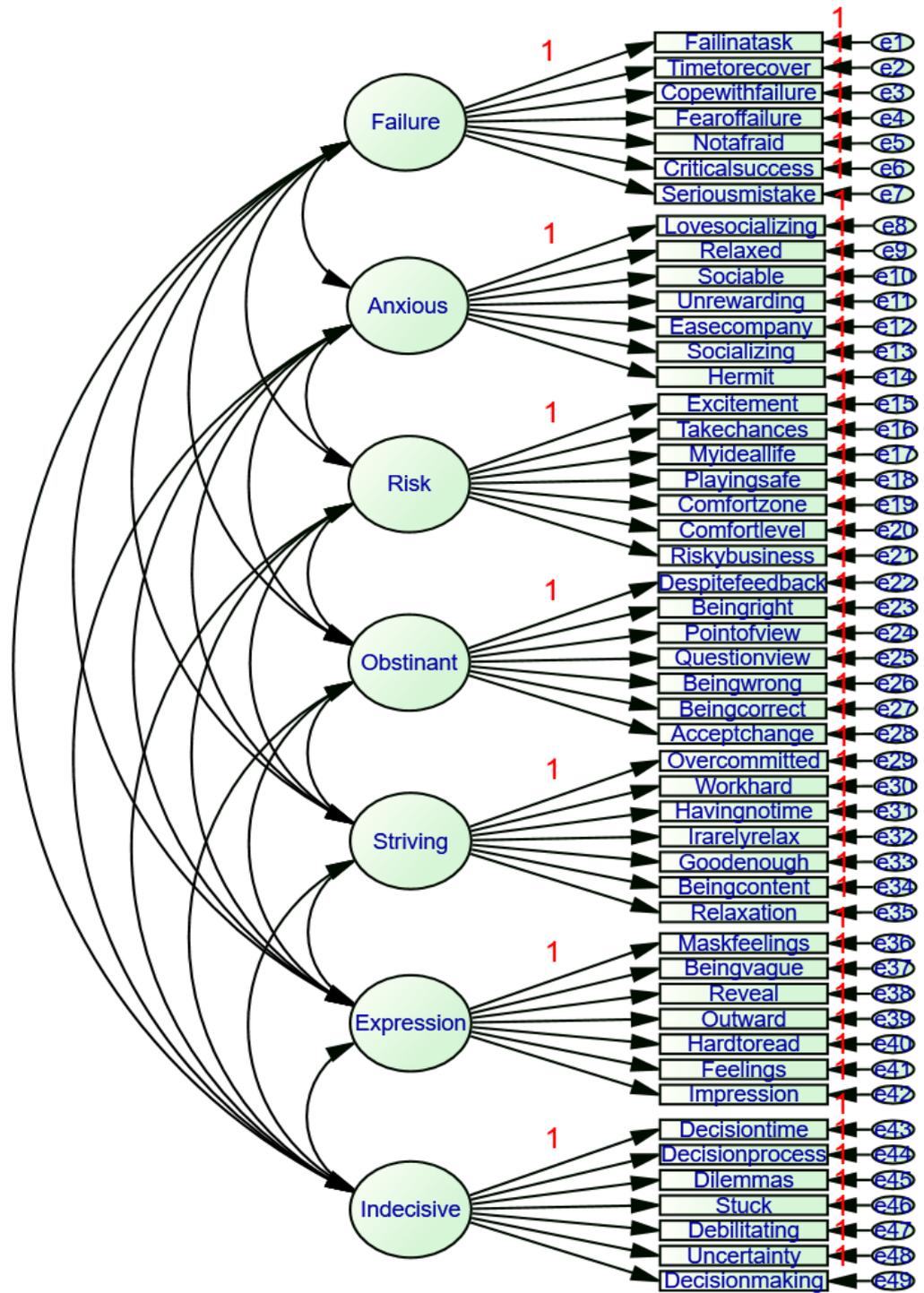


Figure 3-5 Model A: Seven-factor model of OCPD derived from Confirmatory Factor Analysis in the cross-validation sample (N = 518)

Table 3-9 *Standardized Regression Weights for Model A*

Item		Factor	SRW
Failing a task	When I fail in a task I feel that I am a total failure	Fear of Failure	0.76
Time to recover	It takes me a lot of time to recover from failures	Fear of Failure	0.81
Cope with failure	I feel that I cannot cope with failure	Fear of Failure	0.74
Fear of failure	I often feel that I live my life in fear of failure	Fear of Failure	0.81
Not afraid	I am not afraid to fail	Fear of Failure	-0.49
Critical success	I am very critical of myself when I am not succeeding	Fear of Failure	0.59
Serious mistake	When I make a serious mistake, I am so upset that I am often unable to put it behind me and get on with my life	Fear of Failure	0.78
Loves socializing	I always love socializing and interacting with people	Social Anxiety	0.85
Relaxed	I feel relaxed and comfortable around other people	Social Anxiety	0.82
Sociable	I am naturally relaxed and sociable with those around me	Social Anxiety	0.77
Unrewarding	I find most social interactions unrewarding or unpleasant	Social Anxiety	-0.65
Ease company	I am not at ease in the company of others	Social Anxiety	-0.68
Socializing	I am always on the lookout for opportunities to socialize and connect with other people	Social Anxiety	0.77
Hermit	Some people might describe me as a hermit	Social Anxiety	-0.61
Excitement	I enjoy the excitement of taking risks	Risk Aversion	0.79
Take chances	I like to take chances	Risk Aversion	0.72
My ideal life	My ideal life would be free from any risk	Risk Aversion	-0.48
Playing safe	People tell me I always play safe	Risk Aversion	-0.36
Comfort zone	I regularly step outside my comfort zone to take risks	Risk Aversion	0.70
Comfort level	I am not willing to take risks that stretch my comfort level	Risk Aversion	-0.60

Item		Factor	SRW
Risky business	I am not the kind of person that engages in risky business ventures	Risk Aversion	-0.56
Despite feedback	Despite being given repeated feedback that something is wrong I know my opinion is right	Obstinacy	0.76
Being right	I frequently believe that I am right about something, no matter what the person says or how things seem.	Obstinacy	0.68
Point of view	People have often told me that I refuse to appreciate their point of view	Obstinacy	0.69
Question view	I find it hard to question my point of view	Obstinacy	0.65
Being wrong	I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	Obstinacy	0.72
Being correct	It doesn't matter what you say or how things seem, when I am right about something I know I am correct	Obstinacy	0.54
Accept change	I find it difficult to accept that someone is right even when I know they are	Obstinacy	0.73
Over committed	I am usually so overcommitted that I hardly ever have any spare time	Compulsive Striving	0.78
Work hard	I have often been given feedback that I work too hard or that I need to relax	Compulsive Striving	0.73
Having time	I can't help spending too many hours on my work and having too little time for myself	Compulsive Striving	0.76
I rarely relax	I rarely relax just to relax	Compulsive Striving	0.58
Good enough	When it comes to work, good is never good enough for me	Compulsive Striving	0.60
Being content	There are never enough hours in the day to finish my work and be content with the result	Compulsive Striving	0.69
Relaxation	I believe that relaxing, playing, or recreation must be earned	Compulsive Striving	0.20
Mask feelings	I often mask or hide my inner feelings from others	Constricted Expressivity	0.82

Item		Factor	SRW
Being vague	When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	Constricted Expressivity	0.73
Reveal	I think twice before revealing my true emotions to others	Constricted Expressivity	0.73
Outward	The outward expression of my emotions often doesn't match what's going on inside me	Constricted Expressivity	0.76
Hard to read	I am a hard to read person	Constricted Expressivity	0.60
Feelings	My mind often goes blank when I have to speak about my feelings	Constricted Expressivity	0.70
Impression	I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	Constricted Expressivity	0.63
Decision time	For me, the process leading up to taking a decision is long and painful	Indecisiveness	0.82
Decision process	Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	Indecisiveness	0.82
Dilemmas	Finding answers to dilemmas has always been a huge struggle for me	Indecisiveness	0.76
Stuck	I am often unable to make decisions and feel stuck	Indecisiveness	0.84
Debilitating	Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	Indecisiveness	0.81
Uncertainty	One of the worst experiences in life is struggling with the uncertainty of making the right choice	Indecisiveness	0.73
Decision making	Decision making has always been easy for me: I just follow my gut feeling	Indecisiveness	-0.36

Note SRW = Standardized Regression Weights

Table 3-10 *Factors Correlations of Model A*

Factor		<i>r</i>
Fear of Failure	Social Anxiety	-0.61
Fear of Failure	Risk Aversion	0.46
Fear of Failure	Obstinacy	0.59
Fear of Failure	Compulsive Striving	0.60
Fear of Failure	Constricted	0.75
Fear of Failure	Expressivity	0.91
Fear of Failure	Indecisiveness	0.91
Social Anxiety	Risk Aversion	-0.55
Social Anxiety	Obstinacy	-0.31
Social Anxiety	Compulsive Striving	-0.27
Social Anxiety	Constricted	-0.52
Social Anxiety	Expressivity	-0.52
Social Anxiety	Indecisiveness	-0.57
Risk Aversion	Obstinacy	0.15
Risk Aversion	Compulsive Striving	0.12
Risk Aversion	Constricted	0.26
Risk Aversion	Expressivity	0.26
Risk Aversion	Indecisiveness	0.45
Obstinacy	Compulsive Striving	0.60
Obstinacy	Constricted	0.55
Obstinacy	Expressivity	0.55
Obstinacy	Indecisiveness	0.57
Compulsive Striving	Constricted	0.49
Compulsive Striving	Expressivity	0.49
Compulsive Striving	Indecisiveness	0.56
Constricted Expressivity	Indecisiveness	0.69

Using the default Maximum Likelihood estimator, fit indices for Model A suggested a relatively good fit to the data:  $\chi^2(657, N = 518) = 3109.39, p < .001$ , CFI= 0.855, RMSEA = 0.59 (90% confidence interval [CI] = [.57, .62]), SRMR= .096. Table 3-7 shows the standardized regression weights of the items on their respective factor and Table 3-8 shows the factor correlations. All items loaded strongly on their respective factor with only two

exceptions: the reverse coded item “I believe that relaxing, playing, or recreation must be earned” which produced a standardized regression weight of .198 and the reverse coded item “Decision making has always been easy for me: I just follow my gut feeling” which produced a standardized regression weight of -.356. Assessment of the correlations between the factors suggested that two of the factors (Fear of Failure and Indecisiveness) correlated  $> 0.90$ . Correlations of this size typically mean that the subscales measure the same construct. Whereas Fear of Failure and Indecisiveness appear to be sufficiently distinct concepts (defined during the development stage of the measure) it seems that these two variables are related so that the high degree of overlap shows that Indecisiveness may be a facet of fear of failure and specifically fear of taking the wrong decision. Therefore, **Hypothesis 1** was not confirmed, and it was deemed necessary to adopt the standard psychometric practice in questionnaire development literature when two subscales of measures correlate too highly: this is that either the two factors merge into one factor or that one of the factors is discarded as redundant ([Clark et al., 2014](#); [Clark & Watson, 1995](#)). In this case merging the factors would not create a factor that would be clearly interpreted and defined. Thus, I opted for keeping the factor that offers the most specificity in terms of assessment and diagnosis of OCPD. Whereas both traits yielded correlations of the same magnitude with NA (Study 3) the Indecisiveness trait is more specific to OCPD ([Ansell, Pinto, Edelen, & Grilo, 2008a](#); [Costa et al., 2005](#); [de Reus & Emmelkamp, 2012](#); [Holaway, Heimberg, & Coles, 2006](#)). The resulting model B of six inter-correlating factors, including Indecisiveness, can be seen in Figure 3-6.

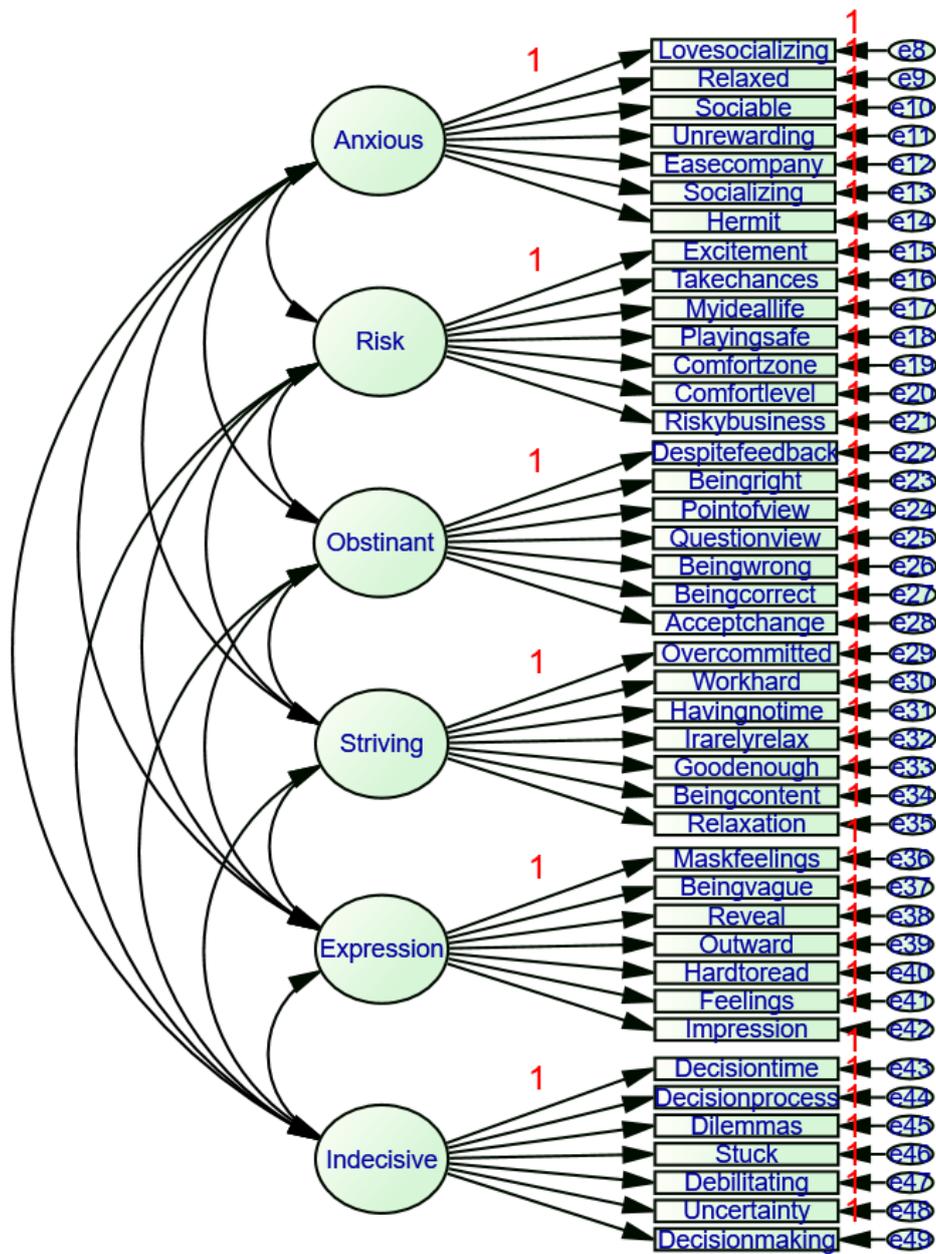


Figure 3-6 Model B: Six-factor order model of maladaptive OCPD derived from Confirmatory Factor Analysis in the cross-validation sample ( $N = 518$ )

Model B showed a good fit to the data:  $\chi^2(804, N = 518) = 2465.85, p < .001, CFI = 0.851, RMSEA = 0.63$  (90% confidence interval [CI] = [.60, .66]), SRMR = .099. Table 3-9 shows the standardized regression weights of the items on their respective factor. All items loaded sufficiently high onto their respective factor except for three items: “People tell me I always play safe”, “Decision making has always been easy for me: I just follow my gut feeling”, and “I believe that relaxing, playing, or recreation must be earned” which produced the lowest regression weight of .198. Table 3-10 shows the factor correlations which ranged from  $r = -.115$  (Risk aversion <--> Compulsive Striving) to  $r = .689$  (Constricted Expressivity <--> Indecisiveness) with most correlations being of small to moderate magnitude.

Table 3-11 *Standardized Regression Weights for Model B*

Item		Factor	SRW
Love socializing	I always love socializing and interacting with people	Social Anxiety	0.85
Relaxed	I feel relaxed and comfortable around other people	Social Anxiety	0.82
Sociable	I am naturally relaxed and sociable with those around me	Social Anxiety	0.76
Unrewarding	I find most social interactions unrewarding or unpleasant	Social Anxiety	-0.65
Ease company	I am not at ease in the company of others	Social Anxiety	-0.68
Socializing	I am always on the lookout for opportunities to socialize and connect with other people	Social Anxiety	0.77
Hermit	Some people might describe me as a hermit	Social Anxiety	-0.61
Excitement	I enjoy the excitement of taking risks	Risk Aversion	0.79
Take chances	I like to take chances	Risk Aversion	0.72
My ideal life	My ideal life would be free from any risk	Risk Aversion	-0.48
Playing safe	People tell me I always play safe	Risk Aversion	-0.36
Comfort zone	I regularly step outside my comfort zone to take risks	Risk Aversion	0.70
Comfort level	I am not willing to take risks that stretch my comfort level	Risk Aversion	-0.61
Risky business	I am not the kind of person that engages in risky business ventures	Risk Aversion	-0.56
Despite feedback	Despite being given repeated feedback that something is wrong I know my opinion is right	Obstinacy	0.76
Being right	I frequently believe that I am right about something, no matter what the person says or how things seem.	Obstinacy	0.68
Point of view	People have often told me that I refuse to appreciate their point of view	Obstinacy	0.69
Question view	I find it hard to question my point of view	Obstinacy	0.65
Being wrong	I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	Obstinacy	0.72
Being correct	It doesn't matter what you say or how things seem, when I am right about something I know I am correct	Obstinacy	0.54
Accept change	I find it difficult to accept that someone is right even when I know they are	Obstinacy	0.73

Item		Factor	SRW
Overcommitted	I am usually so overcommitted that I hardly ever have any spare time	Compulsive Striving	0.78
Work hard	I have often been given feedback that I work too hard or that I need to relax	Compulsive Striving	0.73
Having no time	I can't help spending too many hours on my work and having too little time for myself	Compulsive Striving	0.76
I rarely relax	I rarely relax just to relax	Compulsive Striving	0.58
Good enough	When it comes to work, good is never good enough for me	Compulsive Striving	0.60
Being content	There are never enough hours in the day to finish my work and be content with the result	Compulsive Striving	0.69
Relaxation	I believe that relaxing, playing, or recreation must be earned	Compulsive Striving	0.20
Mask feelings	I often mask or hide my inner feelings from others	Constricted Expressivity	0.82
Being vague	When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	Constricted Expressivity	0.72
Reveal	I think twice before revealing my true emotions to others	Constricted Expressivity	0.74
Outward	The outward expression of my emotions often doesn't match what's going on inside me	Constricted Expressivity	0.76
Hard to read	I am a hard to read person	Constricted Expressivity	0.60
Feelings	My mind often goes blank when I have to speak about my feelings	Constricted Expressivity	0.70
Impression	I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	Constricted Expressivity	0.63
Decision time	For me, the process leading up to taking a decision is long and painful	Indecisiveness	0.83
Decision process	Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	Indecisiveness	0.82
Dilemmas	Finding answers to dilemmas has always been a huge struggle for me	Indecisiveness	0.76
Stuck	I am often unable to make decisions and feel stuck	Indecisiveness	0.83
Debilitating	Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	Indecisiveness	0.81
Uncertainty	One of the worst experiences in life is struggling with the uncertainty of making the right choice	Indecisiveness	0.73
Decision-making	Decision making has always been easy for me: I just follow my gut feeling	Indecisiveness	-0.36

Note SRW = Standardized Regression Weight

Table 3-12 *Factors Correlations of Model B*

Factors		<i>r</i>
Social Anxiety	Risk Aversion	0.55
Social Anxiety	Obstinacy	-0.31
Social Anxiety	Compulsive Striving	-0.27
Social Anxiety	Constricted Expressivity	-0.52
Social Anxiety	Indecisive	-0.56
Risk Aversion	Obstinacy	-0.15
Risk Aversion	Compulsive Striving	-0.12
Risk Aversion	Constricted Expressivity	-0.26
Risk Aversion	Indecisiveness	-0.45
Obstinacy	Compulsive Striving	0.60
Obstinacy	Constricted Expressivity	0.55
Obstinacy	Indecisiveness	0.57
Compulsive Striving	Constricted Expressivity	0.49
Compulsive Striving	Indecisiveness	0.56
Constricted Expressivity	Indecisiveness	0.69

### 3.9.3 Additional Analyses

As per standard psychometric practice ([Anderson & Gerbing, 1988](#); [Gerbing & Anderson, 1988](#)) additional models were assessed and these were compared to Model B. I first estimated a unidimensional model in which all indicators loaded on a single factor of OCPD. Model C, presented in Figure 3-7 showed a poor fit to the data:  $\chi^2(820, N = 518) = 5990.61, p < .001$ , CFI = 0.538, RMSEA = 0.110 (90% confidence interval [CI] = [.108, .113]), SRMR = .133. Moreover, a great number of indicators loaded weakly on the OCPD factor (<.40) (Table 3-11). Therefore, the solution was not superior to Model B.

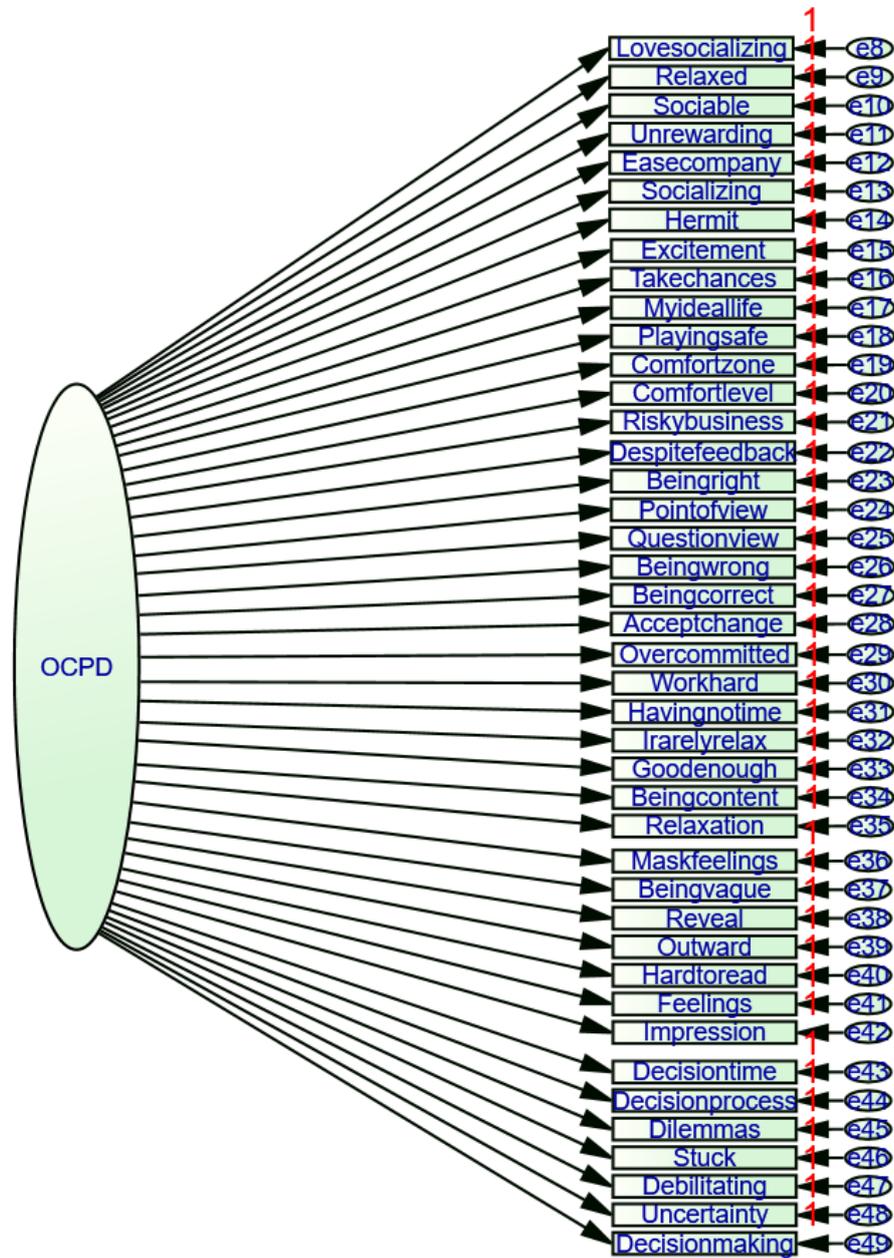


Figure 3-7 Model C Single factor model of maladaptive OCPD derived from Confirmatory Factor Analysis (CFA) in the cross-validation sample ( $N = 518$ )

Table 3-13 *Standardized Regression Weights for Model C*

Item		Factor	SRW
Love socializing	I always love socializing and interacting with people	OCPD	-0.47
Relaxed	I feel relaxed and comfortable around other people	OCPD	-0.54
Decision-making	Decision making has always been easy for me: I just follow my gut feeling	OCPD	-0.27
Uncertainty	One of the worst experiences in life is struggling with the uncertainty of making the right choice	OCPD	0.69
Debilitating	Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	OCPD	0.78
Stuck	I am often unable to make decisions and feel stuck	OCPD	0.78
Dilemmas	Finding answers to dilemmas has always been a huge struggle for me	OCPD	0.71
Decision process	Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	OCPD	0.76
Decision time	For me, the process leading up to taking a decision is long and painful	OCPD	0.75
Impression	I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	OCPD	0.51
Feelings	My mind often goes blank when I have to speak about my feelings	OCPD	0.66
Hard to read	I am a hard to read person	OCPD	0.46
Outward	The outward expression of my emotions often doesn't match what's going on inside me	OCPD	0.66
Reveal	I think twice before revealing my true emotions to others	OCPD	0.55
Sociable	I am naturally relaxed and sociable with those around me	OCPD	-0.45
Unrewarding	I find most social interactions unrewarding or unpleasant	OCPD	0.62
Ease company	I am not at ease in the company of others	OCPD	0.68
Socializing	I am always on the lookout for opportunities to socialize and connect with other people	OCPD	-0.41
Hermit	Some people might describe me as a hermit	OCPD	0.60
Excitement	I enjoy the excitement of taking risks	OCPD	-0.21
Take chances	I like to take chances	OCPD	-0.24
My ideal life	My ideal life would be free from any risk	OCPD	0.48
Playing safe	People tell me I always play safe	OCPD	0.39
Comfort zone	I regularly step outside my comfort zone to take risks	OCPD	-0.23
Being vague	When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	OCPD	0.63
Mask feelings	I often mask or hide my inner feelings from others	OCPD	0.64
Comfort level	I am not willing to take risks that stretch my comfort level	OCPD	0.51
Risk business	I am not the kind of person that engages in risky business ventures	OCPD	0.40

Item		Factor	SRW
Despite feedback	Despite being given repeated feedback that something is wrong I know my opinion is right	OCPD	0.47
Being right	I frequently believe that I am right about something, no matter what the person says or how things seem.	OCPD	0.41
Point of view	People have often told me that I refuse to appreciate their point of view	OCPD	0.54
Relaxation	I believe that relaxing, playing, or recreation must be earned	OCPD	0.02
Being content	There are never enough hours in the day to finish my work and be content with the result	OCPD	0.54
Question view	I find it hard to question my point of view	OCPD	0.52
Being wrong	I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	OCPD	0.59
Goodenough	When it comes to work, good is never good enough for me	OCPD	0.49
Being correct	It doesn't matter what you say or how things seem, when I am right about something I know I am correct	OCPD	0.31
Accept change	I find it difficult to accept that someone is right even when I know they are	OCPD	0.55
Overcommitted	I am usually so overcommitted that I hardly ever have any spare time	OCPD	0.48
I rarely relax	I rarely relax just to relax	OCPD	0.54
Having no time	I can't help spending too many hours on my work and having too little time for myself	OCPD	0.47
Work hard	I have often been given feedback that I work too hard or that I need to relax	OCPD	0.39

Note SRW = Standardized Regression Weight

Next, I compared the fit of these theoretical models with a super-factor model in which the six latent constructs are effects of a second-order latent construct of OCPD Model D, presented in Figure 3-8. This showed a good fit to the data:  $\chi^2(813, N = 518) = 2603.86, p < .001, CFI = .840, RMSEA = .065$  (90% confidence interval [CI] = [.062, .068]), SRMR = .102.

All items loaded on their respective factor strongly (Table 3-12) with the exception of the same items as in model B: “People tell me I always play safe”, “I believe that relaxing, playing, or recreation must be earned”, and “Decision making has always been easy for me: I just follow my gut feeling”. However, compared to Model B the second-order model produced a lower CFI, which is an incremental index of fit to the data, and a higher SRMR, which is an absolute measure of fit with no penalty for model complexity. Model B was superior to Model C confirming that OCPD is multidimensional model. This is in line with studies that have attempt to identify an optimal set of dimensions for the entire set of DSM personality disorders ([Depue, 2009](#); [Widiger, Trull, Hurt, Clarkin, & Frances, 1987](#); [Yun, Stern, Lenzenweger, & Tiersky, 2013](#)) as well as with studies that have proposed

multidimensional structural ([Cicero & Kerns, 2010](#); [Lenzenweger, McClough, Clarkin, & Kernberg, 2012](#)) and theoretical models ([Bishopp & Hare, 2007](#); [Bornstein & Huprich, 2011](#)) of specific DSM personality disorders. In summary, when the Fear of Failure factor was removed, the analysis showed that the construct of OCPD is multifactorial with Model B presenting the best solution both in terms of item loadings to their factors and fit indices. Table 3-13 confirms the results obtained for Model B with bootstrapped estimates. As Model B was the final model and achieved an acceptable fit the model it could have been respecified using modification indices (MI) provided in the AMOS CFA output as suggested by [MacCallum \(1986\)](#) who demonstrated the efficiency of allowing covariances between items to be fixed to zero. Respecification of the model takes into account conceptual and statistical parameters (covariances) in line with current psychometric practice in Structural Equation Modeling ([Perry, Nicholls, Clough, & Crust, 2015](#); [Schreiber, Nora, Stage, Barlow, & King, 2006](#)) and yields a better model fit. However, it is noted that the very strong internal reliability of the final 42 item scale entails that a shorter form with better fit might be readily and justifiably produced in future analyses. In regard to clinical scales this is typically carried out when the measure in question has shown good psychometric properties in a clinical sample and at which point items may be removed in a data-driven fashion without compromising the factorial stability of the measure ([Hartley, 2014](#); [Holden, Fekken, & Cotton, 1991](#); [Kenny, 2011](#); [Meijer & Egberink, 2011](#)). Without a conceptually and psychometrically justified use of modification indices or item removal, any model, even a grossly mis-specified model, may produce good fit indices ([Kenny, 2011](#); [Kline, 2015](#)).

A final note is necessary to clarify the choice of trait items and subscale/trait labels. What makes personality potentially pathological is still a matter of debate. Crucial aspects of the debate are the relationship between personality traits and psychiatric disorders ([Dolan-Sewell, Krueger, & Shea, 2001](#)) the relationship between temperament, personality traits, and personality disorders ([Clark, 2005](#)) and the conceptual problem of when a personality trait is in itself a failure in capacity or may otherwise lead to a cognitive and behavioural manifestation that is subsumed under the term of mental disorder. A comprehensive and thoughtful a discussion on the topic is provided by Zachar ([Zachar & Potter, 2010](#); [Zachar, 2011](#)) who outlines how different theoretical models (such as the impairment-distress model adopted by DSM) explain the nature of personality traits and whether as well as under which conditions a trait may be integral to personality disorder or distinct correlate captured better the construct of common mental disorder. Although no single model seems able to adequately

justify this latter conceptual issue, it seems that trait and disorder do represent a difference of kind (i.e., a carving of its nature at its joints) albeit different models present different accounts as to criteria for each category. However it appears that both higher (e.g., Negative Affectivity) and lower order traits (Rigid Perfectionism) do not represent a capacity failure unless additional criteria are met ([Krueger & Eaton, 2010a](#)). Therefore, it should be noted that the operationalization of OCPD traits by the OC-PDI should not be confounded with distinct disorders especially in respect to traits (such as Social Anxiety) whose label may allude to mental disorders (Social Anxiety Disorder).

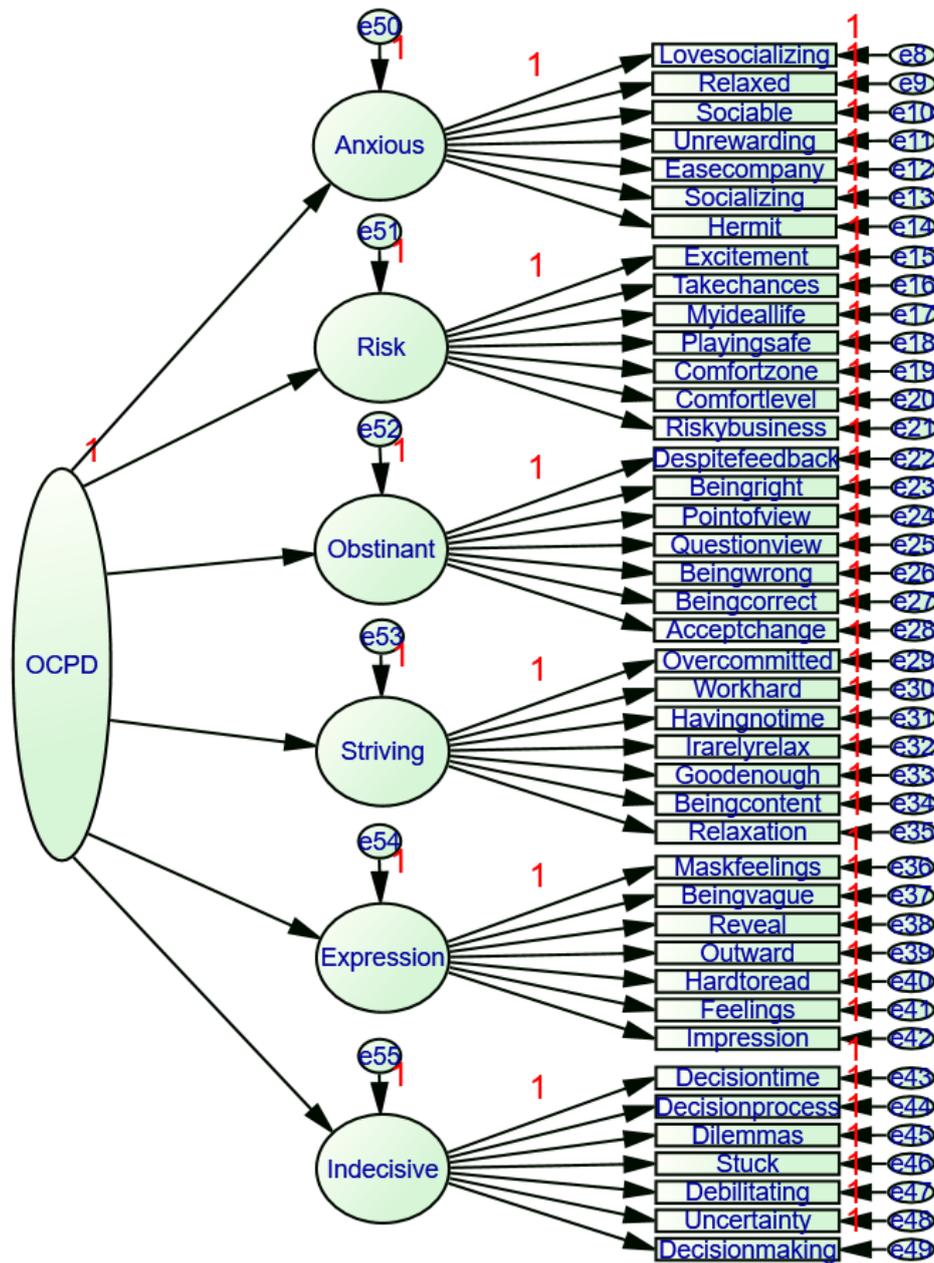


Figure 3-8 Model D: A second order 6-factor order model of maladaptive OCPD derived from Confirmatory Factor Analysis (CFA) in the cross-validation sample ( $N = 518$ )

Table 3-14 *Standardized Regression Weights for Model D*

Item		Factor	SRW
Social Anxiety	<---	OCPD	-0.63
Risk Aversion	<---	OCPD	-0.50
Obstinacy	<---	OCPD	0.66
Compulsive Striving	<---	OCPD	0.62
Constricted Expressivity	<---	OCPD	0.78
Indecisiveness	<---	OCPD	0.90
Love socializing	I always love socializing and interacting with people	Social Anxiety	0.84
Relaxed	I feel relaxed and comfortable around other people	Social Anxiety	0.82
Sociable	I am naturally relaxed and sociable with those around me	Social Anxiety	0.76
Unrewarding	I find most social interactions unrewarding or unpleasant	Social Anxiety	-0.67
Ease company Socializing	I am not at ease in the company of others I am always on the lookout for opportunities to socialize and connect with other people	Social Anxiety Social Anxiety	-0.69 0.76
Hermit	Some people might describe me as a hermit	Social Anxiety	-0.62
Excitement	I enjoy the excitement of taking risks	Risk Aversion	0.73
Take chances	I like to take chances	Risk Aversion	0.66
My ideal life	My ideal life would be free from any risk	Risk Aversion	-0.54
Playing safe	People tell me I always play safe	Risk Aversion	-0.43
Comfort zone	I regularly step outside my comfort zone to take risks	Risk Aversion	0.65
Comfort level	I am not willing to take risks that stretch my comfort level	Risk Aversion	-0.67
Risky business	I am not the kind of person that engages in risky business ventures	Risk Aversion	-0.61
Despite feedback	Despite being given repeated feedback that something is wrong I know my opinion is right	Obstinacy	0.75
Being right	I frequently believe that I am right about something, no matter what the person says or how things seem.	Obstinacy	0.68
Point of view	People have often told me that I refuse to appreciate their point of view	Obstinacy	0.70
Question view	I find it hard to question my point of view	Obstinacy	0.65
Being wrong	I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	Obstinacy	0.72
Being correct	It doesn't matter what you say or how things seem, when I am right about something I know I am correct	Obstinacy	0.53

Item		Factor	SRW
Accept change	I find it difficult to accept that someone is right even when I know they are	Obstinacy	0.74
Overcommitted	I am usually so overcommitted that I hardly ever have any spare time	Compulsive Striving	0.78
Work hard	I have often been given feedback that I work too hard or that I need to relax	Compulsive Striving	0.72
Having no time	I can't help spending too many hours on my work and having too little time for myself	Compulsive Striving	0.77
I rarely relax	I rarely relax just to relax	Compulsive Striving	0.58
Goodenough	When it comes to work, good is never good enough for me	Compulsive Striving	0.59
Being content	There are never enough hours in the day to finish my work and be content with the result	Compulsive Striving	0.69
Relaxation	I believe that relaxing, playing, or recreation must be earned	Compulsive Striving	0.19
Mask feelings	I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	Constricted Expressivity	0.82
Being vague	I often mask or hide my inner feelings from others	Constricted Expressivity	0.72
Reveal	When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	Constricted Expressivity	0.74
Outward	I think twice before revealing my true emotions to others	Constricted Expressivity	0.76
Hard to read	The outward expression of my emotions often doesn't match what's going on inside me	Constricted Expressivity	0.60
Feelings	I am a hard to read person	Constricted Expressivity	0.70
Impression	My mind often goes blank when I have to speak about my feelings	Constricted Expressivity	0.63
Decision time	For me, the process leading up to taking a decision is long and painful	Indecisiveness	0.83
Decision process	Very often, the process of making the right decision is so nerve-racking that after I finally decide on an option I feel exhausted	Indecisiveness	0.82
Dilemmas	Finding answers to dilemmas has always been a huge struggle for me	Indecisiveness	0.76
Stuck	I am often unable to make decisions and feel stuck	Indecisiveness	0.83
Debilitating	Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	Indecisiveness	0.81
Uncertainty	One of the worst experiences in life is struggling with the uncertainty of making the right choice	Indecisiveness	0.73

Item		Factor	SRW
Decision-making	Decision making has always been easy for me: I just follow my gut feeling	Indecisiveness	-0.35

*Note* SRW = Standardised Regression Weight

Table 3-15 *Standardized Regression Weights of Model B with Bootstrapped Estimates*

Item		Factor	SRW	SE	SE-SE	M	Bias	SEBias
Love socializing	I always love socializing and interacting with people	Social Anxiety	0.85	0.02	0.00	0.85	0.00	0.00
Relaxed	I feel relaxed and comfortable around other people	Social Anxiety	0.82	0.02	0.00	0.82	0.00	0.00
Sociable	I am naturally relaxed and sociable with those around me	Social Anxiety	0.76	0.03	0.00	0.76	0.00	0.00
Unrewarding	I find most social interactions unrewarding or unpleasant	Social Anxiety	-0.65	0.04	0.00	-0.65	0.00	0.00
Ease company	I am not at ease in the company of others	Social Anxiety	-0.68	0.04	0.00	-0.68	0.00	0.00
Socializing	I am always on the lookout for opportunities to socialize and connect with other people	Social Anxiety	0.77	0.03	0.00	0.77	0.00	0.00
Hermit	Some people might describe me as a hermit	Social Anxiety	-0.61	0.04	0.00	-0.61	0.00	0.00
Excitement	I enjoy the excitement of taking risks	Risk Aversion	0.79	0.04	0.00	0.78	0.00	0.00
Take chances	I like to take chances	Risk Aversion	0.72	0.04	0.00	0.71	0.00	0.00
My ideal life	My ideal life would be free from any risk	Risk Aversion	-0.48	0.06	0.00	-0.49	0.00	0.00
Playing safe	People tell me I always play safe	Risk Aversion	-0.36	0.07	0.00	-0.36	0.00	0.00
Comfort zone	I regularly step outside my comfort zone to take risks	Risk Aversion	0.70	0.05	0.00	0.69	0.00	0.00

Item	Factor	SRW	SE	SE-SE	M	Bias	SEBias	
Comfort level	I am not willing to take risks that stretch my comfort level	Risk Aversion	-0.61	0.06	0.00	-0.61	0.00	0.00
Risky business	I am not the kind of person that engages in risky business ventures	Risk Aversion	-0.56	0.06	0.00	-0.56	0.00	0.00
Despite feedback	Despite being given repeated feedback that something is wrong I know my opinion is right	Obstinacy	0.76	0.03	0.00	0.76	0.00	0.00
Being right	I frequently believe that I am right about something, no matter what the person says or how things seem.	Obstinacy	0.68	0.04	0.00	0.68	0.00	0.00
Point of view	People have often told me that I refuse to appreciate their point of view	Obstinacy	0.69	0.03	0.00	0.69	0.00	0.00
Question view	I find it hard to question my point of view	Obstinacy	0.65	0.04	0.00	0.64	0.00	0.00
Being wrong	I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	Obstinacy	0.72	0.03	0.00	0.72	0.00	0.00
Being correct	It doesn't matter what you say or how things seem, when I am right about something I know I am correct	Obstinacy	0.54	0.04	0.00	0.54	0.00	0.00
Accept change	I find it difficult to accept that someone is right even when I know they are	Obstinacy	0.73	0.03	0.00	0.73	0.00	0.00
Over committed	I am usually so overcommitted that I hardly ever have any spare time	Compulsive Striving	0.78	0.02	0.00	0.78	0.00	0.00

Item		Factor	SRW	SE	SE-SE	M	Bias	SEBias
Work hard	I have often been given feedback that I work too hard or that I need to relax	Compulsive Striving	0.73	0.03	0.00	0.73	0.00	0.00
Having no time	I can't help spending too many hours on my work and having too little time for myself	Compulsive Striving	0.76	0.03	0.00	0.76	0.00	0.00
I rarely relax	I rarely relax just to relax	Compulsive Striving	0.58	0.04	0.00	0.58	0.00	0.00
Good enough	When it comes to work, good is never good enough for me	Compulsive Striving	0.60	0.04	0.00	0.60	0.00	0.00
Being content	There are never enough hours in the day to finish my work and be content with the result	Compulsive Striving	0.69	0.03	0.00	0.68	0.00	0.00
Relaxation	I believe that relaxing, playing, or recreation must be earned	Compulsive Striving	0.20	0.05	0.00	0.20	0.00	0.00
Mask feelings	I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	Constricted Expressivity	0.82	0.02	0.00	0.82	0.00	0.00
Being vague	I often mask or hide my inner feelings from others	Constricted Expressivity	0.72	0.03	0.00	0.72	0.00	0.00
Reveal	When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	Constricted Expressivity	0.74	0.03	0.00	0.74	0.00	0.00

Item	Factor	SRW	SE	SE-SE	M	Bias	SEBias	
Outward	I think twice before revealing my true emotions to others	Constricted Expressivity	0.76	0.03	0.00	0.76	0.00	0.00
Hard to read	The outward expression of my emotions often doesn't match what's going on inside me	Constricted Expressivity	0.60	0.04	0.00	0.60	0.00	0.00
Feelings	I am a hard to read person	Constricted Expressivity	0.70	0.03	0.00	0.70	0.00	0.00
Impression	My mind often goes blank when I have to speak about my feelings	Constricted Expressivity	0.63	0.04	0.00	0.63	0.00	0.00
Decision time	For me, the process leading up to taking a decision is long and painful	Indecisiveness	0.83	0.02	0.00	0.83	0.00	0.00
Decision process	Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	Indecisiveness	0.82	0.02	0.00	0.82	0.00	0.00
Dilemmas	Finding answers to dilemmas has always been a huge struggle for me	Indecisiveness	0.76	0.03	0.00	0.76	0.00	0.00
Stuck	I am often unable to make decisions and feel stuck	Indecisiveness	0.83	0.02	0.00	0.83	0.00	0.00
Debilitating	Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	Indecisiveness	0.81	0.02	0.00	0.81	0.00	0.00

Item	Factor	SRW	SE	SE-SE	M	Bias	SEBias	
Uncertainty	One of the worst experiences in life is struggling with the uncertainty of making the right choice	Indecisiveness	0.73	0.03	0.00	0.73	0.00	0.00
Decision making	Decision making has always been easy for me: I just follow my gut feeling	Indecisiveness	-0.36	0.05	0.00	-0.36	0.00	0.00

Note SRW = Standardized Regression Weight

### 3.9.4 Construct Validity: Correlations with Other Questionnaires

#### 3.9.4.1 Zero-order correlations: convergent and divergent validity.

Correlations between the OC-PDI and the rest of the OCPD scales included in the analysis were computed to investigate the relationship between the newly developed measure and existing measures of OCPD. Table 3-14 displays the convergent relationships between the OC-PDI, SNAP-2 OCPD scale, IPDE OCPD scale and PID-5 OCPD scale (total score) and subscales. As hypothesized the OC-PDI exhibited moderate to strong convergent validity with OCPD scales of SNAP-2, PID-5 and IPDE questionnaires, with the highest correlation between OC-PDI and PID-5. Correlations of OC-PDI subscales with PID-5 subscales were also in the expected direction and of expected size. **Hypothesis 2** was confirmed.

Table 3-16 *Convergent Validity of OC-PDI with OCPD Measures and PID-5 OCPD Subscales*

	IPDE OCPD	SNAP2 OCPD	PID-5 OCPD	PID-5 Perfectionism	PID-5 Perseveration	PID-5 Restricted Affectivity	PID-5 Intimacy Avoidance
OC-PDI	0.53	0.47	0.71	0.53	0.71	0.52	0.41
Social Anxiety	0.29	0.20	0.55	0.31	0.49	0.45	0.42
Risk Aversion	0.24	0.17	0.26	0.18	0.33	0.13	0.17
Obstinacy	0.46	0.46	0.51	0.46	0.57	0.33	0.21
Compulsive Striving	0.52	0.55	0.52	0.58	0.52	0.27	0.24
Constricted Expressivity	0.40	0.38	0.62	0.38	0.50	0.63	0.37
Indecisiveness	0.40	0.30	0.57	0.40	0.65	0.38	0.33

*Note* All correlations are significant at  $p < .001$

Divergent validity is an important psychometric characteristic of instruments concerned with the extent to which a measure is novel in the sense of measuring something different from that provided by other measures of the same construct ([Campbell, 1960](#); [Clark & Watson, 1995](#); [Farrell & Rudd, 2009](#)). Given the problem of substantial comorbidity (often spurious) between different personality disorders it was paramount to produce a measure of OCPD which is high in specificity of the targeted construct. Consistent with Hypothesis 3,

the OC-PDI was significantly but only moderately correlated with IPDE subscales (Table 3-15). The highest correlations were shown for Cluster C Dependent and Avoidant personality disorder scales which was both expected and established by literature in personality disorders ([Hyler, Kellman, Oldham, & Skodol, 1992](#); [Lenzenweger et al., 2007](#); [McGlashan et al., 2000](#)). Correlations of the OC-PDI were of moderate effect size. To provide further evidence of the measure's divergent validity I examined correlations of the OC-PDI with the NA subscales of the PANAS-X. In contrast to other personality disorders, all PANAS-X NA scales are relevant to OCPD phenomenology. Therefore, the small to medium correlations with the NA scales (Table 3-16) provide an additional index of discriminant validity for the OC-PDI. **Hypothesis 3** was confirmed. Correlations with other PDs are included to better assess the relative importance of the basic NA scales in the context of personality pathology.

Table 3-17 *Divergent Validity of OC-PI with IPDE Personality Disorders Measures*

	Anankastic	Paranoid	Schizoid	Dissocial	Emotionally Unstable	Emotionally Unstable Borderline Type	Histrionic	Avoidant	Dependent
OC-PDI	.53**	.45**	.55**	.26**	.34**	.47**	.11*	.65**	.52**
Anankastic	1	.41**	.38**	.12**	.39**	.31**	.18**	.46**	.41**

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

Table 3-18 *PANAS-X Correlations with IPDE Personality Disorders*

	OC-PDI	Paranoid	Schizoid	Dissocial	Emotionally Unstable	Borderline Type	Histrionic	Avoidant	Dependent	Anankastic
Fear	.48	.40	.28	.26	.31	.47	.15	.54	.51	.26
Sadness	.54	.38	.38	.25	.26	.55	.11	.54	.49	.30
Guilt	.54	.42	.33	.28	.30	.54	.14*	.55	.52	.29
Hostility	.45	.46	.27	.32	.40	.42	.18	.48	.43	.31
Shyness	.50	.29	.35	.19	.23	.35	.02**	.55	.45	.24
Fatigue	.44	.32	.27	.23	.25	.37	.12*	.42	.37	.23

Note Correlations are significant at  $p < .001$  unless otherwise reported: \*  $p < .05$ . \*\* $p > .05$

**3.9.4.2 Hierarchical regression analyses: predictive validity.**

A hierarchical regression analysis was conducted to provide support for the hypothesis that the OC-PDI is not merely a measure of NA. The outcome variable was the PID-5 OCPD (total score) and the predictor variables were the PANAS-X trait NA subscales (Fear, Sadness, Guilt, Hostility, Shyness, Fatigue) that were entered in Step 1, and OC-PDI that was entered in Step 2. I opted for the specific PANAS-X scales in order to produce a more rigorous test of predictive validity. I chose the PID-5 OCPD as the outcome variable given that this measure is closer to the nature of OCPD as conceptualised in Lynch ([Lynch, 2018a](#); [Lynch, 2018b](#)).

After controlling for NA, which significantly predicted OCPD symptomatology ( $R^2 = .214, p < .001$ ), OC-PDI contributed an additional amount of the 28.7 % of the variance ( $p < .001$ ) beyond that of NA. Regression coefficients are presented in Table 3-17. In line with **Hypothesis 4** these findings indicate that the OC-PDI is measuring OCPD beyond that of trait NA.

Table 3-19 *Regression Coefficients of Model Predicting PID-5 OCPD*

Model	Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
	$\beta$	<i>SE</i>	$\beta$			Lower	Upper
1 (Constant)	1.59	0.06		28.65	<.001	1.48	1.69
Fear	0.01	0.04	0.02	0.23	.821	-0.07	0.09
Sadness	0.10	0.04	0.21	2.81	.005	0.03	0.17
Guilt	0.07	0.04	0.15	1.76	.078	-0.01	0.15
Hostility	0.02	0.04	0.03	0.43	.665	-0.06	0.10
Shyness	0.05	0.03	0.10	1.61	.108	-0.01	0.10
Fatigue	0.01	0.03	0.03	0.48	.630	-0.04	0.07
2 (Constant)	0.53	0.08		6.94	<.001	0.38	0.68
Fear	0.02	0.03	0.03	0.55	.582	-0.05	0.08
Sadness	0.03	0.03	0.06	1.05	.295	-0.03	0.09
Guilt	0.00	0.03	0.00	-0.02	.988	-0.07	0.06
Hostility	0.04	0.03	0.06	1.13	.259	-0.03	0.10
Shyness	-0.03	0.02	-0.05	-1.09	.275	-0.07	0.02
Fatigue	-0.01	0.02	-0.01	-0.29	.772	-0.05	0.04
OC-PDI	0.08	0.00	0.66	17.12	<.001	0.07	0.09

Another regression was conducted to examine whether the OC-PDI would predict well-being associated with OCPD beyond levels of NA. This was done using a hierarchical regression where the dependent variable was well-being and the predictor variables were

general NA entered in Step 1, followed by OCPD (OC-PDI) on Step 2 (Table 3-18). After controlling for NA which significantly predicted 25% of the variance ( $p < .001$ ), the OC-PDI significantly contributed an additional 12.5% of the variance ( $p < .001$ ) beyond that of NA (Table 3-18) – in line with **Hypothesis 5**. The same analysis was repeated at OC-PDI trait level with NA trait scales predicting 35% of the variance and OC-PDI traits an additional 18% beyond that of NA (Table 3-19).

Table 3-20 *Regression Coefficients of Model Predicting Well-being.*

Model	Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
	$\beta$	<i>SE</i>	$\beta$			Lower	Upper
1 (Constant)	4.44	0.07		65.70	<.001	4.30	4.57
General	-0.39	0.03	-0.50	-12.92	<.001	-0.45	-0.33
Negative Affect							
2 (Constant)	5.43	0.12		46.68	<.001	5.20	5.65
General	-0.23	0.03	-0.29	-7.26	<.001	-0.30	-0.17
Negative Affect							
OC-PDI	-0.07	0.01	-0.41	-10.06	<.001	-0.08	-0.05

Table 3-21 *Coefficients of OC-PDI regressed onto PANAS-X scales*

Model	Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
	$\beta$	<i>SE</i>	$\beta$			Lower	Upper
1 (Constant)	4.52	0.07		64.24	<.001	4.38	4.66
Fear	0.02	0.05	0.03	0.42	.677	-0.08	0.12
Sadness	-0.21	0.05	-0.31	-4.58	<.001	-0.29	-0.12
Guilt	-0.27	0.05	-0.39	-5.19	<.001	-0.37	-0.17
Hostility	0.14	0.05	0.17	2.69	.007	0.04	0.24
Shyness	-0.05	0.04	-0.07	-1.31	.192	-0.12	0.02
Fatigue	-0.04	0.04	-0.06	-1.03	.305	-0.11	0.04
2 (Constant)	5.20	0.12		45.24	<.001	4.97	5.43
Fear	-0.01	0.04	-0.01	-0.15	.880	-0.09	0.08
Sadness	-0.13	0.04	-0.19	-3.13	.002	-0.21	-0.05
Guilt	-0.18	0.05	-0.26	-3.84	<.001	-0.27	-0.09
Hostility	0.06	0.05	0.08	1.31	.192	-0.03	0.15
Shyness	0.06	0.03	0.08	1.76	.078	-0.01	0.12
Fatigue	-0.03	0.03	-0.04	-0.93	.353	-0.09	0.03
Social Anxiety	-0.22	0.03	-0.34	-8.28	<.001	-0.27	-0.17
Risk Aversion	-0.14	0.03	-0.17	-4.71	<.001	-0.19	-0.08
Obstinacy	0.02	0.03	0.03	0.80	.424	-0.04	0.08
Compulsive	0.09	0.03	0.12	3.29	.001	0.04	0.15
Striving							

Model	Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
Emotional Constriction	-0.04	0.03	-0.06	-1.50	.135	-0.10	0.01
Indecisiveness	-0.06	0.03	-0.09	-1.64	.102	-0.12	0.01

A final regression was conducted to examine whether the OC-PDI predicted depression associated with OCPD beyond levels of general NA. Hierarchical regression was again used where the outcome variable was depression and the predictor variables were: general NA entered in Step 1, followed by OCPD (OC-PDI) in Step 2. After controlling for NA which significantly predicted 40% of the variance ( $p < .001$ ), the OC-PDI significantly contributed an additional 7.9 % of the variance ( $p < .001$ ) beyond that of NA- in line with **Hypothesis 6**. The regression was repeated to include variables at the trait level (Table 3-21) with the first model predicting 52% of the variance and OC-PDI traits contributing significantly an additional 4.1 % of the variance. These results confirmed **Hypothesis 6**.

Table 3-22 *Regression Coefficients of Model Predicting Depression*

Model		Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
		$\beta$	<i>SE</i>	$\beta$			Lower	Upper
1	(Constant)	0.78	0.05		14.29	<.001	0.67	0.88
	Negative Affect	0.45	0.02	0.63	18.35	<.001	0.40	0.50
2	(Constant)	0.08	0.10		0.82	.415	-0.11	0.26
	Negative Affect	0.33	0.03	0.47	12.57	<.001	0.28	0.38
	OC-PDI	0.05	0.01	0.33	8.73	<.001	0.04	0.06

Table 3-23 *Regression Coefficients of Trait Level Model Predicting Depression*

Model		Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
		$\beta$	<i>SE</i>	$\beta$			Lower	Upper
1	(Constant)	0.64	0.05		11.86	<.001	0.54	0.75
	Fear	0.00	0.04	0.00	0.06	.952	-0.07	0.08
	Sadness	0.18	0.04	0.30	5.16	<.001	0.11	0.25
	Guilt	0.21	0.04	0.34	5.26	<.001	0.13	0.29
	Hostility	-0.04	0.04	-0.05	-0.91	.362	-0.11	0.04
	Shyness	-0.02	0.03	-0.03	-0.64	.525	-0.07	0.04
	Fatigue	0.14	0.03	0.23	4.98	<.001	0.09	0.20
2	(Constant)	0.23	0.10		2.32	.021	0.04	0.42
	Fear	0.01	0.04	0.01	0.23	.820	-0.07	0.08
	Sadness	0.13	0.04	0.22	3.78	<.001	0.06	0.20
	Guilt	0.17	0.04	0.27	4.15	<.001	0.09	0.25

Model	Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
	$\beta$	<i>SE</i>	$\beta$			Lower	Upper
Hostility	-0.01	0.04	-0.02	-0.27	.788	-0.09	0.07
Shyness	-0.06	0.03	-0.10	-2.21	.028	-0.12	-0.01
Fatigue	0.14	0.03	0.22	4.93	<.001	0.08	0.19
Social Anxiety	0.06	0.02	0.11	2.79	.006	0.02	0.11
Risk Aversion	0.03	0.03	0.04	1.02	.307	-0.02	0.07
Obstinacy	-0.01	0.03	-0.02	-0.38	.705	-0.06	0.04
Compulsive Striving	0.02	0.02	0.03	0.74	.458	-0.03	0.07
Emotional Constriction	0.04	0.02	0.08	1.83	.067	0.00	0.09
Indecisiveness	0.06	0.03	0.10	2.00	.046	0.00	0.12

### 3.9.4.3 Multiple linear regression: external validity.

Of paramount importance to the Study was the question of whether the OC-PDI is a better predictor of variability in depression and well-being than the existing OCPD scales included in the study. This would offer strong evidence of the external validity of the OC-PDI. To answer this question, several analyses were conducted. First, zero order correlations were calculated to assess which measure of OCPD is more strongly related to psychopathology and well-being measures which often accompany OCPD (Table 3-22). Although all correlations were significant, the relationships between the OC-PDI and the depression, well-being, decentering, and rumination scales were of greater magnitude than the relationships between PID-5 OCPD, SNAP2 OCPD, IPDE Anankastic PD and the same measures.

Table 3-24 *Zero Order Correlations of OC-PDI with OCPD Measures and Measures of Psychopathology*

	OC-PDI	PID-5 OCPD	SNAP2 OCPD	Anankastic
PHQ9 Depression	0.56	0.48	0.23	0.33
WEMWBS Well-being	-0.55	-0.45	-0.15	-0.23
Rumination	0.46	0.37	0.31	0.38
Decentering	-0.25	-0.11*	-.019*	-.057*

Note All correlations are significant at  $p < .001$ , \*  $p > .05$

Furthermore, regression analyses were performed to assess the unique predictive ability of the OC-PDI and other OCPD measures to depression. Results for depression (Table 3-23) and well-being (Table 3-24) indicated that the OC-PDI was a better predictor of well-being and depression than other measures of OCPD. In the final regression model I tested the

hypothesis that OCPD measured by OC-PDI would be a better predictor of well-being (Table 3-25) and depression (Table 3-26) than other personality disorders. These results showed that the OC-PDI is more sensitive than current OCPD measures with respect to detecting well-being and depression. The results also demonstrated that that the total score of the OC-PDI was a significantly better predictor of well-being and depression compared to other personality disorders. Overall, the results showed that OC-PDI has strong external validity and confirmed **Hypothesis 7**.

Table 3-25 OCPD Measures as Predictors of Well-Being

	Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
	$\beta$	<i>SE</i>	$\beta$			Lower	Upper
(Constant)	5.45	0.14		39.15	< .001	5.18	5.73
Anankastic	0.01	0.02	0.04	0.81	.417	-0.02	0.05
SNAP2 OCPD	0.02	0.01	0.13	2.61	.009	0.01	0.04
PID-5 OCPD	-0.22	0.08	-0.16	-2.94	.003	-0.37	-0.07
OC-PDI	-0.09	0.01	-0.53	-9.87	<.001	-0.10	-0.07

Table 3-26 OCPD Measures as Predictors of Depression.

	Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
	$\beta$	<i>SE</i>	$\beta$			Lower	Upper
(Constant)	0.07	0.12		0.55	.585	-0.18	0.31
Anankastic	0.02	0.02	0.06	1.14	.254	-0.01	0.05
SNAP2 OCPD	-0.02	0.01	-0.11	-2.22	.027	-0.03	0.00
PID-5 OCPD	0.22	0.07	0.18	3.33	.001	0.09	0.35
OC-PDI	0.07	0.01	0.46	8.54	< .001	0.05	0.08

Table 3-27 Personality Disorders and Well-Being

	Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
	$\beta$	<i>SE</i>	$\beta$			Lower	Upper
(Constant)	4.9	0.1		37.8	.000	4.68	5.20
Paranoid	0.0	0.0	0.0	0.9	.382	-0.02	0.05
Schizoid	0.0	0.0	0.0	0.4	.680	-0.03	0.04
Dissocial	0.0	0.0	-0.1	-1.9	.064	-0.09	0.00
Emotionally Unstable	0.0	0.0	0.1	1.4	.165	-0.01	0.07
Emotionally Unstable Borderline Type	-0.1	0.0	-0.2	-4.4	<.001	-0.16	-0.06
Histrionic	0.1	0.0	0.1	3.5	.001	0.03	0.11
Avoidant	-0.1	0.0	-0.2	-3.8	<.001	-0.12	-0.04

	Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
	$\beta$	<i>SE</i>	$\beta$			Lower	Upper
Dependent	0.0	0.0	0.0	-0.9	.390	-0.06	0.02
OC-PDI	-0.1	0.0	-0.3	-6.9	<.001	-0.07	-0.04

Table 3-28 *Personality Disorders and Depression*

	Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
	$\beta$	<i>SE</i>	$\beta$			Lower	Upper
(Constant)	0.38	0.11		3.34	.001	0.16	0.60
OC-PDI	0.05	0.01	0.32	6.72	.000	0.03	0.06
Paranoid	0.01	0.02	0.02	0.55	.584	-0.02	0.04
Schizoid	0.01	0.01	0.02	0.36	.722	-0.02	0.03
Dissocial	0.05	0.02	0.10	2.57	.010	0.01	0.09
Emotionally Unstable	-0.02	0.02	-0.03	-0.79	.428	-0.05	0.02
Emotionally Unstable Borderline Type	0.14	0.02	0.29	6.52	.000	0.10	0.18
Histrionic	0.01	0.02	0.02	0.57	.567	-0.02	0.04
Avoidant	0.01	0.02	0.04	0.66	.507	-0.02	0.05
Dependent	0.03	0.02	0.09	1.86	.064	0.00	0.07

### 3.10 Discussion

#### 3.10.1 Construct validity: Factorial structure of the OC-PDI

In these two studies my aim was to conceptualise and operationalise OCPD by developing a short valid measure of OCPD. I aimed specifically at producing an OCPD scale that would clearly capture the maladaptive character of OCPD and would have overall better psychometric properties than existing scales. After a review of the literature on Overcontrol and OCPD, and based on the theory by Lynch and colleagues, I produced an item pool that captured what I considered the eight most pertinent OCPD traits. An Exploratory Factor Analysis yielded a clear seven factor structure and initial good evidence of convergent validity. I tested the EFA-derived model structure using a CFA in an independent sample drawn from an online crowdsourcing platform. In CFA, the factor structure is the relationship between the latent and measured variables. The EFA, hypothetical model was fitted to empirical data and the closeness between EFA and CFA could be evaluated statistically

through goodness-of-fit indexes, which include the  $\chi^2$ /degrees of freedom ratio, and various fit indexes. Initial results suggested that a modification in the measure's structure was necessary. Due to the high intercorrelation between two factors (Fear of Failure and Indecisiveness) and in order to avoid merging two factors that were not conceptually identical into one, I reduced the number of items by dropping the Fear of Failure factor to produce a scale with a simple and robust six-factor structure. Indecisiveness is a well-established feature of OCPD and retaining the factor would plausibly increase the specificity of the measure. Fear of Failure is a broader construct which, ultimately, explains and encompasses the difficulty of taking decisions.

Relying on several indicators of model fit I compared three competing theory driven CFA models. Of the three solutions which were theoretically plausible and offered acceptable fit one solution (Model C) did not gather all elements of a robust structure. On the other hand, manifest variables in Model B and D loaded significantly ( $p \leq .001$ ) on their hypothesized latent factors, and produced a good combination of fit indexes, with Model B offering the best solution.

Therefore, further to removing the Fear of failure factor, the solutions presented, clearly showed that the construct of OCPD is multifactorial: Both Model B and Model D were superior to the one-factor Model C. This is in accordance both with the theory upon which the measure was based ([Lynch, 2018a](#); [Lynch, 2018b](#)) and the literature on OCPD ([Chapman et al., 2007](#); [Costa et al., 2005](#); [Hertler, 2015c](#)). It should be noted however that even Models B and D were not optimum in terms of fit indices. One reason for this might be that certain items, more specifically the items that did not fare well in the internal reliability of the OC-PDI subscales have increased error variances. Inspection of modifications indices in both Model A and Model D confirmed this. Nevertheless, further research needs to be carried out to confirm whether these items need to be removed from the OC-PDI, ideally in clinical samples or populations who score high in OCPD traits. The size of the current sample could not support oversampling for people high in OCPD and therefore the results of the study are limited in this respect.

### **3.10.2 Convergent Validity**

The OC-PDI converged with all measures of OCPD included in Study 4. Correlations with the PID-5 OCPD, SNAP-2 OCPD, and IPDE Anankastic PD were all statistically

significant of the expected magnitude and in the expected direction. The highest correlation obtained was with the PID-5 OCPD scale which is a good indicator of the OC-PDI's convergent validity as the PID-5 was developed to endorse the dimensional approach of conceptualizing maladaptive personality traits as opposed to the categorical criterion approach reflected in the SNAP-2 and IPDE OCPD scales. The OC-PDI total score showed a higher correlation with the Perseveration subscale of the PID-5, followed by PID-5 Rigid Perfectionism which is necessary to endorse in order to provide diagnosis of OCPD. This is not surprising given the OC-PDI's theoretical conception and emphasis on fearful social interaction ([Lynch, 2018a](#)).

Plausibly, the most interesting finding is the low correlation of the OC-PDI with the PID-5 Intimacy Avoidance scale. The Intimacy Avoidance scale comprises items like “I prefer to keep romance out of my life” and the reverse-scored “I enjoy being in love” ([Krueger et al., 2012b](#)). But no phenomenological or indeed any empirical study of OCPD has provided evidence that people with OCPD prefer to be alone or stay away from romantic relationships. This is a characteristic which belongs to Cluster A disorders. Therefore, Study 4 adds to the evidence based suggesting that the intimacy avoidance should not be part of the OCPD diagnosis.

Results on the facet analysis were also good. More specifically most OC-PDI subscales showed statistical convergence with PID 5 subscales, of the expected magnitude and direction. The OC-PDI Emotional Constriction subscale was highly correlated with the PID-5 Restricted Affectivity scale. The OC-PDI Compulsive striving scale was highly correlated with the PID-5 Rigid Perfectionism subscale. The OC-PDI Risk Aversion was not significantly associated with any of the PID-5 scales, but all relationships were in expected directions. The OC-PDI indecisiveness subscale, also did not correspond to a specific PID-5 subscale. Its high correlation ( $r = .65$ ) with Perseveration was therefore unexpected and it is a finding that merits replication as the only PID-5 Perseveration item that seems associated with indecisiveness is “I get stuck on things a lot”. The OC-PDI Social Anxiety subscale correlated highly with the PID-5 Restricted Affectivity but even higher with the PID-5 Perseveration subscale. Clearly these findings need to be replicated and complemented with trait measures more specific to the facet structure of the OC-PDI (see Chapter 4).

### 3.10.3 Divergent Validity

The divergent validity of the OC-PDI was examined using correlations with the personality disorder scales of the IPDE screening questionnaire. The pattern of correlations provided evidence of good divergent validity for the measure. As expected the highest magnitude correlation was between the OC-PDI total score and IPDE OCPD subscale.

Equally expected and comparable to published data were the magnitudes of correlations with the Cluster C, Dependent and Avoidant PD, followed by Cluster A disorders and finally Cluster B PDs ([Clark et al., 2014](#); [Clark, 2007](#); [Lenzenweger et al., 2007](#)). Indeed, OCPD comorbidity follows exactly this pattern, with histrionic PD being the polar opposite of OCPD.

Of importance are the positive correlations of the OC-PDI with facets of NA. Although the neuroticism domain predicts a number of psychopathological outcomes, there is evidence that individual traits within the neuroticism cluster—which is shared by all PDs—predict uniquely the course of mental disorder such as depression ([Manning, Chan, & Steffens, 2017](#)) but also serious physical disease ([Busch, Possel, & Valentine, 2017](#)).

Correlation of OC-PDI with shyness was the highest among all PDs except for Avoidant PD. The link of maladaptive shyness with psychopathology has been explored from the viewpoint of a number of different perspectives and is an important one ([Cheek & Busch, 1981](#); [Jackson, Fritch, Nagasaka, & Gunderson, 2002](#); [Lahat et al., 2018](#)). The high magnitude of the correlation— not captured by the IPDE— is a strong indicator of the OC-PDI's construct validity: it is in agreement with the theory on overcontrolled disorders by [Lynch \(2018a\)](#) whereby individuals with OCPD are described as socially inept and avoid the limelight at all costs. Shyness represents a barrier in social interaction and this could plausibly be another variable that determines the emotional and social isolation of overcontrolled individuals. It should be noted that the Neuro-biosocial model of Maladaptive OC by Lynch prioritises the feeling of (lack of) safety in the social environment as the proximal factor of the emotional isolation experienced by OC individuals. Shyness is a related ([Jackson et al., 2002](#)) but distinct characteristic of OCPD not addressed in the literature with respect to phenomenology or assessment.

The hostility subscale is somewhat a misnomer as it captures anger against others although some of the items pertain to anger in general. [Waller et al. \(2003\)](#) found higher

levels of anger and anger suppression among women with eating disorders. This profile is very similar to the phenomenology of Maladaptive Overcontrol ([Lynch, 2018a](#)) and specifically the construct of “emotional leakage” as manifestation of anger suppression ([Lynch et al., 2016a](#)). Moreover, hostility is linked to worse treatment response of depression over time ([Manning et al., 2017](#)) as well as increased suicidal behaviour in depressed patients ([Christodoulou et al., 2017](#)). This is the kind of depression that typically accompanies OCPD. The correlation is another good indicator of the OC-PDI’s construct validity in line with the phenomenology of OCPD by Lynch who suggests that feelings of hostility are especially pertinent in OCPD who perceive the social world (and very often significant others) as hostile and may repress or act on this hostility. The finding adds to the limited evidence showing hostility is strongly linked to overcontrolled personality ([Brad, Coupland, & Olver, 2014](#); [Hershorn & Rosenbaum, 1991](#)). More specific measures of anger and hostility might offer a better insight into this line of research.

Finally, the correlation of OC-PDI with Fatigue is a finding of significance and a good indicator of the measure’s construct validity. The correlation with the PANAS-X Fatigue scale was the highest correlation among all PDs. It is the second time that Fatigue is specifically linked to OCPD after the study by [Burkauskas et al. \(2018\)](#) who found a strong link between mental fatigue and OCPD even after controlling for depression scores (BDI-II), age, gender, medication use, and reduced motivation.

#### **3.10.4 Predictive Validity, and Relationship with Depression and Well-Being.**

Most empirical studies about therapeutic interventions in personality disorders use OCPD measures almost exclusively in assessment; therapeutic success is mainly measured in terms of reducing symptoms and dysfunctional behaviours or improving well-being. The OC-PDI was developed primarily but not exclusively as a measure of assessment. However, it was important to examine the extent to which OC-PDI (and OC-PDI facets) predict general well-being and depression. The OC-PDI showed excellent predictive validity in terms of well-being and good predictive validity in terms of depression, which at the facet level only minimally increased the variance explained. Although our hypotheses were confirmed the finding about depression is not optimal.

The link between obsessive compulsive personality traits with depression is strong and well established ([Diaconu & Turecki, 2009](#)). Depression in Study 4 was measured with the

PHQ-9, a widely used open access screening instrument for depression in health and community settings with strong evidence supporting the validity of the one-factor PHQ-9 as a measure of depression in the general population ([Kocalevent, Hinz, & Brahler, 2013](#)). However, the use of additional measures of depression and related constructs (i.e., especially anhedonia) would offer more information about the qualitative aspects of the highly debilitating nature of depression in OCPD. This is a limitation of the current investigation and is explored in the next chapter.

### **3.10.5 External Validity.**

This withstanding, the OC-PDI had excellent external validity. The OC-PDI showed significant medium size correlations with NA, depression, well-being, decentering, and rumination. The relationship with rumination is of particular importance as it may act as a proximal mechanism via which vulnerability factors affect depression ([McLaughlin & Nolen-Hoeksema, 2011](#); [Robinson & Alloy, 2003](#)). The results on decentering are noteworthy. Decentering is the ability to observe one's thoughts and feelings as temporary events in the mind, as opposed to reflections of the self that are necessarily true ([Safran & Segal, 2004](#)). It is a concept with a long history in cognitive therapy of depression ([Beck, 1979](#); [Clark & Beck, 1999](#)) as an active component in producing treatment effects and more recently it has been related to the construct of metacognitive awareness ([Teasdale et al., 2002](#)), a possible mediator of the reduction in relapse that results from Mindfulness-Based Cognitive Therapy (MBCT) for depression ([Segal, Williams, & Teasdale, 2002](#); [Watkins, Teasdale, & Williams, 2000](#)). In essence, decentering epitomizes the antithesis of the ego-syntonic, ego-centric, obsessive thinking that characterizes individuals with OCPD ([Hertler, 2015c](#)). As such the concept of decentering is of relevance to OCPD psychopathology by virtue of its converse relationship with obsessive preoccupation. The results are highly supportive of the superior external validity of the OC-PDI against other OCPD measures. However, it is surprising that two out of four measures of OCPD did not produce significant negative correlations with decentering. Future research should fill this gap of knowledge in OCPD psychopathology, in the context of emotion regulation ([Hayes & Feldman, 2004](#); [Mennin & Fresco, 2009](#)). The role of emotion regulation in OCPD is discussed in Chapter 5.

Moreover, the OC-PDI predicted the highest amount of variance of depression and well-being compared to other PD measures. This is another finding of significance which contradicts previous findings that OCPD is associated with higher well-being and less functional impairment compared to other personality disorders ([Skodol et al., 2002](#)). Overall,

these results confirm the discriminatory power of the newly developed measure against existing OCPD scales in terms of prediction of well-being and depression. The results also confirm that the OC-PDI has strong external validity and that the total score of the scales can be used in the diagnosis of OCPD as well as a measure of OCPD severity.

### **3.10.6 Conclusion**

In summary, the findings showed that the OC-PDI is a reliable and valid measure of OCPD, introduces the facet Social Anxiety as a core aspect of the OCPD construct, and confirms the strong comorbidity between OCPD and depression and the effect of OCPD on well-being. The OC-PDI may be used to identify individuals who are at high risk of having OCPD in a general and specialist adult mental health setting as well as a measure of OCPD severity. Researchers and clinicians might want to adopt higher thresholds depending on the nature of the sample and the relative significance of sensitivity and specificity in their research or clinical investigation. A limitation of the study is the absence of a clinical sample and clinician-administered semi-structured questionnaires in terms of PD diagnoses. Further research is required to establish whether the factorial structure of the OC-PDI will be confirmed in a population high in OCPD traits and/or a clinical sample. The OC-PDI is the shortest of the OCPD measures published (along with the FFOCI). The high internal consistencies of the six subscales suggest that the scales can be shortened without compromising the psychometric properties of the scales. The factor structure and psychometric properties of a shortened version of the measure would also need to be investigated in a clinical sample.



## **Chapter 4: Exploring the Construct Validity of the OC-PDI Against PID-5 OCPD Using a Sample of Participants Scoring High in OCPD traits.**

### **4.1 Abstract**

As part of Chapter 3 I developed and validated a six-factor 42-item self-report measure of OCPD. The OC-PDI showed strong psychometric properties in samples of students and crowdsourcing contributors. The first aim of this Study was to cross-validate the factor structure of the OC-PDI in a sample of participants scoring high in OCPD traits. The second aim was to compare the predictive validity of the measure developed with the PID-5 OCPD trait measure. The Study further aimed to demonstrate the conceptual relationship of the OCPD construct with the facet of Social Anxiety, by means of a self-report questionnaire of Social Interaction Anxiety, and to confirm the hypothesis that Intimacy Avoidance (one of the four facets that operationalise OCPD in Criterion B of the Section III of DSM-5) is not theoretically related to OCPD. Moreover, I aimed to show that OCPD is strongly associated with Dysthymia. Finally, to my knowledge this is the first study that has investigated the role of Emotion Regulation and Coping in a sample of patients with OCPD traits. I also tested the hypotheses that deficits in Emotion Regulation and Coping would mediate the relationship between OCPD and measures of well-being, anxiety and depression.

## 4.2 Background

The assessment of personality and personality disorders (PDs) remains a perplexing issue, linked closely with classification. The two broad approaches to the classification of PDs, the categorical and the dimensional, were discussed at length in the first chapter of this thesis. There is minimal empirical support for the categorical system, which, nevertheless, is still in force after the APA Board of Trustees' voted to keep the DSM-IV categorical diagnostic system for PDs in the main section of DSM-5 and to include the new dimensional model as an "alternative DSM-5 model for personality disorders" in Section III of DSM-5 ([Krueger & Markon, 2014](#); [Oldham, 2015](#)). Assessment of a PD in specialist settings includes a structured clinical interview, detailed history taking, and consideration of presentation and symptomatology as well as acquiring information from sources other than the patient ([Banerjee, Gibbon, & Huband, 2009](#)). Self-report instruments differ substantially in reliability and validity. Two self-report measures have been developed to aid clinicians in diagnosis and comprehensive evaluation of OCPD: the 48-item Five-Factor Obsessive-Compulsive Inventory-Short Form (FFOCI-SF) ([Crego et al., 2015b](#); [Griffin et al., 2018](#)) and the 49-item Pathological Obsessive Compulsive Personality Scale (POPS) developed by [Pinto et al. \(2011\)](#). However, as shown in Section 3.3.3 of Chapter 3, the operationalization and validity of these measures are not good, and they fail to capture what I propose to be core OCPD traits, such as Social Anxiety and Indecisiveness. To fill this gap, I have developed a two-step algorithm to guide the assessment of OCPD: the Brief Overcontrol Scale, a brief screening measure, which measures the Obsessive Personality type but does not warrant an OCPD diagnosis and the Obsessive-Compulsive Personality Disorder Inventory (OC-PDI), a more in depth self-report measure which should be administered to participants who, as a result of an initial assessment, merit a more thorough evaluation for presence of OCPD.

### 4.2.1 Factor structure and internal consistency of the OC-PDI

The factor structure of the OC-PDI has been confirmed in a non-clinical sample ( $N = 572$ , see Chapter 3) but not yet amongst those individuals with high OCPD traits. The first objective of this study was to cross-validate the 6-factor structure of the measure (comprising the factors of Social Anxiety, Risk Aversion, Obstinacy, Compulsive Striving, Constricted Expressivity and Indecisiveness) and assess its psychometric properties in a sample of participants who endorsed six or more criteria in the OCPD scale of the International

personality disorder examination ICD-10 screening questionnaire (IPDE-SQ) ([Loranger et al., 1997](#)), a screening measure of personality disorders (PDs). Our first three hypotheses were:

- **Hypothesis 1:** The OC-PDI will show a six-factor structure with good fit in a sample of participants with OCPD traits.
- **Hypothesis 2:** The subscales of the OC-PDI will be internally consistent, as measured by Cronbach's Alpha coefficients of  $>.7$ .
- **Hypothesis 3:** Participants with OCPD traits (as measured by a score of  $\geq 6$  on the IPDE-SQ OCPD scale) will score significantly higher on the six subscales the OC-PDI scale compared to participants in the non-clinical group (as measured by a score of  $< 6$  on the IPDE-SQ OCPD scale).

#### 4.2.2 OC-PDI relationship with PID-5 OCPD and Social Interaction Anxiety

In Chapter 3 I presented evidence supporting the convergent, divergent, and predictive validity of the OC-PDI. The second objective of this Study was to offer further evidence on the measure's construct validity in people with OCPD traits as measured by the IPDE-SQ OCPD subscale. To this end, I aimed to investigate the psychometric properties of the OC-PDI using the Personality Inventory for DSM-5 (PID-5) OCPD scales ([Krueger et al., 2012a](#)) as a measure of criterion validity. The PID-5 is of particular importance because it operationalises the section III Personality Trait Model of personality disorders ([APA, 2013, pp. 773-774](#)).

In DSM-5 a diagnosis of OCPD requires the presence of Rigid Perfectionism and two or more of the pathological traits of Perseveration, Intimacy Avoidance, and Restricted Affectivity ([APA, 2013](#)). Rigid perfectionism is defined as "Rigid insistence on everything being flawless, perfect, and without errors or faults, including one's own and others' performance" (APA, 2013, p 780) and also as "...difficulty changing ideas and/or viewpoint" (APA, 2013, p 780) which corresponds to Opinionatedness or Obstinacy. Indeed, most of the scale items pertain to this definition of Perfectionism while two items capture behavioural rigidity ("I have a strict way of doing things", "It is important to me that things are done in a certain way"). In the non-clinical sample (Chapter 3), the OC-PDI total score gave a moderate to high, positive correlation with the PID-5 Rigid Perfectionism subscale. In the

three studies which focused on OCPD and investigated whether PID-5 OCPD traits of the alternative DSM-5 can predict categorical OCPD, Rigid Perfectionism emerged as the core OCPD trait ([Liggett & Sellbom, 2018](#)). The current Study focuses on OCPD and the prediction of categorical OCPD from PID-5 OCPD traits by means of evidencing the criterion validity of the OC-PDI and it is the first Study which evaluates the DSM-5 Alternative Model of OCPD in a sample of participants with OCPD traits.

In Chapter 3, the OC-PDI yielded a statistically significant, high, positive correlation with the PID-5 Perseveration subscale. The concept of Perseveration has had varied use in psychology and psychopathology spanning several fields ([Newman, Patterson, & Kosson, 1987](#); [Pyszczynski & Greenberg, 1987](#); [Sandson & Albert, 1984](#)). A related psychological construct –which informed the development of the Compulsive Striving subscale of the OC-PDI- is that of Distress Over tolerance which Lynch posited as a characteristic feature of Maladaptive Overcontrol/OCPD ([Lynch & Mizon, 2010](#); [Lynch, 2018a](#)) and which was operationalised by [Gorey et al. \(2018\)](#). Most of the items in the PID-5 Perseveration subscale are consistent with the DSM-5 definition of this trait as “persistence at tasks long after the behaviour has ceased to be functional or effective” (APA, 2013, p 768). Two items appear to depart from the concept of a reluctance and/or inability to change despite failure to achieve the desired effect: “It is hard for me to shift from one activity to another” which relates to set shifting ability and “I’ve missed out on things because I was busy trying to get something I was doing exactly right” which is conceptually closer to Rigid Perfectionism. The PID-5 Perseveration has shown a relevant consistency in studies which investigated the association of PID-5 personality traits with the respective DSM PD categorical diagnosis- reviewed in Chapter 3.

A result of importance in the Chapter 3 study was the significant but low to moderate positive association of the PID-5 Intimacy Avoidance scale with the OC-PDI. Intimacy Avoidance, defined as “avoidance of close or romantic relationships, interpersonal attachments and intimate sexual relationships” (APA, 2013, p 768), comprises items like “I’m just not very interested in having sexual relationships” and “I prefer being alone to having a close romantic partner.” However, there is no empirical support of an association between OCPD and intimacy avoidance. Lynch and colleagues ([Lynch et al., 2016a](#)) argue that overcontrolled/OCPD individuals find it hard to function in social contexts because of a lower threshold for social threat cues. More specifically it is argued that the *Temperamental Threat Sensitivity* of individuals with OCPD inhibits flexible responses to social cues and

interaction appropriate to social context- which impedes social connectedness ([Lynch et al., 2016a](#)). In turn, our operationalisation of the OC-PDI Social Anxiety trait while originating from the work of Lynch, differs in that OCPD Social Anxiety does not entail “low affiliation needs”(Lynch, 2018a). The rationale for this differentiation is that the same behaviour often has a different underlying meaning or function in different PDs. Therefore, an individual with schizotypal PD will avoid or will be indifferent to social contact because they have no interest in developing intimate relationships. But an individual with OCPD will avoid social contact in order to cope with the anxiety that social interaction entails notwithstanding that they may value the development of intimate relationships (see [Banerjee et al. \(2009\)](#) for a similar distinction). Although the results in Chapter 3 are in line with our rationale, the association between Social Anxiety and OCPD has not been investigated by use of a measure of Social Anxiety. This Study tests the hypothesis that Social Anxiety (as opposed to Intimacy Avoidance) is a core feature of OCPD.

The fourth OCPD trait, operationalised in PID-5, is Restricted Affectivity. The PID-5 Restricted affectivity trait was moderately and positively correlated with the OC-PDI total score and was highly, positively correlated with the OC-PDI Constricted Expressivity subscale (Chapter 3). In DSM-5 this trait is defined as “Little reaction to emotionally arousing situations; constricted emotional experience and expression; indifference or coldness” (APA, 2013, p.769). Therefore, Restricted Affectivity in DSM-5 refers both to the emotional experience and the behavioural expression of the experience. However, it should be noted, that there is no data to suggest that people with OCPD have blunted affect. The OC-PDI operationalization is based on Lynch who argues that constricted emotional expression – but not blunted affect- is the most characteristic feature of overcontrolled disorders and OCPD ([Lynch, 2018a](#)). In line with this, the Constricted Expressivity subscale of the OC-PDI was developed to capture only inhibition of expression and not constricted emotion or aloofness which is referred to in DSM-5: “Little reaction...; indifference and aloofness in normatively engaging situations.” (APA, 2013, p 779). In summary, this is another aspect of the OC-PDI that merits further empirical investigation. In Chapter 3, I showed that OCPD is positively and strongly related to negative emotions as measured by the PANAS.

Based on the above considerations, the following hypotheses were tested (note that the terms *sub-clinical OCPD* or *group of people with OCPD traits/scoring high on OCPD traits* refer to the group of participants who endorsed six or more items on the IPDE-SQ OCPD

scale and the terms *control group* or *non-clinical group* refer to participants who scored < 5 on the IPDE-SQ OCPD scale

- **Hypothesis 4:** OC-PDI Total score will predict OCPD (as measured by the IPDE-SQ OCPD scale) over and above PID-5 OCPD (measured by the Mean of PID-5 Rigid Perfectionism, PID-5 Perseveration, PID-5 Restricted Affectivity and PID-5 Intimacy Avoidance).
- **Hypotheses 5-6:** Social Interaction Anxiety (as measured by the SIAS) (**H5**) and OC-PDI Social Anxiety (**H6**) will be a stronger predictor of sub-clinical OCPD than the PID-5 defined Intimacy Avoidance.
- **Hypothesis 7:** In the group of people with OCPD traits, Social Interaction Anxiety (as measured by the SIAS) will be a stronger predictor than PID-5 Intimacy Avoidance of PID-5 OCPD (measured by the Mean of PID-5 Rigid Perfectionism, PID-5 Perseveration and PID-5 Restricted Affectivity).

#### 4.2.3 OC-PDI relationship with Anxiety, Depression and Emotion Regulation difficulties

The relationship of OCPD with anxiety and depression is well documented ([Ansell, Pinto, Crosby, Becker, Anez, et al., 2010](#); [Burkauskas et al., 2018](#); [Diaconu & Turecki, 2009](#)) and was presented in detail in Chapter 1. In clinical settings people with OCPD are far more likely to be treated for comorbid depression and/or anxiety given the relative absence of successful treatments for OCPD ([Diedrich & Voderholzer, 2015](#)). The Coping strategies used by patients with OCPD traits when confronted with challenging social situations and adversity are posited to maintain anxiety and increase depression ([Lynch et al., 2016b](#); [Lynch, 2018a](#)). I expect that the OC-PDI will predict both anxiety and depression, within the group of participants with OCPD traits, thereby offering further evidence regarding the predictive validity of the measure. I also propose that OCPD severity as well as comorbid psychopathology in OCPD is mediated by poor Emotion Regulation skills.

In a related vein, constricted emotional expression being the opposite pole of dramatic emotional expression, may be a sign of poor regulation of emotion. This notion, that people with OCPD lack the capacity to regulate their emotions effectively, has not been investigated in the PDs literature. Among different DSM 5 PDs, it is Borderline/Emotionally Unstable Personality Disorder (BPD) which has been described as a prototypical disorder of emotional

dysregulation, a hypothesis initially based on the labile and dramatic behavioral patterns typically seen in BPD patients, which was confirmed by research showing deficits in Emotion Regulation skills in people with BPD ([Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006](#); [Linehan, 1993a, 1993b](#); [Yen, Zlotnick, & Costello, 2002](#)). I argue that poor regulation of emotion underlies the high distress tolerance and constrained behavior of people with OCPD.

- **Hypotheses 8:** The effect of OCPD (measured by the IPDE-SQ OCPD scale) on well-being will be mediated by Emotion Regulation skills (as measured by the Difficulties in Emotion Regulation Scale Short Form (DERS-SF; Kaufman et al., 2016).
- **Hypotheses 9-10:** Within the group of participants with OCPD traits the effect of OCPD (measured by the OC-PDI) on anxiety (**H9**) and depression (**H10**) will be mediated by Emotion Regulation skills.

#### 4.2.4 OCPD and Dysthymia

Personality disorders and depressive disorders often co-occur. However, the literature on comorbidity of depressive disorders other than Major Depressive Disorder MDD in patient population with PDs is sparse. Dysthymic Disorder (DD) is a chronic depressive condition associated with a high risk of relapse; in the 10-year naturalistic study by [Klein, Shankman, and Rose \(2008\)](#) the estimated relapse rate was 71.4%. The prevalence rate of comorbid DD in patients with PDs are high: [Skodol et al. \(1999\)](#) reported that among 571 subjects with personality disorders the proportion of lifetime diagnosis of Dysthymia was 74.4%. Despite this, only a handful of studies have focused on the effect of PD on Dysthymia and DD- these reported a poorer prognosis for both Dysthymia and PDs ([Hellerstein et al., 2010](#); [Klein et al., 2008](#))- and only one study has focused on the effect of personality traits on Dysthymia. In a prospective 5-year follow-up study of outpatients with early-onset DD [Hayden and Klein \(2001\)](#) estimated that cluster C personality features were associated with a lower rate of recovery from DD and higher levels of depression at follow-up. No study has so far focused on the relationship of OCPD traits with Dysthymia. I argue that early maladaptive cognitive schemas, the rigid way of thinking and unrealistic high standards of individuals with OCPD traits makes them highly vulnerable to the chronic low mood, feelings of worthlessness and excessive guilt that accompany Dysthymia. I hypothesized that:

- **Hypothesis 11:** Dysthymia will be a better predictor of sub-clinical OCPD than depression

#### 4.2.5 OCPD and Coping

Over the past two decades a lot more has become known about how patients cope with mental illness. For instance, in an early study [Dittmann and Schuttler \(1990\)](#) showed that patients with a diagnosis of schizophrenia are not passive recipients of symptoms, rather they engage in five main strategies to pursue symptomatic relief: withdrawal, increasing of social contact, cognitive control, symptomatic behaviour and adjustment of medication. Later studies confirmed a wider range of Coping strategies for people experiencing psychosis (cognitive, behavioural, social, and interpersonal) ([Knudson & Coyle, 1999](#); [Wykes, 2004](#)). Interestingly, [Farhall, Greenwood, and Jackson \(2007\)](#) confirmed that Coping strategies are similar across cultures for patients with a diagnosis of schizophrenia. Extensive research on Coping mechanisms has been carried out in regard to other common mental problems including depression ([Coyne, Aldwin, & Lazarus, 1981](#); [Horwitz, Hill, & King, 2011](#); [Reynolds & Brewin, 1998](#)), chronic pain ([Andrews, Strong, & Meredith, 2012](#); [Peres & Lucchetti, 2010](#)), and Anxiety Disorders ([Cisler, Olatunji, Feldner, & Forsyth, 2010](#); [Helbig-Lang & Petermann, 2010](#)). Fewer are the studies that have explored Coping among people with PDs, with the possible exception of BPD ([Holm & Severinsson, 2008](#); [Jacob & Arntz, 2013](#); [Neacsiu, Rizvi, Vitaliano, Lynch, & Linehan, 2010](#)). To my knowledge no prior study has investigated Coping in people with OCPD traits or OCPD diagnosis. In this study I sought to identify the adaptive and maladaptive strategies that people with OCPD traits use. My hypotheses were:

- **Hypothesis 12:** Within the group of participants with OCPD traits the effect of OCPD (measured by OC-PDI) on anxiety will be mediated by Emotion Regulation skills and maladaptive Coping skills (as measured by the DERS-SF and COPE).
- **Hypothesis 13:** Within the group of participants with OCPD traits the effect of OCPD (measured by OC-PDI) on Dysthymia will be mediated by Emotion Regulation skills and maladaptive Coping skills (as measured by the DERS-SF and COPE).

#### 4.2.6 Testing Alternative OCPD traits

As the PID-5 operationalizes criterion B of the alternative model of personality disorders (Krueger & Markon, 2014) I tested an additional hypothesis related to PID-5 OCPD which also bears on the OC-PDI. More specifically, as explained in Chapter 1, Lynch (Lynch, 2018a; Lynch, 2018b) argues that Maladaptive Overcontrol is the result of three interrelating biotemperamental dispositions; *High Temperamental Threat Sensitivity*, *Low Temperamental Reward Sensitivity*, and *High Temperamental Inhibitory-Control*, thus reflecting the Cloninger's Tridimensional Personality Model (Cloninger, 1987) and more closely the three-temperament model by Clark (2005). Lynch argues that the aetiopathology of overcontrol is linked to all three higher order factors or diatheses. Whereas the OC-PDI development has been informed by the trait expressions of Temperamental Threat Sensitivity and Temperamental Inhibitory-Control, no trait has been included to capture facets that reflect Low Temperamental Reward Sensitivity. However, the PID-5 includes the trait of Anhedonia which has typically been associated with DSM-IV cluster A personality disorders. On the other hand, Hertler argues that the cardinal feature of OCPD is a state of constant urgency which in PID-5 could best be captured by the trait of Anxiousness (Hertler, 2013, 2015c, 2015d). In view of the current uncertainty in the literature over which personality traits should cover criterion B of the dimensional model of OCPD I investigated whether the predictive power of PID-5 OCPD would be increased if I included the traits of Anxiousness and Anhedonia in the PID-5 OCPD construct. Because the PID-5 Intimacy Avoidance is not in agreement with either theory this trait was removed from the model and was replaced with Anxiousness and Anhedonia. Therefore, I tested the following hypothesis:

- **Hypothesis 14:** Within the sample of participants scoring high in OCPD traits the traits PID-5 Anxiousness and PID-5 Anhedonia will predict OCPD (as measured by the OC-PDI scale) over and above the PID-5 OCPD traits of Rigid Perfectionism, Perseveration and Restricted Affectivity.

## 4.3 Method

### 4.3.1 Design and procedure

The study was approved by the Southampton Research Ethics Committee and received governance approval by the Insurance and Research Governance Office. The cross-sectional design was used in order to report norms for a) general population and b) people with OCPD traits.

Although standardised clinical interviews and multimethod assessment are optimal when assessing PDs, such methods are often prohibitive (due to resources and cost) in large scale studies ([Lewin et al., 2005](#)). The International personality disorder examination ICD-10 screening questionnaire (IPDE-SQ) ([Loranger et al., 1997](#)) is a screening measure of PDs. The choice of the IPDE-SQ was largely dictated by the fact that it was designed in accordance with operational criteria that are set out within ICD-10, the taxonomy published by the World Health Organization (WHO). With reference to OCPD the ICD-10 taxonomy is superior to the DSM-5 categorical system of PDs, which continues to include hoarding and miserly spending style as diagnostic criteria of OCPD, despite the evidence against such classification ([Ansell, Pinto, Crosby, Becker, Añez, et al., 2010](#); [Hummelen, Wilberg, Pedersen, & Karterud, 2008](#)).

The use of the IPDE-SQ is not without caveats. It was designed to be an initial screen to detect presence of PD, followed by a comprehensive clinical assessment, with a score of  $\geq 3$  being the standard cut-off score for detecting presence of PD. However, the standard cut-off of three affirmative answers within any category for the IPDE-SQ has often produced false positives ([Lewin et al., 2005](#); [Loranger et al., 1997](#); [Magallon-Neri et al., 2013](#)). Therefore, adjusted cut-off points have been proposed instead depending on context, population, setting and the aim of the study: the most common adjustment is the use of a cut-off score of four or more answers ([Fernandez del Rio, Martinez Vispo, & Becona, 2011](#); [Slade & Forrester, 2013](#); [Slade, Peters, Schneiden, & Andrews, 1998](#)). Although self-report instruments designed to identify mental disorders should achieve a balance of sensitivity and specificity ([Slade et al., 1998](#)), this balance for the purposes of this Study was skewed towards specificity. This was because the aim of Study 5 was not merely to detect sub-threshold personality pathology rather to achieve the highest probability that participants oversampled for OCPD by means of the screener, in our study, qualify for a diagnosis of OCPD; thereby bringing the sample of the study as close as possible to a clinical sample. No studies have explored the use of different IPDE-SQ cut-off scores, specifically for OCPD. Therefore, following considerations outlined by [Magallon-Neri et al. \(2013\)](#) regarding cut-off scores depending on whether the study was designed to perform primary or secondary screening, I adopted the more stringent cut-off score of  $\geq 6$  to ensure that the study group were closer to an OCPD sample recruited in clinical settings. Participants with a score  $< 6$  on the IPDE OCPD scale served as a control group.

Potential participants were approached via adverts posted on the E-Folio platform of the University of Southampton and in the Figure Eight contributors' platform. Figure Eight (<https://www.figure-eight.com/>) is a Machine Learning platform which hosts commercial and academic research projects providing high-quality data ([Gadiraju, Kawase, Dietze, & Demartini, 2015](#); [Vakharia & Lease, 2015](#); [Van Pelt & Sorokin, 2012](#)). The survey ran at Level 3 of the Figure Eight platform (the highest option available). It was therefore available to contributors with rich experience in both academic and commercial surveys. University students received research credits for their participation. For Figure Eight participants, the manual bonus system was used: contributors were awarded a standard amount for taking part and an additional amount of \$3 if they achieved 100% accuracy in the random response scale, included in the survey.

The survey was run on the iSurvey platform, developed by the University of Southampton to host surveys, experiments, and other online research. Participants were directed to the iSurvey link which included an information sheet and consent form. All participants provided informed consent by agreeing to the online consent statement and clicking on the option to continue to the online survey.

#### **4.3.2 Participants**

Participants were undergraduate students from the University of Southampton and contributors on the Figure Eight platform. I used two inclusion criteria: participants needed to be over 18 years of age and native or fluent speakers of English

In total, 1,814 participants completed the survey, of which 1,437 participants were recruited from Figure Eight (FE) and 377 were undergraduate students at the University of Southampton. Of these, 302 students and 805 FE contributors passed the random response scale, i.e., answered correctly to all items of the random response scale. The data of the remaining 1,107 participants were examined for total time taken to finish the survey. Thirteen participants completed the survey in less than 10 minutes, indicating that they did not take time enough time to respond to the questions thoughtfully; the data of these participants were deleted. Six participants left all answers of the IPDE-SQ scale blank. The data of these participants were also deleted. No participant showed a uniform responding pattern, i.e., answered questions in the same way (e.g., all option 1) to every question of at least one question block of 20 items.

The mean age of participants in the final sample ( $N = 1088$ ) was 29.94 years old ( $SD = 11.90$ ). Of these 559, (51.42 % of the sample) were female participants (age  $M = 28.51$ ,  $SD = 12.36$ ) and 526 (48.49% of the sample), were male participants (age  $M = 31.51$ ,  $SD = 11.16$ ), with one participant identifying as other and four with missing values. The majority of participants were British (21.74%), followed by Hispanic (19.36 %). Figure 4-1 shows the ethnicity of the entire sample.

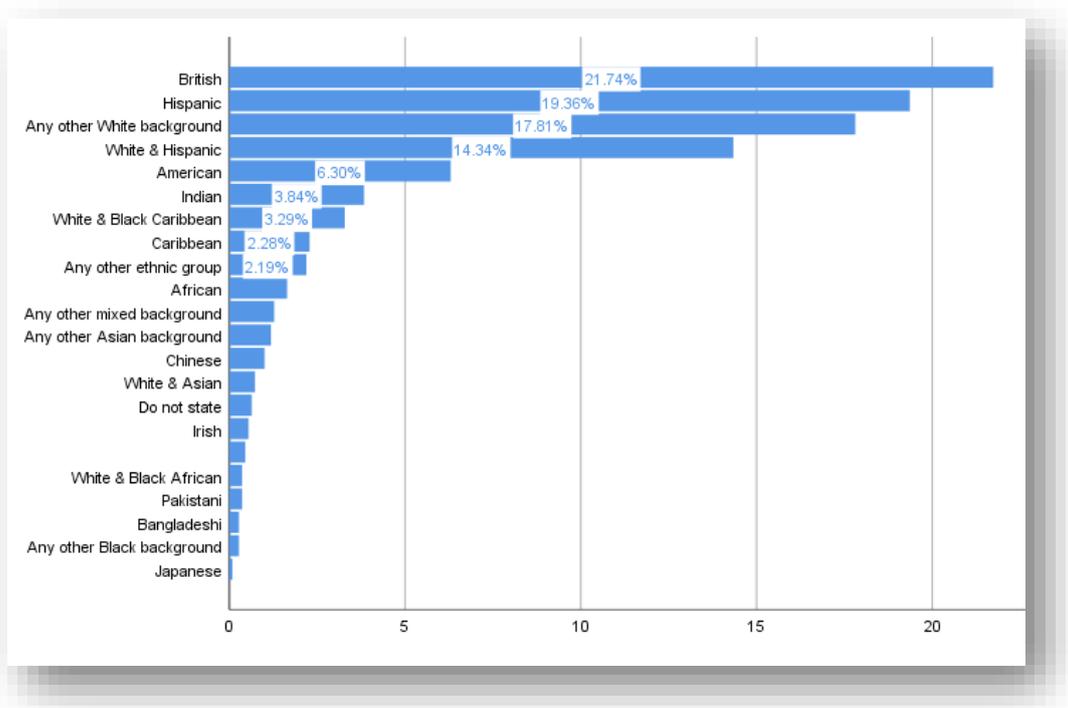


Figure 4-1 Ethnicity of participants in the final sample ( $N = 1088$ )

Of the 1088 participants in this Study, 227 participants met the criterion of IPDE-SQ  $\geq 6$ . The sub-clinical group had a mean age of 29.12 years ( $SD = 11.04$ ) with 118 participants, 52.42 % of the sample consisting of female participants (age  $M = 26.92$ ,  $SD = 11.24$ ) and 47.58 % of the sample (age  $M = 31.55$ ,  $SD = 10.34$ ) consisting of male participants. The control group of 861 participants had a mean age of 30.19 years of age ( $SD = 12.13$ ) with 51.17 % of the sample (age  $M = 29.00$ ,  $SD = 12.64$ ) consisting of female participants and 48.72% male participants (age  $M = 31.52$ ,  $SD = 11.39$ ). Ethnicity of the two groups is shown in Figure 4-2 and Figure 4-3.

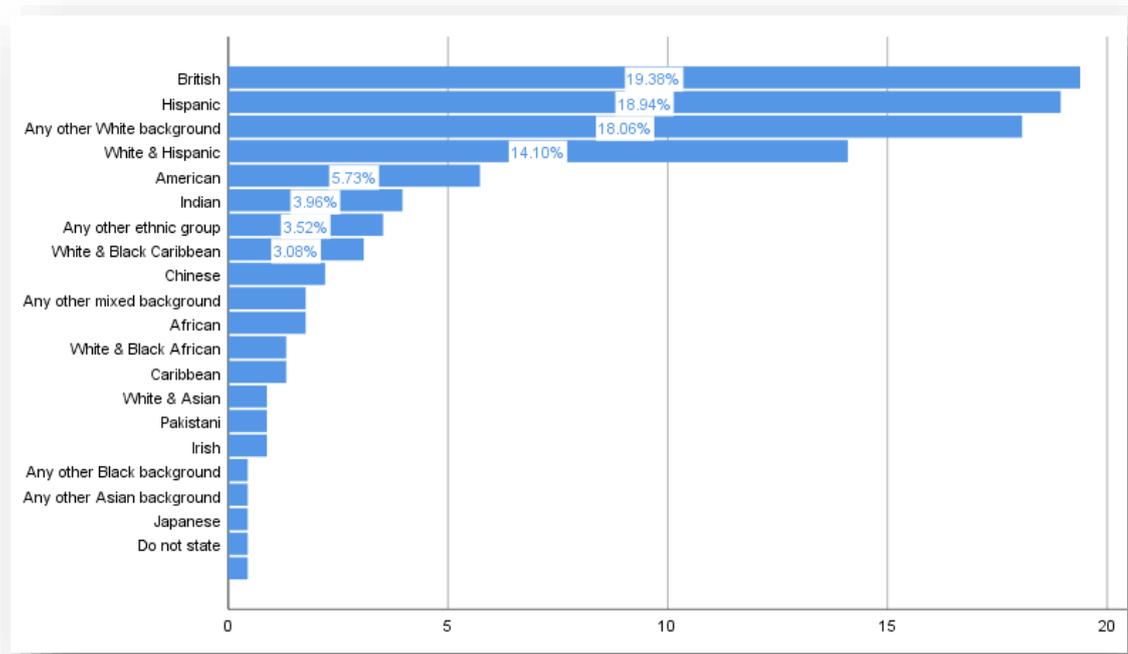


Figure 4-2 Ethnicity within the sub-clinical group (N = 227)

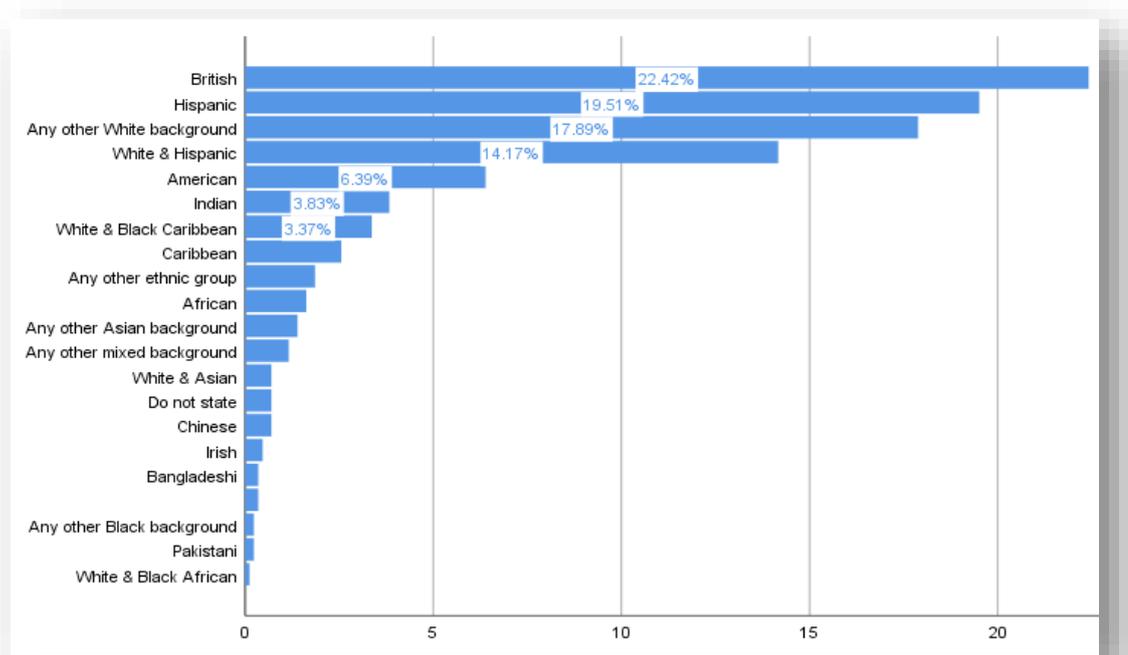


Figure 4-3 Ethnicity within control group (N = 861)

### 4.3.3 Materials

The study included the following self-report questionnaires:

**IPDE-ICD-10 International Personality Disorder Examination Screening questionnaire (IPDE-SQ)-OCPD subscale.** The IPDE SQ ([Loranger et al., 1997](#)) is a self-administered form which includes 77 DSM-IV or 59 ICD-10 items. Participants respond either ‘True’ or ‘False’ to each item and can complete the questionnaire in fifteen minutes or less. Studies that have investigated the psychometric properties of the 59 ICD-10 screener have shown that the IPDE screener is a valid instrument for diagnosing PDs, including OCPD, and across several samples including the community and nonclinical populations ([Braden & Sullivan, 2008](#); [Lenzenweger, Loranger, Korfine, & Neff, 1997](#); [Lewin et al., 2005](#); [Loranger et al., 1994](#); [Magallon-Neri et al., 2013](#); [Martin et al., 2013](#); [Schroeder et al., 2010](#); [Slade & Forrester, 2013](#)). As noted, a caveat for the use of the IPDE-SQ is the use of the 3-item cut-off point when screening for PDs in certain populations ([Alvaro-Brun & Vegue-Gonzalez, 2008](#); [Fernandez del Rio et al., 2011](#)). To address this issue I took into account research which shows that superior validity is achieved when the cut-off point is modified to four or more answers ([Lewin et al., 2005](#); [Slade et al., 1998](#)) and five/six or more affirmative answers depending on the aim of the study ([Magallon-Neri et al., 2013](#)). Recruiting an oversampled for OCPD traits group from a nonclinical sample by means of a stricter criterion I aimed to increase the specificity of the IPDE-SQ and by implication to allow for a valid examination of the factorial structure of the OC-PDI and testing the Study hypotheses. The cut-off point of responding affirmatively to six or more answers was therefore chosen as the optimal cut-off point for the IPDE-SQ. Example items for the OCPD scale include: “People think I am too stiff or formal”, “I work so hard I don’t have time left for anything else”, and “People think I’m too strict about rules and regulations”.

**Obsessive Compulsive Personality Disorder Inventory (OC-PDI).** The OC-PDI is a 42-item self-report scale which captures six OCPD traits (Social Anxiety, Risk aversion, Obstinacy, Compulsive Striving, Constricted Expressivity, and Indecisiveness). It is rated on a 6-point Likert scale (1 = *disagree completely* to 6 = *agree completely*). In Chapter 3 I have shown that the OC-PDI has excellent internal consistency and good convergent, discriminant and predictive validity. The final version of the OC-PDI is shown in Appendix E.1

**Personality Inventory for DSM-5 (PID-5)** The PID-5 ([Krueger et al., 2012a](#)) is a 220-item, self-report personality trait assessment scale for people aged 18 and older, of Likert type format (0= *none of the time* to 3= *all of the time*). It operationalises the section III Personality Trait Model of personality disorders ([APA, 2013, pp. 773-774](#)) and it covers 25 lower-order trait facets: Anhedonia, Anxiousness, Attention Seeking, Callousness,

Deceitfulness, Depressivity, Distractibility, Eccentricity, Emotional Lability, Grandiosity, Hostility, Impulsivity, Intimacy Avoidance, Irresponsibility, Manipulativeness, Perceptual Dysregulation, Perseveration, Restricted Affectivity, Rigid Perfectionism, Risk Taking, Separation Insecurity, Submissiveness, Suspiciousness, Unusual Beliefs & Experiences, and Withdrawal. Elevations on a combination of scales is used to guide the diagnosis of personality disorder. A diagnosis of OCPD requires a specific profile of elevated traits on Rigid Perfectionism and in two or more of the pathological traits of Perseveration, Intimacy Avoidance, Restricted Affectivity ([APA, 2013](#)). Based on results from Chapter 3 of the thesis, and other studies reporting data on PID-5 OCPD traits, the following scales were used: Rigid Perfectionism, Perseveration, Restricted Affectivity, Intimacy Avoidance, Anhedonia and Anxiousness. Example items include: “I have a strict way of doing things” for Rigid Perfectionism, “I feel compelled to go on with things even when it makes little sense to do so” for Perseveration, “I don’t react much to things that seem to make others emotional” for Restricted Affectivity, “I prefer being alone to having a close romantic partner” for Intimacy Avoidance, “I rarely get enthusiastic about anything” for Anhedonia, and “I’m always fearful or on edge about bad things that might happen” for Anxiousness.

**World Health Organisation- Five Well-Being Index (WHO-5).** The WHO-5 is a 5-item, self-reported measure of current mental well-being. It is among the most widely used questionnaire assessing subjective psychological well-being used in different health settings and with a very wide range of clinical populations ([Bech, Lindberg, & Moeller, 2018](#); [Downs, Boucher, Campbell, & Polyakov, 2017](#); [Kessing, Hansen, & Bech, 2006](#); [Krieger et al., 2014](#); [Moller Leimkuhler, Heller, & Paulus, 2007](#); [Sisask, Varnik, Kolves, Konstabel, & Wasserman, 2008](#)). Participants rate each statement on a six-point Likert type scale (*at no time* = 0 to *all of the time* = 5) with regard to the past two weeks. The WHO-5 is unidimensional, producing a final total score of well-being of 0 to 100 with 100 representing optimal well-being. It has been found to measure aspects of psychological well-being, other than just the absence of depressive symptoms and is superior to the Short Form 36 (SF-36) mental health subscale ([Ware & Sherbourne, 1992](#)) in sensitivity of differentiating between persons whose health had declined over the past year from those whose health had not ([Bech, Olsen, Kjoller, & Rasmussen, 2003](#)). A systematic review by [Topp, Østergaard, Søndergaard, and Bech \(2015\)](#) showed that the scale is valid both as a screening measure for depression and as an outcome measure in clinical trials and has wide applicability across different study

fields. Example items include: “I have felt cheerful and in good spirits” and “I have felt calm and relaxed”

**Hospital Anxiety and Depression Scale (HADS):** The HADS was originally developed for use with patients under treatment in general hospital settings ([Zigmond & Snaith, 1983](#)). It consists of 14 items seven pertaining to anxiety and seven to depression and it is scored on a four-point Likert type (0-4) scale. Participants indicate how they have been feeling in the past week. Anchor points for the Likert type responses vary depending on the item scale e.g., “I get a sort of frightened feeling as if something awful is about to happen:” is scored as 0 for *not at all* to 3 for *very definitely and quite badly*; and “I have lost interest in my appearance” is scored 0 for *I take just as much care as ever* to 3 for *definitely*. The HADS produces two total scores for anxiety and depression which have been found to improve diagnostic accuracy for specific disorders, including Generalized Anxiety Disorder and Major Depressive Disorder ([Olsson, Mykletun, & Dahl, 2005](#)), and to predict psychosocial outcomes ([Herrmann, 1997](#)). The scale in its entirety (14 items) can also be used as a global measure of psychological distress ([Pallant & Tennant, 2007](#)). Psychometric properties of the HADS (factor structure and stability, test-retest reliability and various indices of construct validity) and its efficacy in assessing severity of Anxiety Disorders and depression have been assessed in a wide range of patient groups and settings: the HADS has performed well in psychiatric patients, primary care patients, different groups of physically ill inpatients and outpatients, the general population- both younger (age 18–65 years) and elderly adults (66 years or older) ([Bjelland, Dahl, Haug, & Neckelmann, 2002](#); [Moorey et al., 2018](#); [Mykletun, Stordal, & Dahl, 2001](#); [Spinhoven et al., 1997](#)). The two factor solution is well supported by evidence and the scale demonstrates optimal sensitivity and specificity for both the anxiety and depression subscales ([Bjelland et al., 2002](#)).

**Brief COPE.** The Brief COPE ([Carver, 1997](#)) is a measure of adaptive and Maladaptive Coping developed by the original COPE inventory ([Carver, Scheier, & Weintraub, 1989](#)) in order to reduce participant response burden. The brief version was developed by omitting two scales of the full COPE and reducing all subscales to two items per subscale. An additional subscale was also included. Overall 14 coping strategies are measured: Self-distraction, Active Coping, Denial, Substance Use, Use of Emotional Support, Use of Instrumental Support, Behavioural Disengagement, Venting, Positive Reframing, Planning, Humour, Acceptance, Religion, and Self-blame. These are scored on a

four-item Likert type scale (1 = *I haven't been doing this at all* to 4 = *I've been doing this a lot*).

The Brief Coping includes elaborate and somewhat confusing instructions pertaining to the original scope of the COPE inventory. First participants are asked to rate statements which reflect “*the stress in your life since you found out you were going to have to have this operation*” and it is explained “*There are many ways to try to deal with problems. These items ask what you've been doing to cope with this one*”. Therefore, the first set of instructions refers to something specific and potentially stressful and the second set contradicts this by referring to the operation as a problem (usually it is the solution to a medical problem). The instructions were modified to include items which reflect “ways you've been coping with the stress in your life in general, i.e., most of the time”. By revising the instructions, I opted for a non-situation version, more akin to personality Coping, and therefore less context dependent.

Useful composite subscales have been produced (e.g., emotion-focused, problem-focused, and dysfunctional Coping ([Cooper, Katona, & Livingston, 2008](#))) although the author of the Brief COPE cautions against them and suggests that (higher-order) factors should be based on data from individual samples. The Brief version of the questionnaire has been used with people with serious mental illness ([Meyer, 2001](#)) and the two-item subscales as well as composite subscales have shown good psychometric properties when used in a wide range of clinical ([Hagan et al., 2017](#); [Snell, Siegert, Hay-Smith, & Surgenor, 2011](#); [Su et al., 2015](#); [Yusoff, Low, & Yip, 2010](#)) and non-clinical populations ([Pritchard & Wilson, 2003](#); [Yusoff, 2010](#)). Example items include: “I've been turning to work or other activities to take my mind off things” for Self-distraction, “I've been concentrating my efforts on doing something about the situation I'm in” for Active Coping, “I've been saying to myself "this isn't real" for Denial, “I've been using alcohol or other drugs to make myself feel better” for Substance Use, “I've been getting emotional support from others” for Emotional Support, “I've been getting help and advice from other people” for Informational Support, “I've been giving up trying to deal with it” for Behavioural Disengagement, “I've been saying things to let my unpleasant feelings escape” for Venting, “I've been trying to see it in a different light, to make it seem more positive” for Positive Reframing, “I've been trying to come up with a strategy about what to do” for Planning, “I've been making jokes about it” for Humour, “I've been accepting the reality of the fact that it has happened” for Acceptance, “I've been trying

to find comfort in my religion or spiritual beliefs” for Religion, and “I’ve been blaming myself for things that happened” for Self-blame.

**Social Interaction Anxiety Scale (SIAS).** The SIAS ([Mattick & Clarke, 1998](#)) is 20-item measure of anxiety in social interactional situations, developed specifically to capture distress when meeting and talking with other people and in particular (what I argue to be fundamental concerns of social apprehensiveness and of critical opinions of others in OCPD) fears of negative evaluations within social interactions such as fears of sounding inarticulate, stupid, not knowing what to what to say, fears of being rejected or ignored. The SIAS is scored on a five-point Likert-type scale (1= *not at all* to 5 = *extremely*). [Gore, Carter, and Parker \(2002\)](#) have shown that the SIAS is an accurate measure of trait Social Anxiety and a better predictor than general trait anxiety measures of anxious response to a social challenge. A number of studies have confirmed that the SIAS is a valid measure of Social Anxiety separate to Social Phobia ([Heidenreich, Schermelleh-Engel, Schramm, Hofmann, & Stangier, 2011](#)) with excellent reliability and validity in clinical and non-clinical samples -particularly for the SIAS's positively worded items ([Brown et al., 1997](#); [Osman, Gutierrez, Barrios, Kopper, & Chiros, 1998](#); [Rodebaugh, Woods, Heimberg, Liebowitz, & Schneier, 2006](#)). Despite some concerns about its factor structure –see for example [Zubeidat, Salinas, Sierra, and Fernandez-Parra \(2007\)](#)- two recent studies have confirmed a unifactorial structure for the SIAS in large clinical samples ( $N = 577$ ; [Heidenreich et al. \(2011\)](#)), ( $N = 5353$ ; [Carleton et al. \(2009\)](#)), and an undergraduate sample ( $n = 5317$ ; [Carleton et al. \(2009\)](#)). The version without the reverse items was used in this study ([Rodebaugh, Woods, & Heimberg, 2007](#)). Example items include: “I find it difficult to mix comfortably with the people I work with” and “I feel tense if I am alone with just one other person”.

**Difficulties in Emotion Regulation Scale Short Form (DERS-SF):** the DERS-SF ([Kaufman et al., 2016](#)) was developed from the 36-item DERS ([Gratz & Roemer, 2004](#)) which was based on a clinical model of Emotion Regulation by the same authors. The DERS-SF asks participants to indicate how often the items apply to themselves, rated on a Likert-type scale from 1 = *almost never* to 5 = *almost always*. The scale measures six distinct but related dimensions: a) Non-acceptance of Emotional Responses, b) Difficulties Engaging in Goal-Directed Behaviour, c) Impulse Control Difficulties, d) Lack of Emotional Awareness, e) Limited Access to Emotion Regulation, and f) Lack of Emotional Clarity. In the initial validation sample in adults Cronbach’s alpha coefficients for each of the three-item DERS-SF subscales ranged from .79 to .91 ([Kaufman et al., 2016](#)). In a large sample ( $N = 427$ ) of

treatment-seeking adults with a DSM-5 Emotional Disorder the short form showed a robust bifactor structure, good internal consistency, and convergent validity with the original DERS ([Hallion, Steinman, Tolin, & Diefenbach, 2018](#)). The factor structure of the DERS-SF has been confirmed in a sample of people with a history of Non-Suicidal Self-Injury ([Kiekens, Hasking, & Boyes, 2018](#)) and the scale has been used with a wide range of mental disorders ([Ram, George, & Gowdappa, 2018](#)) including Eating Disorders ([Smith, Mason, Peterson, & Pearson, 2018](#)) and Skin Picking Disorder ([Schienle, Zorjan, Ubel, & Wabnegger, 2018](#)). Example items include: “When I’m upset, I become embarrassed for feeling that way” for Non-acceptance of Emotional Responses, “When I’m upset, I have difficulty getting work done” for Difficulties Engaging in Goal-Directed Behaviour, “When I’m upset, I become out of control” for Impulse Control Difficulties, “I pay attention to how I feel” for Lack of Emotional Awareness, “When I’m upset, it takes me a long time to feel better” for Limited Access to Emotion Regulation, and “I have no idea how I am feeling” for Lack of Emotional Clarity.

**Cornell Dysthymia Rating Scale Self-Report (CDRS-SR):** The CDRS-SR ([Mason, 2018](#)) was developed from the 20-item Cornell Dysthymia Rating Scale (CDRS) ([Mason, Kocsis, & Frances, 1989](#)), a clinician-rated inventory which has been the gold standard of rating Dysthymia since its publication. The original CDRS has been tested and validated in several clinical studies and has proved superior to other measures of depressive symptomatology in measuring chronic depression ([Hellerstein, Batchelder, Lee, & Borisovskaya, 2002](#)). The SR version is based on the factor structure of the original scale and asks participants to indicate how they have functioned or felt during the past week. Unlike the original scale it focuses on frequency (as opposed to both frequency and severity of the CDRS) of cognitive, emotional, and behavioural symptoms of Dysthymia. The measure is rated on a Likert-type scale from 1 = *none or a little of the time* to 4 = *most or all of the time*. Example items of the 27 item CDRS-SR include: “I feel sorry for myself”, “I think of dying or wish I was dead”, and “I feel hopeless, doubtful that things will improve”

**Random Response scale:** A five item random response scale was developed specifically for this study dispersed throughout the survey. Items varied in content and Likert-type and the final sample consisted of participants who answered all five questions correctly. Example items included: “I can hold my breath for an hour because I have super-human abilities” and “Please choose the option Agree somewhat”.

## 4.4 Results

### 4.4.1 Descriptive Statistics

The data was imported into SPSS version 25 and was examined for data cleaning purposes. A missing value analysis showed that only 0.85% of the data were missing (Figure 4-4) and missing data did not follow a systematic pattern (Figure 4-5). Missing values were replaced with the mean and the final sample for analysis consisted of 1088 participants.

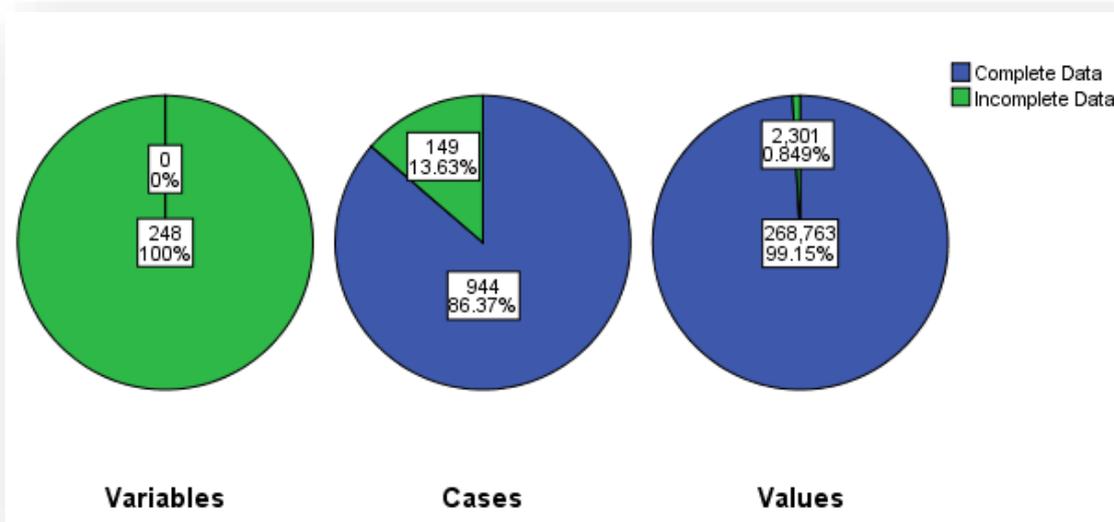


Figure 4-4 Summary of Missing Values

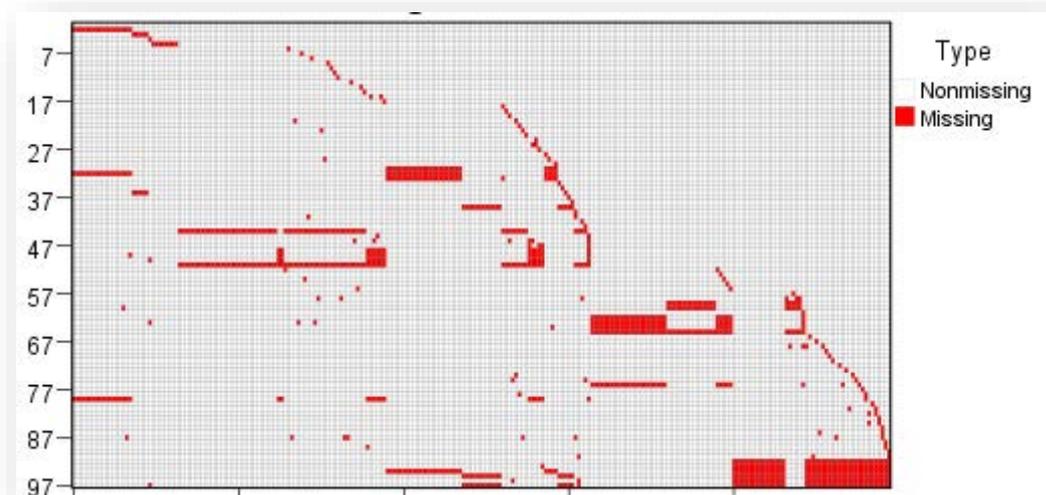


Figure 4-5 Missing values pattern

Appendix E.2 shows the descriptive statistics of the study variables in sub-clinical ( $N = 227$ ) and the control ( $N = 861$ ) group.

#### 4.4.2 Confirmatory Factor Analysis (CFA)

CFA was used to assess the factorial structure of the measure. The distributions of the 49 items of the OCP-DI scale were again examined to determine the appropriate estimation procedure for the confirmatory model. Based on suggested cut-offs for normality [(Skewness  $> 2$ , Kurtosis  $> 7$ ; (Cohen et al., 2014)] the data did not violate univariate normality assumptions. Outlying scores for each item ( $Z > |3.29|$ ) were examined, because extreme values may skew subscales and total scores computed, and can influence statistical analysis. No outlying scores were found for any of the variables. No transformations were performed (Tabachnick & Fidell, 2001;2019).

Normal theory Maximum likelihood (ML) is the standard estimation procedure for CFA (Curran et al., 1996) in Structural Equation Modelling (SEM) and it assumes multivariate normality. Although, distributions of the items were within the acceptable limits, the level of skew exhibited by items suggested that multivariate normality might not be met. To assess multivariate normality the Mardia's coefficient of multivariate skewness and kurtosis was used. Mardia's coefficient had a score of 291.18 (CR 36.082) indicating mild multivariate non-normality. The presence of multivariate outliers was investigated by estimating Mahalanobis d-squared distance for each case. The pattern of cases with the highest d-squared distance justified the deletion of 12 multivariate outliers for the CFA. The Mardia's coefficient for the final sample of the CFA ( $N = 215$ ) had a score of 142.21 (CR 25.695). Appendix E.3 shows the descriptive statistics for the items in the CFA sub-clinical sample. Appendix E.4 shows the descriptive statistics of the Study variables in the CFA sub-clinical sample. Appendix E.5 shows correlations of Study 5 variables

##### 4.4.2.1 Confirming the Factor Structure of the OC-PDI with the Maximum likelihood method.

Maximum likelihood (ML) estimation is robust to mild skewness and AMOS supports the use of bootstrapping which is an efficient way to ensure that models are reliable and produce accurate results by creating data sets that simulate the model tested. In CFA, bootstrapping tests the accuracy of the model producing adjusted standard errors and bias

corrected confidence intervals of the regression weights (i.e., factor loadings). Evidence suggests ([Nevitt & Hancock, 1998](#)) that ML estimation with bootstrapping is superior to alternative methods of estimation such as the correction methods proposed by [Satorra and Bentler \(2010\)](#) which are used when data deviate from normality ([Curran et al., 1996](#)). Therefore, I proceeded with ML estimation with bootstrapping. The CFA took into account the points outlined below.

In the model each trait was modelled as a latent factor with the individual items as observed indicators. A restricted factor analysis model was used to identify the model in which the indicators were scaled, by constraining a path from each factor to one of the factor's indicators, i.e., by assigning a regression weight of 1 to the indicator ([Kline, 2015](#)).

In assessing whether the model conceptualises the OCPD construct adequately I considered the factor loadings of the observed variables as well as the square of the factor loadings, which is the variance of the observed variable accounted for by the construct measured. For a solution to be defined as acceptable it was expected that most factor scores should have a value of  $\geq .40$  ([Clark & Watson, 1995](#)).

Model fit was assessed by means of the following criteria

- The Discrepancy Chi Square, a standard global fit index measure which produces a non-significant p-value for good-fitting models. The Chi Square is very sensitive to sample size and discrepancies from normality in the data ([West et al., 1995](#)). Under such cases of estimation, the chi-square test may reject the model. Thus, as recommended by others ([Kline, 2015](#); [Marsh et al., 1996](#)) I used a combination of additional fit indices
- The Comparative Fit Index (CFI; ([Bentler, 1990](#))) with values ranging from 0 (poor fit) to 1.00 (perfect fit) and a value of 0.9 or higher indicating good fit.
- The Standardized Root Mean Square Residual (SRMR) with values  $< .08$  indicating adequate fit,  $< .05$  good fit, and a value of 0 indicating perfect fit. ([Hu & Bentler, 1999](#); [Kline, 2015](#)).
- The Root Mean Squared Error of Approximation (RMSEA; ([Steiger, 1990](#))) a parsimony adjusted measure, i.e., it penalizes for the lack of parsimony in the

model. Values of .08 or less indicate adequate fit (Hu & Bentler, 1999) suggested  $\leq .06$  as a stricter cut-off for a good model fit.

I proceeded by testing and analysing the fit of the model consisting of the six inter-correlating factors identified in the CFA (Model A). The resulting model can be seen in Figure 4-6.

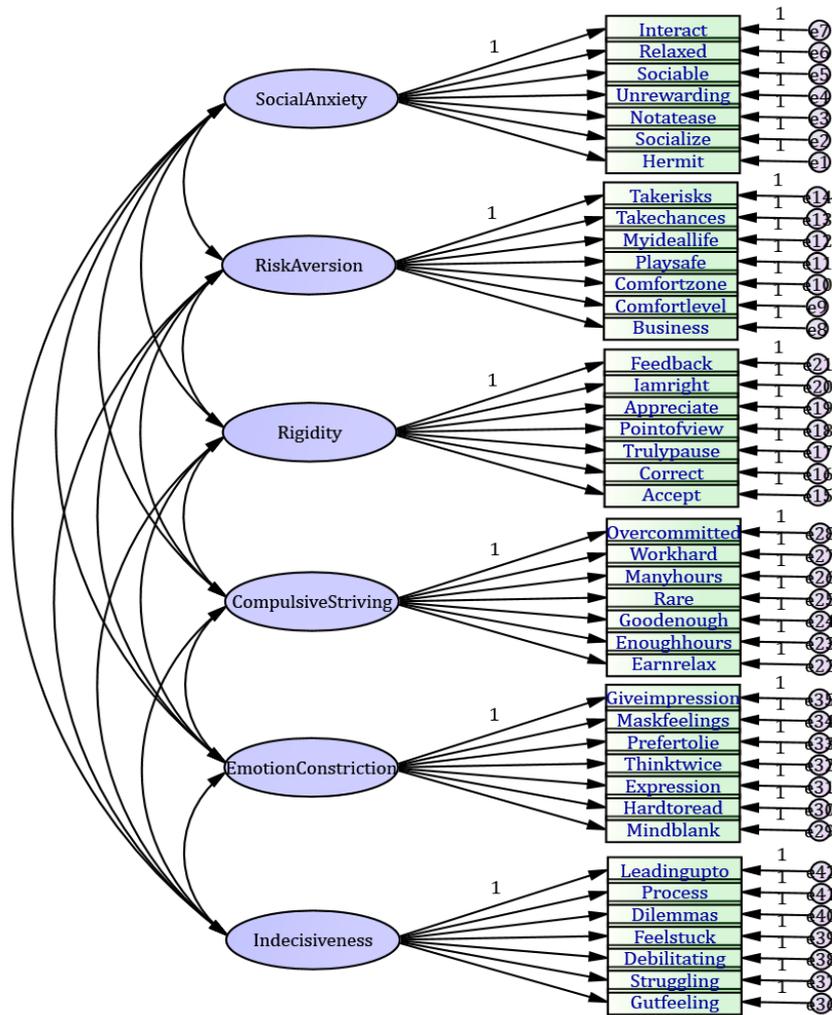


Figure 4-6 Model A: six-factor order model of maladaptive OCPD derived from CFA in the sub-clinical OCPD sample (N = 215)

Table 4-1 *Bootstrapped Standardized Regression Weights, Model A*

			SRW	SE	SE-SE	M	Bias	SEBias
Hermit	Some people might describe me as a hermit	Social Anxiety	-0.53	0.06	.001	-0.53	-.001	.001
Socialize	I am always on the lookout for opportunities to socialize and connect with other people	Social Anxiety	0.76	0.04	.001	0.76	.000	.001
Not at ease	I am not at ease in the company of others	Social Anxiety	-0.61	0.06	.001	-0.60	.005	.001
Unrewarding	I find most social interactions unrewarding or unpleasant	Social Anxiety	-0.69	0.05	.001	-0.69	.002	.001
Sociable	I am naturally relaxed and sociable with those around me	Social Anxiety	0.72	0.05	.001	0.72	-.002	.001
Relaxed	I feel relaxed and comfortable around other people	Social Anxiety	0.83	0.04	.001	0.83	.001	.001
Interact	I always love socializing and interacting with people	Social Anxiety	0.90	0.02	.000	0.90	.000	.000
Business	I am not the kind of person that engages in risky business ventures	Risk Aversion	-0.54	0.08	.001	-0.54	.001	.002
Comfort level	I am not willing to take risks that stretch my comfort level	Risk Aversion	-0.58	0.07	.001	-0.58	-.001	.002
Comfort zone	I regularly step outside my comfort zone to take risks	Risk Aversion	0.62	0.07	.001	0.62	-.003	.002

			SRW	SE	SE-SE	M	Bias	SEBias
Play safe	People tell me I always play safe	Risk Aversion	-0.30	0.08	.001	-0.30	-.001	.002
My ideal life	My ideal life would be free from any risk	Risk Aversion	-0.53	0.06	.001	-0.53	.002	.001
Take chances	I like to take chances	Risk Aversion	0.76	0.04	.001	0.76	.000	.001
Take risks	I enjoy the excitement of taking risks	Risk Aversion	0.85	0.03	.001	0.85	-.001	.001
Accept	I find it difficult to accept that someone is right even when I know they are	Obstinacy	0.64	0.06	.001	0.64	-.005	.001
Correct	It doesn't matter what you say or how things seem, when I am right about something I know I am correct	Obstinacy	0.64	0.06	.001	0.64	.000	.001
Truly pause	I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	Obstinacy	0.62	0.07	.001	0.62	-.005	.001
Point of view	I find it hard to question my point of view	Obstinacy	0.60	0.07	.001	0.60	-.001	.001
Appreciate	People have often told me that I refuse to appreciate their point of view	Obstinacy	0.72	0.05	.001	0.72	.000	.001
I am right	I frequently believe that I am right about something, no matter what the person says or how things seem.	Obstinacy	0.78	0.04	.001	0.77	-.002	.001
Feedback	Despite being given repeated feedback that something is wrong I know my opinion is right	Obstinacy	0.76	0.04	.001	0.76	.000	.001

			SRW	SE	SE-SE	M	Bias	SEBias
Earn relax	I believe that relaxing, playing, or recreation must be earned	Compulsive Striving	0.42	0.06	.001	0.42	.000	.001
Enough hours	There are never enough hours in the day to finish my work and be content with the result	Compulsive Striving	0.51	0.07	.001	0.50	-.004	.002
Good enough	When it comes to work, good is never good enough for me	Compulsive Striving	0.51	0.07	.001	0.51	-.006	.001
Rare	I rarely relax just to relax	Compulsive Striving	0.57	0.06	.001	0.57	-.004	.001
Many hours	I can't help spending too many hours on my work and having too little time for myself	Compulsive Striving	0.75	0.05	.001	0.75	-.002	.001
Work hard	I have often been given feedback that I work too hard or that I need to relax	Compulsive Striving	0.60	0.06	.001	0.60	-.002	.001
Overcommitted	I am usually so overcommitted that I hardly ever have any spare time	Compulsive Striving	0.76	0.05	.001	0.76	.001	.001
Mind blank	My mind often goes blank when I have to speak about my feelings	Constricted Expressivity	0.66	0.05	.001	0.66	-.002	.001
Hard to read	I am a hard to read person	Constricted Expressivity	0.46	0.08	.001	0.46	-.002	.002

			SRW	SE	SE-SE	M	Bias	SEBias
Expression	The outward expression of my emotions often doesn't match what's going on inside me	Constricted Expressivity	0.63	0.06	.001	0.63	-.001	.001
Think twice	I think twice before revealing my true emotions to others	Constricted Expressivity	0.60	0.06	.001	0.60	.000	.001
Prefer to lie	When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	Constricted Expressivity	0.70	0.05	.001	0.69	-.004	.001
Mask feelings	I often mask or hide my inner feelings from others	Constricted Expressivity	0.86	0.03	.000	0.86	-.001	.001
Give impression	I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	Constricted Expressivity	0.63	0.06	.001	0.63	-.002	.001
Gut feeling	Decision making has always been easy for me: I just follow my gut feeling	Indecisiveness	-0.57	0.06	.001	-0.57	.003	.001
Struggling	One of the worst experiences in life is struggling with the uncertainty of making the right choice	Indecisiveness	0.72	0.04	.001	0.72	-.001	.001
Debilitating	Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	Indecisiveness	0.76	0.04	.001	0.76	.000	.001

			SRW	SE	SE-SE	M	Bias	SEBias
Feel stuck	I am often unable to make decisions and feel stuck	Indecisiveness	.819	.032	.001	.818	-.002	.001
Dilemmas	Finding answers to dilemmas has always been a huge struggle for me	Indecisiveness	.722	.046	.001	.722	.000	.001
Process	Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	Indecisiveness	.847	.027	.000	.848	.001	.001
Leading up to	For me, the process leading up to taking a decision is long and painful	Indecisiveness	.829	.034	.001	.827	-.002	.001

Note SRW = Standardized Regression Weight

Table 4-2 *Factor Correlations of Model A*

Factor		<i>r</i>
Social Anxiety	Risk Aversion	0.46
Social Anxiety	Obstinacy	-0.34
Social Anxiety	Compulsive Striving	-0.09
Social Anxiety	Constricted Expressivity	-0.53
Social Anxiety	Indecisiveness	-0.39
Risk Aversion	Obstinacy	-0.05
Risk Aversion	Compulsive Striving	0.01
Risk Aversion	Constricted Expressivity	-0.25
Risk Aversion	Indecisiveness	-0.34
Obstinacy	Compulsive Striving	0.23
Obstinacy	Constricted Expressivity	0.48
Obstinacy	Indecisiveness	0.29
Compulsive Striving	Constricted Expressivity	0.35
Compulsive Striving	Indecisiveness	0.34
Constricted Expressivity	Indecisiveness	0.53

Using the default Maximum Likelihood estimator, fit indices for Model A suggested an acceptable fit to the data:  $\chi^2(804, N = 215) = 1459.91, p < .001, CFI = 0.841, RMSEA = 0.062$  (90% confidence interval [CI] = [.057, .067]), SRMR = .086. The standardized factor loadings for the indicators were significant: All indicators loaded  $> .04$  and in the expected direction on their respective OCPD factors, except for the item “People tell me I always play safe” on the “Risk Aversion” factor. Correlations between factors (Table 4-2) were of small and moderate size except for correlations between Risk Aversion and Compulsive Striving, Risk Aversion and Obstinacy, and finally Compulsive Striving and Social Anxiety.

#### 4.4.2.2 Additional analyses.

Model A supports the notion that OCPD (indeed all PDs) is a multidimensional construct with some factors closely and other factors more loosely related. It is standard psychometric practice to test alternative models and compare the fit of these models with the fit of the model defined by theory ([Anderson & Gerbing, 1988](#); [Gerbing & Anderson, 1988](#)).

First, I opted to test the assumption about a hierarchical organization of discrete traits within an OCPD second-order factor. Model B posits a second-order factor (OCPD) that

has direct paths to six first-order factors (OCPD traits). In turn the first order factors have direct paths to observed variables. In order to achieve model identification one factor loading for each first-order factor and the variance of the second-order factor were constrained to 1 (Kline, 2015). The model is depicted in Figure 4-7. The fit statistics associated with this model were  $\chi^2(813, N = 215) = 1499.89, p < .001, CFI = 0.833, RMSEA = 0.063$  (90% confidence interval [CI] = [.058, .068]), SRMR = .092 Table 4-5 shows that the goodness-of-fit index and comparative fit indices would suggest the model can be accepted. However, the standardized second-order factor loadings although significant, were of moderate magnitude and two of them (Risk Aversion <--- OCPD and Compulsive Striving <--- OCPD) were of small magnitude (<.40.). Therefore, the second-order model did not provide adequate fit to the data.

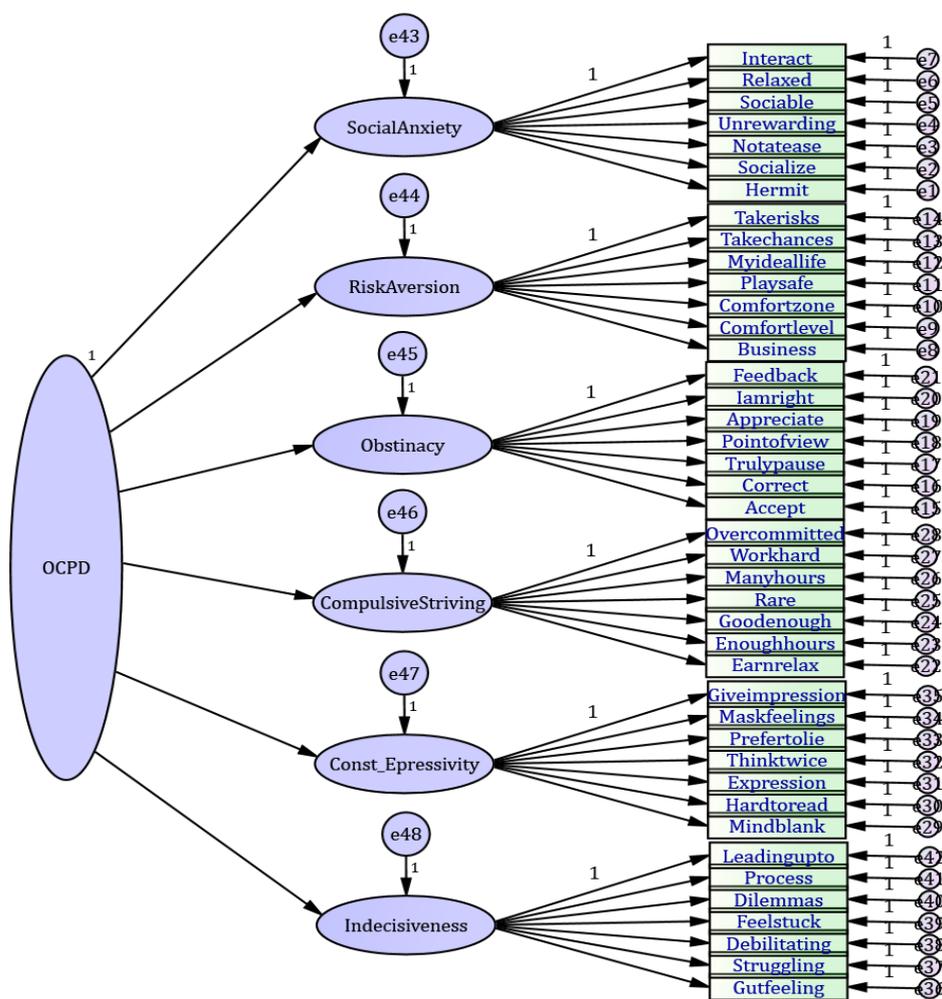


Figure 4-7 Model B: Second order factor order model of maladaptive OCPD derived from CFA in the sub-clinical OCPD sample (N = 215)

Table 4-3 *Standardized Regression Weights and Bootstrapped Estimates of Model B*

Item		Factor	SRW	SE	SE-SE	M	Bias	SEBias
Social Anxiety	<---	OCPD	-0.65	0.08	0.00	-0.65	0.00	0.00
Risk Aversion	<---	OCPD	-0.39	0.11	0.00	-0.39	0.00	0.00
Obstinacy	<---	OCPD	0.52	0.08	0.00	0.52	-0.01	0.00
Compulsive Striving	<---	OCPD	0.37	0.11	0.00	0.36	-0.01	0.00
Indecisiveness	<---	OCPD	0.65	0.08	0.00	0.64	0.00	0.00
Constricted Expressivity	<---	OCPD	0.83	0.07	0.00	0.83	0.00	0.00
Hermit	Some people might describe me as a hermit	Social Anxiety	-0.54	0.06	0.00	-0.54	0.00	0.00
Socialize	I am naturally relaxed and sociable with those around me	Social Anxiety	0.76	0.04	0.00	0.76	0.00	0.00
Not at ease	I am not at ease in the company of others	Social Anxiety	-0.61	0.06	0.00	-0.61	0.01	0.00
Unrewarding	I find most social interactions unrewarding or unpleasant	Social Anxiety	-0.70	0.05	0.00	-0.70	0.00	0.00
Sociable	I am naturally relaxed and sociable with those around me	Social Anxiety	0.72	0.05	0.00	0.72	0.00	0.00
Relaxed	I feel relaxed and comfortable around other people	Social Anxiety	0.83	0.04	0.00	0.84	0.00	0.00
Interact	I always love socializing and interacting with people	Social Anxiety	0.90	0.02	0.00	0.90	0.00	0.00
Business	I am not the kind of person that engages in risky business ventures	Risk Aversion	-0.55	0.08	0.00	-0.55	0.00	0.00
Comfort level	I am not willing to take risks that stretch my comfort level	Risk Aversion	-0.59	0.07	0.00	-0.59	0.00	0.00
Comfort zone	I regularly step outside my comfort zone to take risks	Risk Aversion	0.61	0.07	0.00	0.61	0.00	0.00
Play safe	People tell me I always play safe	Risk Aversion	-0.31	0.08	0.00	-0.31	0.00	0.00
My ideal life	My ideal life would be free from any risk	Risk Aversion	-0.55	0.06	0.00	-0.54	0.00	0.00
Take chances	I like to take chances	Risk Aversion	0.75	0.05	0.00	0.75	0.00	0.00

Item		Factor	SRW	SE	SE-SE	M	Bias	SEBias
Take risks	I enjoy the excitement of taking risks	Risk Aversion	0.84	0.03	0.00	0.84	0.00	0.00
Accept	I find it difficult to accept that someone is right even when I know they are	Obstinacy	0.65	0.06	0.00	0.64	-0.01	0.00
Correct	It doesn't matter what you say or how things seem, when I am right about something I know I am correct	Obstinacy	0.63	0.06	0.00	0.63	0.00	0.00
Truly pause	I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	Obstinacy	0.63	0.06	0.00	0.62	-0.01	0.00
Point of view	I find it hard to question my point of view	Obstinacy	0.61	0.06	0.00	0.61	0.00	0.00
Appreciate	People have often told me that I refuse to appreciate their point of view	Obstinacy	0.72	0.05	0.00	0.72	0.00	0.00
I am right	I frequently believe that I am right about something, no matter what the person says or how things seem.	Obstinacy	0.78	0.04	0.00	0.78	0.00	0.00
Feedback	Despite being given repeated feedback that something is wrong I know my opinion is right	Obstinacy	0.75	0.04	0.00	0.75	0.00	0.00
Earn relax	I believe that relaxing, playing, or recreation must be earned	Compulsive Striving	0.40	0.06	0.00	0.40	0.00	0.00
Enough hours	There are never enough hours in the day to finish my work and be content with the result	Compulsive Striving	0.50	0.07	0.00	0.50	0.00	0.00
Goodenough	When it comes to work, good is never good enough for me	Compulsive Striving	0.51	0.07	0.00	0.50	-0.01	0.00
Rare	I rarely relax just to relax	Compulsive Striving	0.57	0.06	0.00	0.57	0.00	0.00
Many hours	I can't help spending too many hours on my work and having too little time for myself	Compulsive Striving	0.75	0.05	0.00	0.75	0.00	0.00

Item		Factor	SRW	SE	SE-SE	M	Bias	SEBias
Work hard	I have often been given feedback that I work too hard or that I need to relax	Compulsive Striving	0.61	0.06	0.00	0.61	0.00	0.00
Overcommitted	I am usually so overcommitted that I hardly ever have any spare time	Compulsive Striving	0.76	0.05	0.00	0.76	0.00	0.00
Mind blank	My mind often goes blank when I have to speak about my feelings	Constricted Expressivity	0.66	0.05	0.00	0.66	0.00	0.00
Hard to read	I am a hard to read person	Constricted Expressivity	0.46	0.08	0.00	0.45	0.00	0.00
Expression	The outward expression of my emotions often doesn't match what's going on inside me	Constricted Expressivity	0.63	0.06	0.00	0.63	0.00	0.00
Think twice	I think twice before revealing my true emotions to others	Constricted Expressivity	0.60	0.06	0.00	0.60	0.00	0.00
Prefer to lie	When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	Constricted Expressivity	0.70	0.05	0.00	0.69	-0.01	0.00
Mask feelings	I often mask or hide my inner feelings from others	Constricted Expressivity	0.86	0.03	0.00	0.86	0.00	0.00
Give impression	I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	Constricted Expressivity	0.63	0.06	0.00	0.63	0.00	0.00
Gut feeling	Decision making has always been easy for me: I just follow my gut feeling	Indecisiveness	-0.57	0.06	0.00	-0.56	0.00	0.00
Struggling	One of the worst experiences in life is struggling with the uncertainty of making the right choice	Indecisiveness	0.72	0.04	0.00	0.72	0.00	0.00

Item		Factor	SRW	SE	SE-SE	M	Bias	SEBias
Debilitating	Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	Indecisiveness	0.76	0.04	0.00	0.76	0.00	0.00
Feel stuck	I am often unable to make decisions and feel stuck	Indecisiveness	0.82	0.03	0.00	0.82	0.00	0.00
Dilemmas	Finding answers to dilemmas has always been a huge struggle for me	Indecisiveness	0.72	0.05	0.00	0.72	0.00	0.00
Process	Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	Indecisiveness	0.85	0.03	0.00	0.85	0.00	0.00
Leading up to	For me, the process leading up to taking a decision is long and painful	Indecisiveness	0.83	0.03	0.00	0.83	0.00	0.00

Note SRW = Standardized Regression Weight

In addition to a second-order CFA the hierarchical structure of OCPD could be viewed by means of a bifactor model which has several advantages over a second-order factor model ([Chen, West, & Sousa, 2006](#); [Reise, Moore, & Haviland, 2010](#)). All factors operate at the same level, but differ with respect to clustering of observed variables within factors. Observed variables (items or indicators) are organised within their respective factors (lower –order traits or subscales, referred to as first-order factors in Model B), but they are also grouped into an OCPD factor with which the observed variables have a direct relationship (what was referred to as the second-order factor in Model B. Figure 4-8 presents a schematic depiction of the bifactor model structure. In order to achieve model identification, the variances of the factors (both the six OCPD lower-order traits and the general OCPD factor) were constrained to 1.0. The model's fit statistics were:  $\chi^2(777, N = 215) = 1286.20, p < .001$ , CFI = 0.877, RMSEA = 0.055 (90% confidence interval [CI] = [.050, .061]), SRMR = .076. Although the model showed a reasonably good fit to the data factor weights of the standardized factor loadings of the indicators on the OCPD factor were of small magnitude with many of them  $< .40$ . Therefore, the bifactor model did not provide adequate fit to the data and Model A remained the best solution confirming **Hypothesis 1** that the OC-PDI shows a clear six-factor structure with good fit in a sample of participants with OCPD traits.

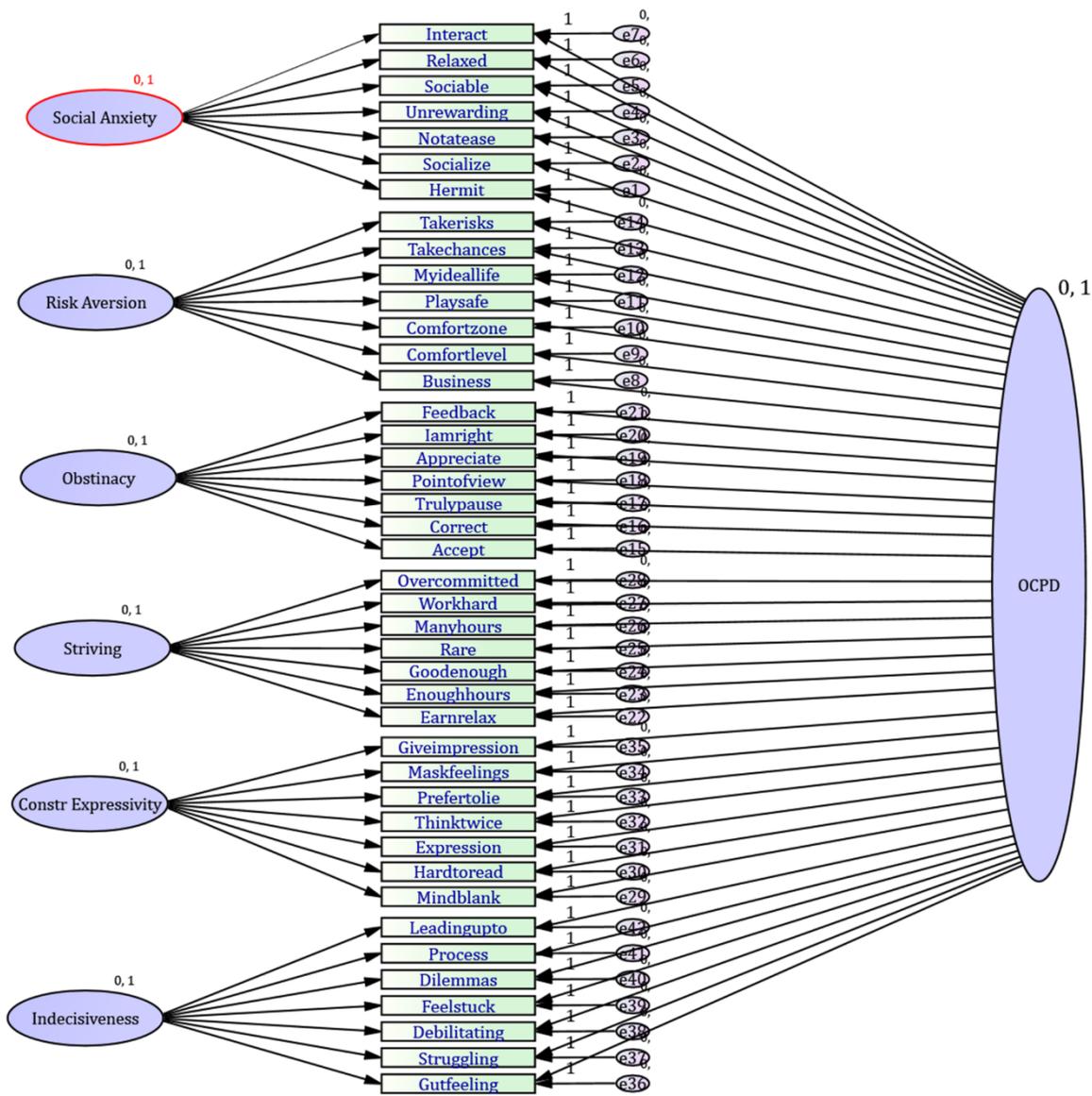


Figure 4-8 Model C: Bi-factor model of maladaptive OCPD derived from Confirmatory Factor Analysis in the validation sample ( $N = 215$ )

Table 4-4 *Standardized Regression Weights and Bootstrapped Estimates of Model C*

Item		Factor	SRW	SE	SE-SE	M	Bias	SEBias
Hermit	Some people might describe me as a hermit	Social	-0.49	0.00	-0.34	-0.02	0.08	0.00
		Anxiety						
Socialize	I am naturally relaxed and sociable with those around me	Social	0.93	0.00	0.72	-0.01	0.06	0.00
		Anxiety						
Not at ease	I am not at ease in the company of others	Social	-0.42	0.00	-0.34	-0.01	0.08	0.00
		Anxiety						
Unrewarding	I find most social interactions unrewarding or unpleasant	Social	-0.65	0.00	-0.48	-0.01	0.08	0.00
		Anxiety						
Sociable	I am naturally relaxed and sociable with those around me	Social	0.69	0.00	0.55	0.00	0.07	0.00
		Anxiety						
Relaxed	I feel relaxed and comfortable around other people	Social	0.86	0.00	0.71	0.00	0.07	0.00
		Anxiety						
Interact	I always love socializing and interacting with people	Social	1.17	0.00	0.85	-0.01	0.05	0.00
		Anxiety						
Business	I am not the kind of person that engages in risky business ventures	Risk Aversion	-0.61	0.00	-0.46	0.01	0.09	0.00
Comfort level	I am not willing to take risks that stretch my comfort level	Risk Aversion	-0.59	0.00	-0.49	0.00	0.08	0.00
Comfort zone	I regularly step outside my comfort zone to take risks	Risk Aversion	0.68	0.00	0.55	-0.02	0.08	0.00
Play safe	People tell me I always play safe	Risk Aversion	-0.28	0.00	-0.25	-0.01	0.09	0.00
My ideal life	My ideal life would be free from any risk	Risk Aversion	-0.61	0.00	-0.46	0.00	0.07	0.00
Take chances	I like to take chances	Risk Aversion	0.96	0.00	0.74	-0.01	0.06	0.00
Take risks	I enjoy the excitement of taking risks	Risk Aversion	1.09	0.00	0.84	-0.01	0.05	0.00
Accept	I find it difficult to accept that someone is right even when I know they are	Obstinacy	0.58	0.00	0.43	0.01	0.08	0.00
Correct	It doesn't matter what you say or how things seem, when I am right about something I know I am correct	Obstinacy	0.81	0.00	0.66	0.00	0.06	0.00

Item		Factor	SRW	SE	SE-SE	M	Bias	SEBias
uly pause	I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	Obstinacy	0.55	0.00	0.48	0.00	0.09	0.00
Point of view	I find it hard to question my point of view	Obstinacy	0.62	0.00	0.54	0.00	0.08	0.00
Appreciate	People have often told me that I refuse to appreciate their point of view	Obstinacy	0.72	0.00	0.57	0.00	0.07	0.00
I am right	I frequently believe that I am right about something, no matter what the person says or how things seem.	Obstinacy	0.91	0.00	0.71	0.01	0.05	0.00
Feedback	Despite being given repeated feedback that something is wrong I know my opinion is right	Obstinacy	0.80	0.00	0.68	0.01	0.06	0.00
Earn relax	I believe that relaxing, playing, or recreation must be earned	Compulsive Striving	0.39	0.00	0.34	0.01	0.07	0.00
Enough hours	There are never enough hours in the day to finish my work and be content with the result	Compulsive Striving	0.43	0.00	0.34	0.01	0.08	0.00
Goodenough	When it comes to work, good is never good enough for me	Compulsive Striving	0.42	0.00	0.40	0.01	0.08	0.00
Rare	I rarely relax just to relax	Compulsive Striving	0.56	0.00	0.44	0.01	0.07	0.00
Many hours	I can't help spending too many hours on my work and having too little time for myself	Compulsive Striving	0.84	0.00	0.68	0.00	0.07	0.00
Work hard	I have often been given feedback that I work too hard or that I need to relax	Compulsive Striving	0.73	0.00	0.66	-0.01	0.06	0.00
Overcommitted	I am usually so overcommitted that I hardly ever have any spare time	Compulsive Striving	0.93	0.00	0.79	0.00	0.05	0.00
Mind blank	My mind often goes blank when I have to speak about my feelings	Constricted Expressivity	0.52	0.00	0.35	0.02	0.10	0.00
Hard to read	I am a hard to read person	Constricted Expressivity	0.59	0.00	0.45	0.01	0.10	0.00

Item		Factor	SRW	SE	SE-SE	M	Bias	SEBias
Expression	The outward expression of my emotions often doesn't match what's going on inside me	Constricted Expressivity	0.45	0.00	0.37	0.02	0.11	0.01
Think twice	I think twice before revealing my true emotions to others	Constricted Expressivity	0.59	0.00	0.49	0.01	0.10	0.00
Prefer to lie	When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	Constricted Expressivity	0.48	0.00	0.34	0.02	0.10	0.01
Mask feelings	I often mask or hide my inner feelings from others	Constricted Expressivity	0.73	0.00	0.61	0.02	0.09	0.00
Give impression	I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	Constricted Expressivity	0.64	0.00	0.57	0.00	0.09	0.00
Gut feeling	Decision making has always been easy for me: I just follow my gut feeling	Indecisiveness	0.63	0.01	0.48	-0.02	0.15	0.01
Struggling	One of the worst experiences in life is struggling with the uncertainty of making the right choice	Indecisiveness	-0.49	0.01	-0.38	0.01	0.17	0.01
Debilitating	Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	Indecisiveness	-0.47	0.01	-0.35	0.02	0.17	0.01
Feel Stuck	I am often unable to make decisions and feel stuck	Indecisiveness	-0.89	0.00	-0.62	0.03	0.13	0.01
Dilemmas	Finding answers to dilemmas has always been a huge struggle for me	Indecisiveness	-0.50	0.01	-0.38	0.02	0.16	0.01
Process	Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	Indecisiveness	-0.70	0.01	-0.51	0.02	0.19	0.01
Leading up to	For me, the process leading up to taking a decision is long and painful	Indecisiveness	-0.84	0.00	-0.62	0.03	0.13	0.01
Interact	I always love socializing and interacting with people	OCPD	-0.51	0.00	-0.37	0.01	0.12	0.01
Relaxed	I feel relaxed and comfortable around other people	OCPD	-0.50	0.00	-0.40	0.01	0.11	0.01
Sociable	I am naturally relaxed and sociable with those around me	OCPD	-0.60	0.00	-0.46	0.01	0.11	0.01

Item		Factor	SRW	SE	SE-SE	M	Bias	SEBias
Unrewarding	I find most social interactions unrewarding or unpleasant	OCPD	0.74	0.00	0.52	-0.02	0.09	0.00
Not at ease	I am not at ease in the company of others	OCPD	0.81	0.00	0.59	-0.03	0.08	0.00
Socialize	I am always on the lookout for opportunities to socialize and connect with other people	OCPD	-0.36	0.00	-0.28	0.01	0.13	0.01
Hermit	Some people might describe me as a hermit	OCPD	0.68	0.00	0.44	-0.02	0.10	0.00
Take risks	I enjoy the excitement of taking risks	OCPD	-0.24	0.00	-0.19	0.00	0.13	0.01
Take chances	I like to take chances	OCPD	-0.15	0.00	-0.13	-0.01	0.12	0.01
My ideal life	My ideal life would be free from any risk	OCPD	0.41	0.00	0.31	0.00	0.09	0.00
Play safe	People tell me I always play safe	OCPD	0.25	0.00	0.21	-0.01	0.09	0.00
Comfort zone	I regularly step outside my comfort zone to take risks	OCPD	-0.27	0.00	-0.23	0.00	0.12	0.01
Comfort level	I am not willing to take risks that stretch my comfort level	OCPD	0.44	0.00	0.35	-0.02	0.09	0.00
Business	I am not the kind of person that engages in risky business ventures	OCPD	0.41	0.00	0.31	-0.01	0.11	0.01
Feedback	Despite being given repeated feedback that something is wrong I know my opinion is right	OCPD	0.42	0.00	0.33	-0.02	0.11	0.01
I am right	I frequently believe that I am right about something, no matter what the person says or how things seem.	OCPD	0.45	0.00	0.33	-0.02	0.09	0.00
Appreciate	People have often told me that I refuse to appreciate their point of view	OCPD	0.55	0.00	0.42	-0.02	0.09	0.00
Point of view	I find it hard to question my point of view	OCPD	0.34	0.00	0.28	-0.02	0.10	0.00
Truly pause	I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	OCPD	0.45	0.00	0.37	-0.02	0.10	0.00
Correct	It doesn't matter what you say or how things seem, when I am right about something I know I am correct	OCPD	0.23	0.00	0.17	-0.02	0.12	0.01
Accept	I find it difficult to accept that someone is right even when I know they are	OCPD	0.72	0.00	0.50	-0.02	0.09	0.00
Overcommitted	I am usually so overcommitted that I hardly ever have any spare time	OCPD	0.22	0.00	0.17	-0.01	0.10	0.00

Item		Factor	SRW	SE	SE-SE	M	Bias	SEBias
Work hard	I have often been given feedback that I work too hard or that I need to relax	OCPD	0.06	0.00	0.06	0.01	0.10	0.01
Many hours	I can't help spending too many hours on my work and having too little time for myself	OCPD	0.39	0.00	0.30	-0.01	0.09	0.00
Rare	I rarely relax just to relax	OCPD	0.53	0.00	0.40	-0.02	0.08	0.00
Goodenough	When it comes to work, good is never good enough for me	OCPD	0.32	0.00	0.28	-0.02	0.10	0.00
Enough hours	There are never enough hours in the day to finish my work and be content with the result	OCPD	0.56	0.00	0.41	-0.02	0.10	0.00
Earn relax	I believe that relaxing, playing, or recreation must be earned	OCPD	0.25	0.00	0.20	-0.01	0.10	0.00
Give impression	I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	OCPD	0.41	0.00	0.35	-0.02	0.09	0.00
Mask feelings	I often mask or hide my inner feelings from others	OCPD	0.79	0.00	0.62	-0.03	0.09	0.00
Prefer to lie	When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	OCPD	0.97	0.00	0.61	-0.02	0.09	0.00
Think twice	I think twice before revealing my true emotions to others	OCPD	0.47	0.00	0.36	-0.02	0.11	0.01
Expression	The outward expression of my emotions often doesn't match what's going on inside me	OCPD	0.68	0.00	0.50	-0.02	0.09	0.00
Hard to read	I am a hard to read person	OCPD	0.28	0.00	0.20	-0.02	0.11	0.01
Mind blank	My mind often goes blank when I have to speak about my feelings	OCPD	0.88	0.00	0.56	-0.02	0.08	0.00
Leading up to	For me, the process leading up to taking a decision is long and painful	OCPD	0.73	0.00	0.56	0.00	0.12	0.01
Process	Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	OCPD	0.85	0.00	0.64	0.00	0.10	0.00

Item		Factor	SRW	<i>SE</i>	<i>SE-SE</i>	<i>M</i>	Bias	<i>SEBias</i>
Dilemmas	Finding answers to dilemmas has always been a huge struggle for me	OCPD	0.74	0.00	0.59	-0.01	0.10	0.00
Feel stuck	I am often unable to make decisions and feel stuck	OCPD	0.75	0.00	0.55	0.01	0.13	0.01
Debilitating	Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	OCPD	0.86	0.00	0.67	-0.01	0.09	0.00
Struggling	One of the worst experiences in life is struggling with the uncertainty of making the right choice	OCPD	0.73	0.00	0.58	-0.01	0.09	0.00
Gut feeling	Decision making has always been easy for me: I just follow my gut feeling	OCPD	-0.42	0.01	-0.35	-0.01	0.16	0.01

*Note* SRW = Standardized Regression Weight

Table 4-5 *Fit indices of the OC-PDI CFA models*

	Model A	Model B	Model C
$\chi^2$	1459.91	1499.89	1184.80
CFI	0.841	0.833	0.877
RMSEA	0.062 (90% [CI] = [.057, .067])	0.063 (90% [CI] = [.058, .068])	0.055 (90% [CI] = [.050, .061])
SRMR	.086	.092	.076

Internal consistency estimates (Cronbach's Alpha) for each subscale of the OC-PDI were calculated and are presented in Table 4-6. Cronbach's Alpha coefficients were all  $>.7$ . Therefore **Hypothesis 2** was confirmed.

Table 4-6 *Item-Total Correlations and Cronbach's Alpha for the OC-PDI in the CFA Sub-clinical sample (N =215)*

Factor	Item	Item-Total Correlation	Cronbach's Alpha
Social Anxiety	I find most social interactions unrewarding or unpleasant	0.68	0.88
	I am not at ease in the company of others	0.65	
	Some people might describe me as a hermit	0.54	
	I always love socializing and interacting with people R	0.79	
	I feel relaxed and comfortable around other people R	0.78	
	I am naturally relaxed and sociable with those around me R	0.71	
	I am always on the lookout for opportunities to socialize and connect with other people R	0.69	
Risk aversion	My ideal life would be free from any risk	0.52	0.80
	People tell me I always play safe	0.30	
	I am not willing to take risks that stretch my comfort level	0.58	
	I am not the kind of person that engages in risky business ventures	0.54	
	I enjoy the excitement of taking risks R	0.64	
	I like to take chances R	0.63	
Obstinacy	I regularly step outside my comfort zone to take risks R	0.52	0.84
	Despite being given repeated feedback that something is wrong I know my opinion is right	0.64	
	I frequently believe that I am right about something, no matter what the person says or how things seem.	0.68	
	People have often told me that I refuse to appreciate their point of view	0.58	
	I find it hard to question my point of view	0.55	
	I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	0.62	
Compulsive Striving	It doesn't matter what you say or how things seem, when I am right about something I know I am correct	0.54	0.81
	I find it difficult to accept that someone is right even when I know they are	0.55	
	I am usually so overcommitted that I hardly ever have any spare time	0.63	
	I have often been given feedback that I work too hard or that I need to relax	0.62	
	I can't help spending too many hours on my work and having too little time for myself	0.63	
	I rarely relax just to relax	0.52	
When it comes to work, good is never good enough for me	0.46		
There are never enough hours in the day to finish my work and be content with the result	0.51		

Factor	Item	Item-Total Correlation	Cronbach's Alpha
Constricted Expressivity	I believe that relaxing, playing, or recreation must be earned	0.38	0.85
	I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	0.59	
	I often mask or hide my inner feelings from others	0.73	
	When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	0.64	
	I think twice before revealing my true emotions to others	0.62	
	The outward expression of my emotions often doesn't match what's going on inside me	0.62	
Indecisiveness	I am a hard to read person	0.54	0.88
	My mind often goes blank when I have to speak about my feelings	0.58	
	For me, the process leading up to taking a decision is long and painful	0.73	
	Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	0.74	
	Finding answers to dilemmas has always been a huge struggle for me	0.64	
	I am often unable to make decisions and feel stuck	0.72	
	Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	0.69	
	One of the worst experiences in life is struggling with the uncertainty of making the right choice	0.64	
Decision making has always been easy for me I just follow my gut feeling R	0.46		

A one-way multivariate analysis of variance (MANOVA) using the General Linear Model was carried out to test the hypothesis that participants with OCPD traits would score significantly higher on the six subscales the OC-PDI scale compared to participants in the control group (Hypothesis 3). Examination of descriptive statistics and histograms confirmed that dependent variables had a normal distribution. The homogeneity of variance assumption was tested for all six dependent variables. Levene's *F* Tests of Equality of Error Variances were non-significant for all variables ( $p > .05$ ). The Box's M Value Test of Equality of Covariance Matrices of 20.96 was non-significant,  $p = .475$ . A statistically significant MANOVA effect was obtained Wilks' Lambda = .87,  $F(6,1033) = 33.70$ , partial  $\eta^2 = .16$  suggesting one or more mean differences between the subscale scores across the two groups. Between groups T-tests with Bonferroni correction ( $p < .001$ ) showed that participants with OCPD scored significantly higher in all OC-PDI subscales. Therefore, **Hypothesis 3 was confirmed.**

Table 4-7 presents descriptive statistics for OC-PDI scales per group of participants (sub-clinical group versus control group).

Table 4-7 *Descriptive statistics and T-tests for OC-PDI Factors*

OC-PDI Trait	<i>t</i> -test	<i>p</i>	Lower CI	Upper CI	Cohen's <i>d</i>	<i>R</i>	Group	Descriptive statistics	
Social Anxiety	-7.64	<.001	-0.73	-0.43	0.47	0.23	Control	<i>M</i>	2.77
								<i>SD</i>	1.00
							Sub-clinical	<i>M</i>	3.36
								<i>SD</i>	1.03
Risk Aversion	-4.33	<.001	-0.41	-0.15	0.27	0.13	Control	<i>M</i>	3.43
								<i>SD</i>	0.86
							Sub-clinical	<i>M</i>	3.71
								<i>SD</i>	0.86
Obstinacy	-6.82	<.001	-0.59	-0.33	0.42	0.21	Control	<i>M</i>	2.84
								<i>SD</i>	0.89
							Sub-clinical	<i>M</i>	3.30
								<i>SD</i>	0.93
Compulsive Striving	-11.72	<.001	-0.88	-0.62	0.73	0.34	Control	<i>M</i>	3.29
								<i>SD</i>	0.86
								<i>M</i>	4.04

OC-PDI Trait	<i>t</i> -test	<i>p</i>	Lower CI	Upper CI	Cohen's <i>d</i>	<i>R</i>	Group	Descriptive statistics	
							Sub-clinical	<i>SD</i>	0.80
Constricted Expressivity	-5.38	<.001	-0.55	-0.26	0.33	0.16	Control	<i>M</i>	3.72
								<i>SD</i>	1.01
							Sub-clinical	<i>M</i>	4.12
								<i>SD</i>	0.94
Indecisiveness	-7.59	<.001	-0.72	-0.43	0.47	0.23	Control	<i>M</i>	3.21
								<i>SD</i>	1.00
							Sub-clinical	<i>M</i>	3.79
								<i>SD</i>	1.03

#### 4.4.3 OC-PDI Relationship With PID-5 OCPD And Social Interaction Anxiety

Hierarchical multiple regression was used to investigate whether OC-PDI would predict OCPD over and above the effect of PID-5 (Hypothesis 4). Parametric assumptions were met (Osborne & Waters, 2002). The final model with OC-PDI added in the second step of the regression gave an acceptable fit to the data  $F(2,1085) = 223.14, p < .001$ . Table 4-9 reports the betas and corresponding *t*-test for each predictor in the regression. The OC-PDI predicted an additional 5.2% of the variance. **Hypothesis 4 was confirmed**

Table 4-8 *Unstandardized and Standardised Coefficients of OCPD IPDE-SQ Regressed Sequentially onto PID OCPD and OC-PDI*

Model		Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
		$\beta$	<i>SE</i>	$\beta$			Lower	Upper
1	(Constant)	0.18	0.21		0.88	.378	-0.22	0.59
	PID-5							
	OCPD	1.91	0.10	0.49	18.51	<.001	1.71	2.12
2	(Constant)	-1.38	0.27		-5.21	<.001	-1.90	-0.86
	PID-5							
	OCPD	1.11	0.13	0.29	8.27	<.001	0.85	1.38
	OC-PDI	0.94	0.11	0.31	8.90	<.001	0.74	1.15

Note Model 1  $R^2 = .24$  Model 2  $R^2 = .29$

Logistic regression was used to investigate whether Social Interaction Anxiety (measured by the SIAS) would be a stronger predictor of sub-clinical OCPD than the PID-5 Intimacy Avoidance (Hypothesis 5). The logistic regression model with Social Interaction Anxiety and PID-5 Intimacy Avoidance as predictors of OCPD was a good fit to the data  $\chi^2(2) = 56.91, p < .001$ . Table 4-10 shows that Social Interaction Anxiety was a stronger predictor of sub-clinical OCPD compared to PID-5 Intimacy Avoidance which gave a non-significant odds ratio. **Hypothesis 5 was confirmed.**

Table 4-9 *Logistic Regression of PID-5 Intimacy Avoidance and Social Interaction Anxiety as Predictors of Sub-clinical OCPD*

	$\beta$	S.E.	Wald	p	OR	95% C.I.	
						Lower	Upper
PID-5 Intimacy Avoidance	.17	.11	2.25	.133	1.19	.94	1.48
Social Interaction Anxiety	.56	.09	39.92	<.001	1.75	1.47	2.09
Constant	-2.93	.26	127.83	<.001	.05		

Note Cox & Snell  $R^2 = .054$ , Nagelkerke,  $R^2 = .082$

A second logistic regression was performed to test whether OC-PDI Social Anxiety would be a stronger predictor than the PID-5 Intimacy Avoidance subscale of sub-clinical OCPD (Hypothesis 6). The regression model was a good fit to the data  $\chi^2(2) = 55.77, p < .001$ . Table 4-11 shows that OC-PDI Social Anxiety was a stronger predictor of OCPD group membership compared to PID-5 Intimacy Avoidance which gave a non-significant odds ratio. **Hypothesis 6 was confirmed**

Table 4-10 *Logistic Regression of PID-5 Intimacy Avoidance and OC-PDI Social Anxiety as Predictors of Sub-clinical OCPD*

	$\beta$	S.E.	Wald	p	OR	95% C. I	
						Lower	Upper
PID-5 Intimacy Avoidance	.18	.12	1.18	.277	1.14	.904	1.426
OCPDI Social Anxiety	.51	.08	38.40	<.001	1.66	1.412	1.943
Constant	-3.05	.27	126.62	<.001	.05		

Note Cox & Snell  $R^2 = .053$ , Nagelkerke,  $R^2 = .081$

Using multiple regression, I also tested the hypothesis that Social Interaction Anxiety would be a stronger predictor than PID-5 Intimacy Avoidance, of PID-5 OCPD within the group of people with OCPD traits (Hypothesis 7). All assumptions were met, and the

regression model gave a good fit to the data  $F(2,224) = 39.72, p < .001$ . Table 4-12 reports the betas and the corresponding t-test for each predictor in the regression. The results of the regression indicated that the two predictors explained 26.2% of the variance and that Social Interaction Anxiety was a stronger predictor than PID-5 Intimacy avoidance of PID-5 OCPD.

**Hypothesis 7 was confirmed.**

Table 4-11 *Unstandardized and Standardised Coefficients of PID-5 OCPD Regressed onto Social Interaction Anxiety and PID-5 Intimacy Avoidance*

	Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
	$\beta$	<i>SE</i>	$\beta$			Lower	Upper
(Constant)	1.57	.10		15.31	<.001	1.36	1.77
Social Interaction Anxiety	.18	.04	.32	5.17	<.001	.11	.25
PID-5 Intimacy Avoidance	.21	.04	.30	4.90	<.001	.13	.30

Note  $R^2 = .26$

#### 4.4.4 OC-PDI: Relationship of Emotion Regulation Difficulties with Well-being, Anxiety and Depression

A multivariate analysis of variance (MANOVA) using the General Linear Model was carried out to test if participants scoring high in OCPD traits would also score significantly lower on facets of emotion dysregulation compared to participants in the control group. Although Multivariate Tests were all significant the Box's Test of Equality of Covariance Matrices was also significant (Box's  $M = 56.95, p < .001$ ) suggesting that this assumption was not met. Relevant statistics (such as Hotelling's  $T^2$ ) are robust to violation of this assumption in the two-group situation but only when sample sizes are equal ([Hakstian, Roed, & Lind, 1979](#)). Levene's Tests of Equality of Error Variances were also carried out for individual groups. Levene Statistics were significant for five out of six dependent variables ER Strategies, Levene (1,1048) = 15.88,  $p < .001$ , ER Non-acceptance Levene (1,1048) = 13.12,  $p < .001$ , ER Impulse Levene (1,1048) = 14.03,  $p < .001$ , ER Awareness Levene (1,1048) = 4.32,  $p < .001$ , ER Clarity Levene (1,1048) = 4.32,  $p < .001$ . ER Goals was the exception Levene (1,1048) = 1.277,  $p > .05$ ). Variances and covariances were also inspected but were roughly equal across groups, therefore MANOVA results could not be trusted ([Tabachnick & Fidell, 2001;2019](#)) and Mann-Whitney tests were conducted with Bonferroni correction ( $p < .001$ ). These are reported below. As shown in Table 4-15, the OCPD group

scored significantly higher in all facets of Emotion Regulation difficulties, except for the Awareness facet.

Table 4-12 *Emotion Regulation Difficulties in the Control and the Sub-Clinical OCPD Group*

	Mann-Whitney U	<i>p</i>	Effect size <i>P<sub>ab</sub></i>	OCPD IPDE-SQ Binary	<i>Mdn</i>
ER Strategies	65634.00	<.001	.35	Control	2.00
				Sub-clinical OCPD	2.67
ER Non-acceptance	76299.00	<.001	.41	Control	2.00
				Sub-clinical OCPD	2.33
ER Impulse	75457.50	<.001	.40	Control	1.67
				Sub-clinical OCPD	2.00
ER Goals	74413.50	<.001	.39	Control	3.00
				Sub-clinical OCPD group	3.33
ER Awareness	89720.50	.359	.47	Control	3.67
				Sub-clinical OCPD	3.67
ER Clarity	69119.00	<.001	.37	Control	1.67
				Sub-clinical OCPD	2.33

Mediation analyses were carried out in AMOS-25. Bootstrapping was used (2000 bootstrap samples) for significance testing and to produce bootstrapped standard errors and statistics that approach the population estimates. The results are summarised below.

An original model was built to test the hypothesis that the link between OCPD (measured by the IPDE-SQ) and well-being would be mediated by Emotion Regulation difficulties, as measured by the DERS-SF (Hypothesis 8). The model (Figure 4-9) gave a reasonably good fit  $\chi^2(19, N = 1088) = 175.29, p < .001, CFI = 0.947, RMSEA = 0.087$  (90% confidence interval [CI] = [.055, .079]), SRMR= .047. To improve the model, I focused on the ER Facet of awareness. The very low standardized regression coefficients (beta) of ER to Awareness (Awareness <--- Emotion Dysregulation -.002) raised concern for empirical under identification of the model. Therefore, model modification was required. The model was re-specified with the Awareness facet removed. The resulting model is shown in Figure 4-10 and gave a better fit to the data: fit  $\chi^2(13, N = 1088) = 52.20., p < .001, CFI = 0.986, RMSEA = .048$  (90% confidence interval [CI] = [.019, .060]), SRMR= .022. A regression

analysis showed that the standardized regression coefficients beta of OCPD on well-being was  $\beta = -.25, p < .001$ . Although, the standardised direct effect of OCPD on well-being remained significant ( $p = .038$  two-tailed), consistent with the mediational hypothesis there was a drop in the direct effect of OCPD on well-being by 0.186. **Hypothesis 8 was confirmed.**

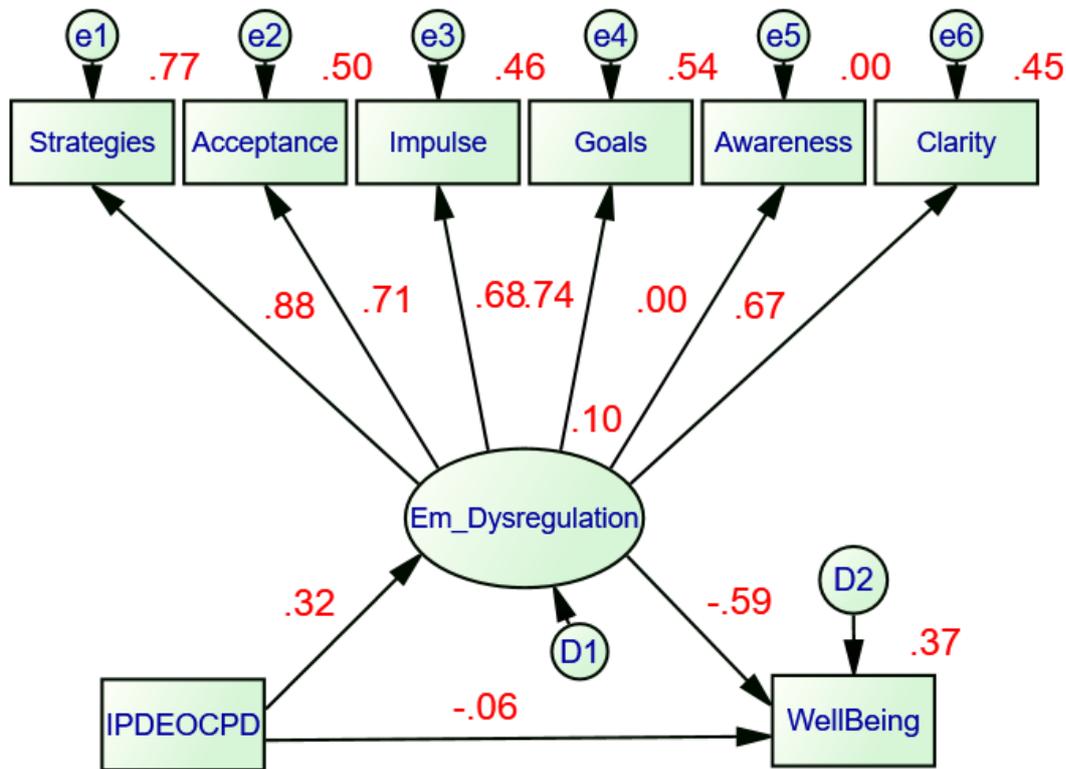


Figure 4-9 Mediation of the link between OCPD severity (IPDE-SQ) and well-being by Emotion Dysregulation. All values are standardized regression coefficients (betas)

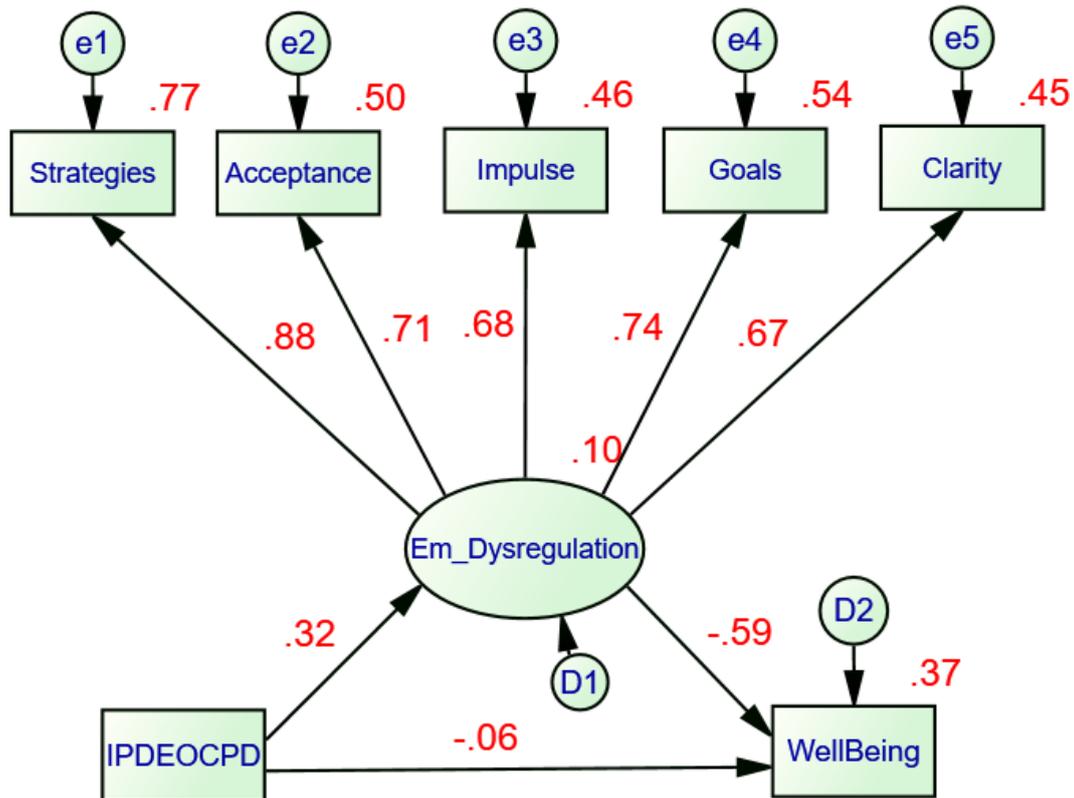


Figure 4-10 Re-specified mediation model of the link between OCPD severity (IPDE-SQ) and well-being by Emotion Dysregulation. All values are standardized regression coefficients (betas).

Based on the above I tested the hypothesis that within the sub-clinical OCPD sample ( $N = 227$ ), the link between OCPD (OC-CPI total score) and anxiety would be mediated by Emotion Dysregulation (Hypothesis 9). The model (Figure 4-12) fitted the data well:  $\chi^2(13, N = 227) = 17.26, p > .05$ , CFI = .99, RMSEA = 0.038 (90% confidence interval [CI] = [.000, .081]), SRMR = .026. The standardised direct effect of OCPD on anxiety dropped from beta = .471 (significant at  $p < .001$ ) to .09 ( $p > .05$ , two-tailed) i.e., by 0.381 SDs. Therefore, Emotion Dysregulation *fully* mediated the relationship OCPD and Anxiety. **Hypothesis 9 was confirmed.**

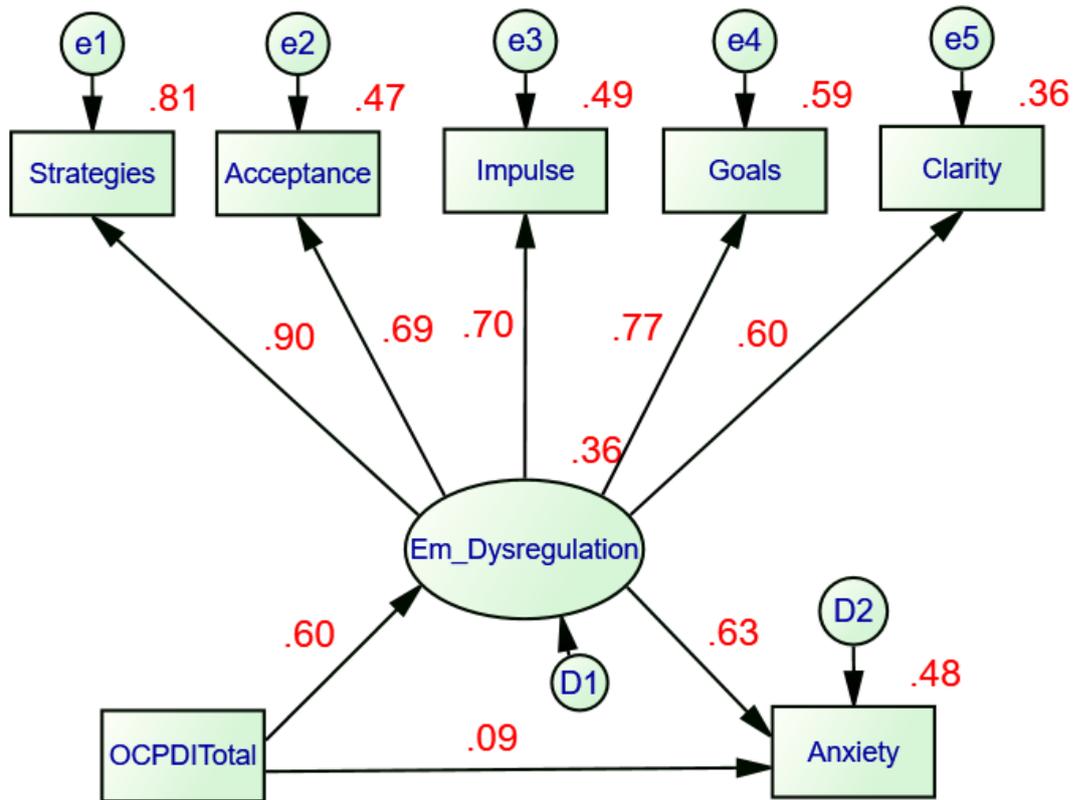


Figure 4-11 Mediation model of the link between OCPD (OC-PDI) and Anxiety by Emotion Dysregulation. All values are standardized regression coefficients (betas)

Finally, I tested the hypothesis that within the OCPD sample ( $N = 227$ ), the link between OCPD (OC-CPI total score) and depression would be mediated by Emotion Dysregulation (Hypothesis 10). The model (Figure 4-13) fitted the data well:  $\chi^2(13, N = 227) = 21.00, p > .05$ , CFI = .99, RMSEA = 0.052 (90% confidence interval [CI] = [.000, .092]), SRMR = .030. The standardised direct effect of OCPD on depression dropped from beta = .508 ( $p < .001$ ) to .22 ( $p < .005$ , two-tailed). Consistent with the mediational hypothesis there was a drop in the direct effect of OCPD on depression by .288 SDs. **Hypothesis 10 was confirmed.**

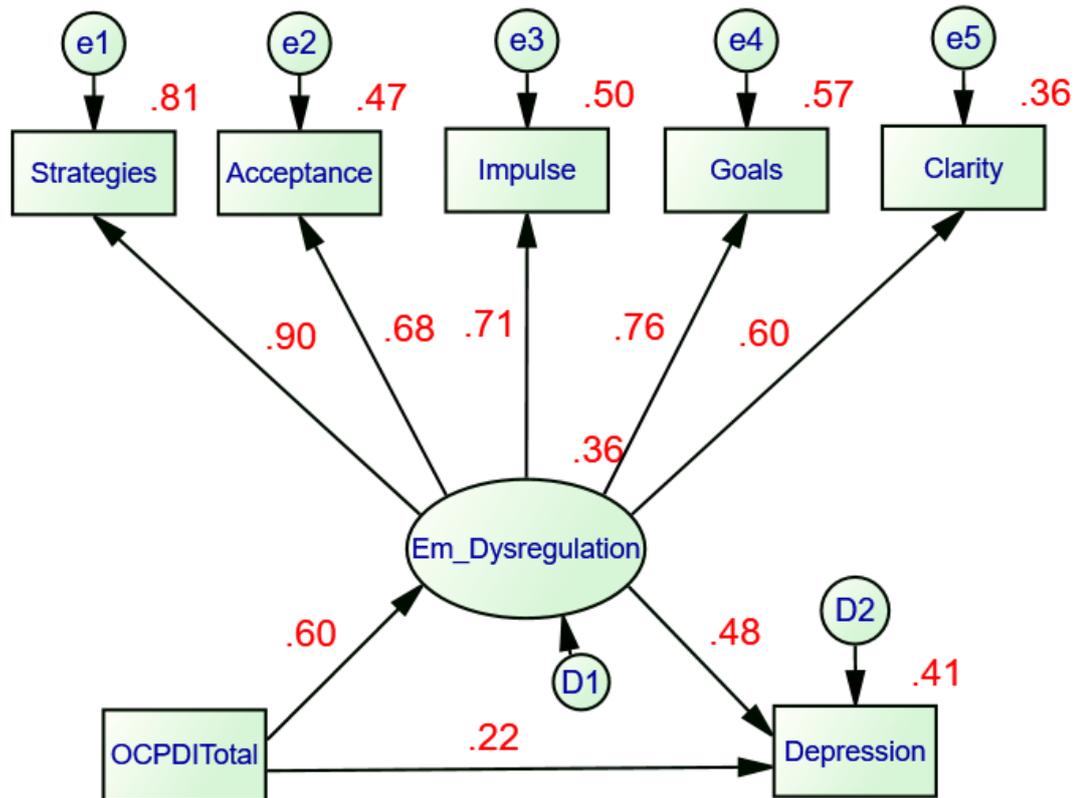


Figure 4-12 Mediation model of the link between OCPD (OC-PDI) and depression by Emotion Dysregulation. All values are standardized regression coefficients (betas).

A logistic regression was carried out in order to test whether Dysthymia would be a better predictor than depression of sub-clinical OCPD (Hypothesis 11). The model was a good fit to the data  $\chi^2(2) = 59.09, p < .001$ . Table 4-16 shows that Dysthymia was a better predictor of OCPD group compared to depression. **Hypothesis 11 was confirmed.**

Table 4-13 Logistic Regression of Dysthymia and Depression as Predictors of OCPD Group Membership

	$\beta$	S.E.	Wald	p	OR	95% C I	
						Lower	Upper
Dysthymia	0.73	0.24	9.00	.003	2.06	1.29	3.32
Depression	0.08	0.03	8.44	.004	1.09	1.03	1.15
Constant	-3.80	0.38	100.20	.000	0.02		

Note Cox & Snell  $R^2 = .06$ , Nagelkerke  $R^2 = .08$

In order to identify maladaptive coping related to OCPD traits a multivariate analysis of variance (MANOVA) using the General Linear Model was carried out. MANOVA tested whether participants scoring high in OCPD traits would score higher than the control group on Maladaptive Coping skills, as measured by Maladaptive Coping strategies of the COPE).

The Multivariate tests (Wilks' Lambda = .93,  $F(14, 1073) = 5.87, p < .001$ , partial  $\eta^2 = .071$ ) showed there is one or more between group differences. The Box's Test of Equality of Covariance Matrices was significant (Box's M = 56.95,  $p = .004$ ). However, Levene's Tests of Equality of Error Variances were significant for two outcome variables: Behavioural Disengagement, Levene (1, 1086) = 9.76,  $p < .005$ , and Self-blame, Levene (1, 1086) = 7.07,  $p < .05$ . t-tests and Mann-Whitney tests were conducted with Bonferroni correction (alpha levels 0.004 and 0.025 respectively). These are reported below. As shown in Table 4-17 the sub-clinical OCPD group scored significantly higher than the control group in three out four Maladaptive Coping strategies: Denial, Behavioural Disengagement and Self-blame.

Table 4-14 *Descriptive Statistics, t Values, U Values and Statistical Significance for Coping Strategies in the Sub-clinical OCPD and Control Group*

Coping	<i>t/ U</i>	<i>p</i>	Group	<i>M/Mdn</i>	<i>SD</i>
Self-distraction	-2.07	.038	Control	2.40	0.78
			Sub-clinical OCPD	2.52	0.76
Active Coping	-0.10	.922	Control	2.73	0.80
			Sub-clinical OCPD	2.73	0.77
Denial	82529.50	<b>&lt;.001</b>	Control	1.41	0.61
			Sub-clinical OCPD	1.57	0.66
Substance Use	-0.19	.847	Control	1.32	0.69
			Sub-clinical OCPD	1.33	0.72
Emotional Support	0.78	.433	Control	2.30	0.92
			Sub-clinical OCPD	2.25	0.94
Instrumental Support	-0.33	.739	Control	2.24	0.88
			Sub-clinical OCPD	2.26	0.94
Behavioural Disengagement	78282.00	<b>&lt;.001</b>	Control	1.54	0.65
			Sub-clinical OCPD	1.80	0.76
Venting	-2.99	.003	Control	1.93	0.73
			Sub-clinical OCPD	2.09	0.73
Positive Reframing	0.81	.416	Control	2.68	0.79
			Sub-clinical OCPD	2.63	0.84
Planning	-4.29	<b>&lt;.001</b>	Control	2.70	0.80
			Sub-clinical OCPD	2.95	0.77
Humour	1.07	.285	Control	2.13	0.90
			Sub-clinical OCPD	2.06	0.92
Acceptance	-1.08	.280	Control	2.69	0.78

Coping	<i>t/U</i>	<i>p</i>	Group	<i>M/Mdn</i>	<i>SD</i>
Religion	0.11	.910	Sub-clinical OCPD	2.76	0.71
			Control	1.90	0.99
Self-blame	71391.50	<.001	Sub-clinical OCPD	1.89	1.02
			Control	2.04	0.89
			Sub-clinical OCPD	2.50	0.98

I further tested the hypothesis that within the group of participants scoring high in OCPD traits the effect of OCPD (measured by OC-PDI) on anxiety would be mediated by Emotion Dysregulation and Maladaptive Coping (as measured by the DERS-SF and COPE) (Hypothesis 12).

Two competing theoretical models were tested.

Model A (Figure 4-14) posits that Coping is indirectly related to Emotion Regulation and fitted the data well:  $\chi^2(32, N = 227) = 94.63, p < .001, CFI = .934, RMSEA = .093$  (90% confidence interval [CI] = [.072, .115]), SRMR = .111. The standardized direct effect of OCPDI on anxiety was  $\beta = -.035 (p > .05)$  dropping from the original  $\beta = .471, (p < .001)$ . Therefore, consistent with the mediational hypothesis there was a drop in the direct effect of OCPD on anxiety by 50.6% and this effect was *fully* mediated by Emotion Regulation and Coping.

Model B (Figure 4-15) posits a path from Emotion Regulation to Coping and gave a better fit:  $\chi^2(31, N = 227) = 44.00, p > .05, CFI = .986, RMSEA = .093$  (90% confidence interval [CI] = [.043, .070]), SRMR = .0332. The standardized direct effect of OC-PDI on anxiety was  $\beta = .014 (p > .05)$  dropping from the original  $\beta = .471 (p < .001)$ . Therefore, consistent with the mediational hypothesis there was a drop in the direct effect of OCPD on anxiety by 45.7% and this effect was *fully* mediated by Emotion Regulation and Coping. **Hypothesis 12 was confirmed.**

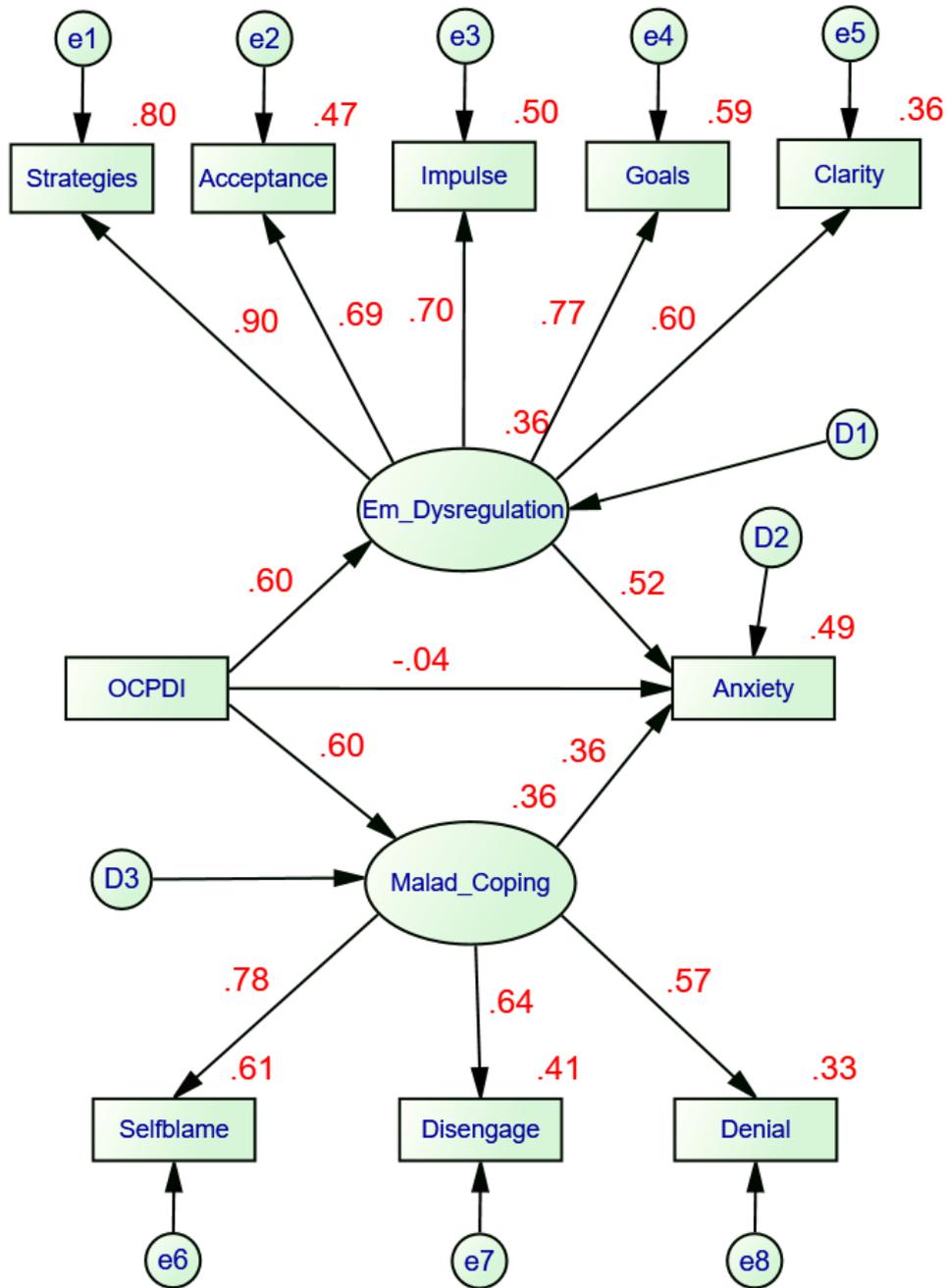


Figure 4-13 Mediation model A of the link between OCPD severity (OC-PDI) and anxiety by Emotion Dysregulation and Coping within the group with OCPD traits ( $N = 227$ ). All values are standardized regression coefficients (betas).

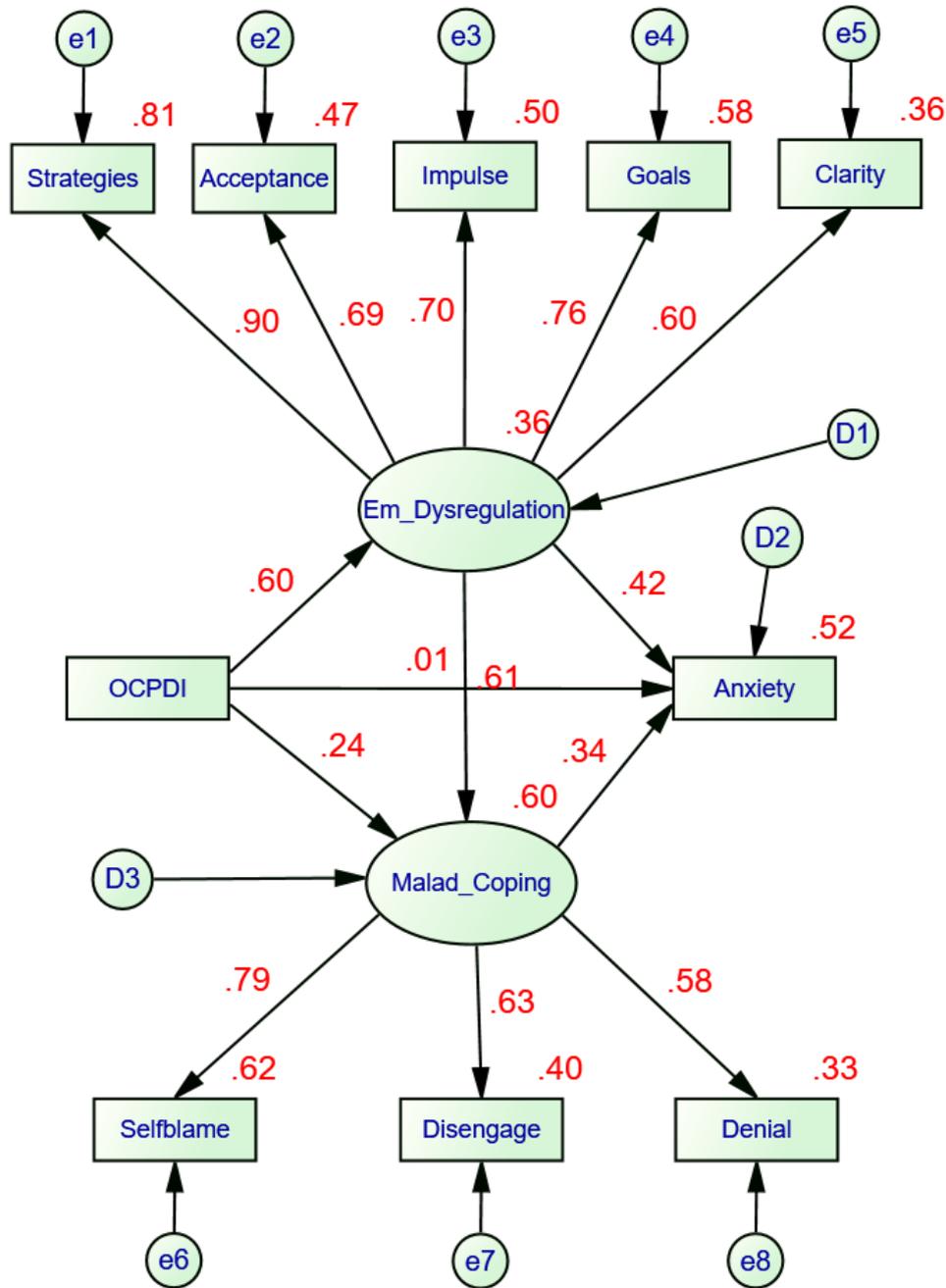


Figure 4-14 Mediation model B of the link between OCPD severity (OC-PDI) and Anxiety by Emotion Dysregulation and Coping within the group with OCPD traits ( $N = 227$ ). All values are standardized regression coefficients (betas).

I also tested the hypothesis that within the group of participants scoring high in OCPD traits the effect of OCPD (measured by the OC-PDI) on Dysthymia would be mediated by Emotion Dysregulation skills and Maladaptive Coping skills (Hypothesis 13).

The Model (Figure 4-16) posits that Emotion Dysregulation and Coping are causally related and fitted the data well:  $\chi^2(31, N = 227) = 50.035, p < .05, CFI = .98, RMSEA =$

.052 (90% confidence interval [CI] = [.022, .078]), SRMR = .035. The Model's standardized direct effect of OCPDI on Dysthymia was  $\beta = .067$  ( $p > .05$ ) dropping from the original  $\beta = .553$  ( $p < .001$ ). Therefore, consistent with the mediational hypothesis there was a drop in the direct effect of OCPD on Dysthymia by 48.6% and this effect was *fully* mediated by Emotion Regulation and Coping. **Hypothesis 13 was confirmed.**

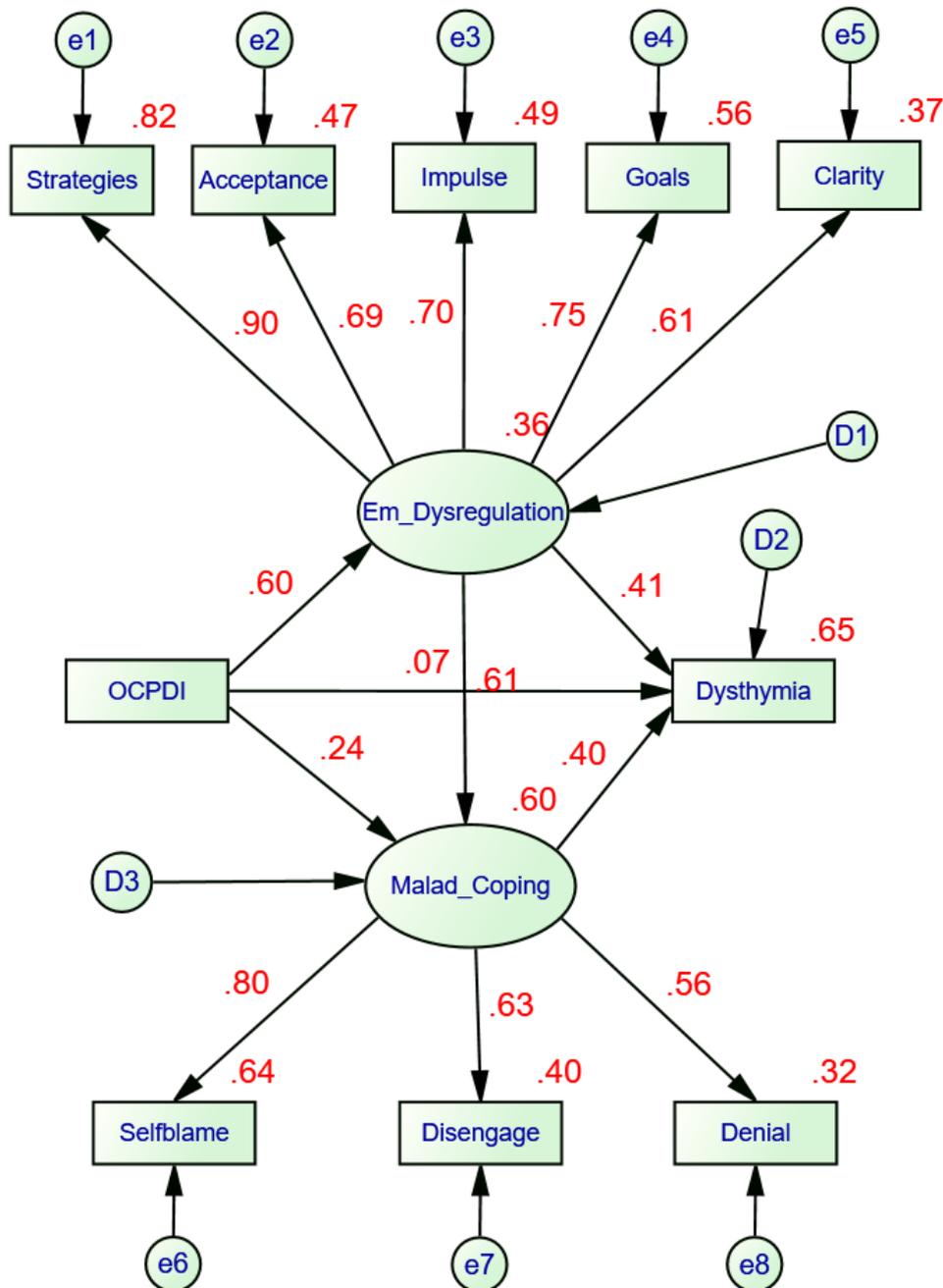


Figure 4-15 Mediation model B of the link between OCPD severity (OC-PDI) and Dysthymia by Emotion Dysregulation and Coping within the sub-clinical OCPD group ( $N = 227$ ). All values are standardized regression coefficients (betas).

A hierarchical multiple regression was used to test whether the traits PID-5 Anxiousness and PID-5 Anhedonia would predict OCPD (as measured by the IPDE OCPD scale) over and above the PID-5 OCPD traits of Rigid Perfectionism, Perseveration, and Restricted Affectivity (Hypothesis 14). The IPDE OCPD total score in the entire sample was the outcome variable, the PID-5 OCPD traits Rigid Perfectionism, Perseveration, and Restricted Affectivity were entered in the first block of the regression and PID-5 Anxiousness and PID-5 Anhedonia were entered in the second block. The final regression model gave a good fit to the data  $F(5, 1082) = 139.84, p < .001$  and the traits PID-5 Anxiousness and PID-5 Anhedonia contributed an additional 1.1 % of the variance ( $p < .001$ ). As shown in *Table 4-18* only PID-5 Rigid Perfectionism, PID-5 Anxiousness, and PID-5 Anhedonia remained significant in the final model with Rigid Perfectionism being the most important contributor in the model. It is also notable that restricted affectivity was not a significant predictor in either the first or the final regression model. **Hypothesis 14 was confirmed**

Table 4-15 Hierarchical Multiple Regression of IPDE OCPD Regressed onto PID Traits

Model		Unstandardized		Standardized	<i>t</i>	<i>p</i>	95.0% CI	
		$\beta$	<i>SE</i>	$\beta$			Lower	Upper
1	(Constant)	-0.24	0.18		-1.29	.196	-0.60	0.12
	PID-5 Rigid Perfectionism	1.56	0.09	0.54	17.66	<.001	1.39	1.74
	PID-5 Perseveration	0.42	0.10	0.13	4.16	<.001	0.22	0.62
	PID-5 Restricted Affectivity	-0.04	0.08	-0.02	-0.55	.578	-0.19	0.11
	PID-5 Anhedonia							
2	(Constant)	-0.50	0.19		-2.62	.009	-0.88	-0.13
	PID-5 Rigid Perfectionism	1.60	0.09	0.55	17.60	<.001	1.42	1.78
	PID-5 Perseveration	0.07	0.13	0.02	0.54	.589	-0.18	0.32
	PID-5 Restricted Affectivity	-0.11	0.08	-0.04	-1.28	.200	-0.27	0.06
	PID-5 Anhedonia	0.23	0.11	0.08	2.13	.033	0.02	0.45
	PID-5 Anxiousness	0.25	0.09	0.09	2.63	.009	0.06	0.43

Note  $R^2 = .39$

## 4.1 Discussion

### 4.1.1 Psychometric Properties of the OC-PDI in the Sample with OCPD Traits, and Criterion Validity

The 42-item OC-PDI was developed in order to assess OCPD in secondary care settings and research. The measure has demonstrated strong psychometric properties, including high internal consistency convergent, divergent, and predictive validity in samples derived from the community and university students. However, psychometric properties and clinical utility had not been assessed in a population screened for OCPD traits. The first objective of the current study was to evaluate the psychometric properties of the OC-PDI in a sample of participants who had been screened for OCPD, using the IPDE Screening Questionnaire (IPDE-SQ) ([Loranger et al., 1997](#)); a self-administered measure of 59 ICD-10 items of which eight pertain to OCPD. Based on the results of the Exploratory Factor Analysis (EFA) and CFA in the community samples (Chapter 3) I tested the fit indices of a six factor model (Model A) in 215 participants who scored  $\geq 6$  in the IPDE-SQ against two competing models: Model B, a second-order factor (OCPD) with direct paths to six first-order factors and Model C, a bifactor model in which all factors operate at the same level, with items organised within their respective first-order factors. Fit indices for Model A ( $\chi^2$ , CFI, RMSEA, SRMR) suggested that the model provided a good fit to the data, with loadings of items in their respective factors within an acceptable range. Model A was superior to Model B and Model C. Moreover, the correlations between factors suggested that a multidimensional model (Model A) is conceptually meaningful and practically useful. Regarding Internal Consistency Item–total correlations ranged from moderate to high and Cronbach's Alpha coefficients were  $> .70$  for all factors ([Cronbach & Meehl, 1955b](#)). In addition, all factors were significantly elevated in the sub-clinical sample compared to the control group of participants. Accordingly, means and medians of each item were elevated in the sub-clinical sample. Overall, **Hypotheses 1-3** were confirmed, and the results show that the OC-PDI is a reliable and valid measure for assessing OCPD and evidences a robust factor structure in sub-clinical sample.

Taking the PID-5 as a measure of criterion validity the OC-PDI showed promising results. **Hypothesis 4** showed the OC-PDI accounts for OCPD variance over and above the variance accounted for by the PID-5 OCPD. This provides evidence that the OC-PDI captures OCPD psychopathology that is not adequately captured by the PID-5 OCPD scales.

Irrespective of these analyses, the OC-PDI may be further improved with an introduction of a Maladaptive Perfectionism scale as the PID-5 Rigid Perfectionism fared well in the results of the Study. The consistency of this trait across studies investigating the validity of the PID-5 should not be discounted. On the other hand, with regards to PID-5 it is proposed that the Intimacy Avoidance facet merits revision or removal. This is explored further in the section below.

#### **4.1.2 Social Anxiety, PID-5 OCPD and the Case for Intimacy Avoidance**

Whereas Social Anxiety has been identified in overcontrolled disorders, predominantly eating disorders ([Hinrichsen, Wright, Waller, & Meyer, 2003](#)), no study has investigated whether levels of Social Anxiety are increased in populations with OCPD. The conceptualization of Social Anxiety and, by implication, the operationalisation of this facet in the OC-PDI- is derived from Lynch and colleagues ([Lynch et al., 2016a](#); [Lynch, Hempel, et al., 2015](#); [Schneider et al., 2013](#)) and the concept of Affiliation Avoidance. However, it should be noted that Affiliation Avoidance in Lynch seems to be a misnomer. On the face it, Affiliation Avoidance is akin to the PID-5 trait of Withdrawal. But, a more careful examination of the concept shows that Lynch describes a traits of Anxiety within social situation. More specifically, Lynch argues that individuals with OC/OCPD have an innate high susceptibility to threat within their proximate environment, in line with Porges' evolutionary theory which suggests that perception of potential social threat initiates a sequence of neural processes to promote adaptive defensive behaviours such as fight, flight, or freeze ([Porges, 2004](#); [Porges, 2007](#); [Porges, 2009a](#)). These physiological processes are posited to inhibit the individual's ability to engage in social interactions by downregulating facial expressions which are contingent on activation of the parasympathetic nervous system (PNS) via activation of the vagus nerve ([Porges, 2001, 2003](#)). Polyvagal theory earmarks facial expressivity as an important safety signal which is emergent during social interactions ([Porges, 1995, 2001, 2003](#)), providing an explanation as to how regulation of cardiac activity (PNS) may contribute to adaptive -versus maladaptive- functioning and socialization. In short, according to Lynch, OCPD individuals will either avoid non-structured social situations or withstand the social situation typically because of a compulsive need to do the right thing. In the latter case, the sense of social threat will make them behave unnaturally (e.g., assuming stilted facial expressions or fake smiles) which in turn makes hard to connect

emotionally with others and build relationships. I decided to operationalize the construct of Social Anxiety as a trait which is separate to Withdrawal (e.g., PID-5 Withdrawal) as already explained Withdrawal from social situations is a Cluster A trait, but it appears to be associated with indifference for social contact or mistrust of others ([Ahmed, Green, Buckley, & McFarland, 2012](#); [Siever, Bernstein, & Silverman, 1991](#)).

Crucially, the introduction of the facet of Social Anxiety in the OC-PDI and the results on the reliability, convergent, discriminant, and predictive validity of this trait offers a new approach to assessment of OCPD. The results confirm previous findings outlined in this thesis. I showed that Social Anxiety measured by a well validated measure of this construct (**Hypothesis 5**) as well as by the OC-PDI Social Anxiety trait (**Hypothesis 6**) were better predictors of OCPD group membership than the PID-5 defined Intimacy Avoidance. It was also shown that within the group of people with OCPD traits Social Anxiety (measured by the SIAS) was a better predictor of PID-5 OCPD (measured by the Mean of PID-5 Rigid Perfectionism, PID-5 Perseveration and PID-5 Restricted Affectivity) than PID-5 Intimacy Avoidance (**Hypothesis 7**). Therefore, Social Anxiety as operationalised by a well validated measure of the concept was linked to two independent widely used measures of OCPD.

This is line with the analyses by [Liggett et al. \(2018\)](#) who found that Intimacy Avoidance was the only PID-5 OCPD trait which was not associated with any OCPD Section II criteria. Consequently, my findings have important implications for the OCPD construct and OCPD measures including the PID-5 OCPD. Regarding the OC-PDI, **Hypotheses 5-7** offer compelling evidence that the operationalisation of Social Anxiety/Social Interaction anxiety has increased the measure's construct validity. On the contrary, the PID-5 OCPD facet of Intimacy Avoidance has been mostly related to Avoidant and schizoid PDs ([Bastiaens, Smits, et al., 2016](#); [Morey, Benson, & Skodol, 2015](#)) and has not fared well in prior studies investigating the psychometric properties of the PID-5 in relation to OCPD ([Watters, Bagby, & Sellbom, 2019](#)). This is confirmed by the pattern of correlations within the subclinical group, shown in Appendix E3: the OC-PDI Social Anxiety correlated significantly with the IPDE-SF OCPD, all OC-PDI subscales and three out of four PID subscales. Intimacy avoidance and did not produce a significant correlation with the IPDE-SF OCPD, it correlated significantly with four of the six OC-PDI subscales and the PID-5 OCPD scales but in comparison correlations were far weaker. Moreover, OC-PDI Social Anxiety produced higher correlations than the PID-5 Intimacy avoidance with all measures of mental health and functioning.

This is important because personality traits are considered maladaptive if they compromise normal capacities relevant to PDs, a premise accepted by proponents of most models of pathological personality, including the Pathoplasticity model (Clark, 2005, the Spectrum model (Lenzenweger, 2006 #107; van Valkenburg, Kluznik, Speed, & Akiskal, 2006) as well as the Impairment-distress model (Schneider, 1958) favoured by proponents of the FFM (Widiger, 2006) and the DSM. The results are also in line with the theory of Lench whereby overcontrolled/OCPD individuals have an innate hyper susceptibility to the evaluation of the level of threat in their surrounding environment processes which limit their ability to engage in social interactions. Indeed, these results confirm the characterization of OCPD as a disorder of emotional isolation, stemming from marked social anxiety, a central tenet of Lynch's neuroregulatory model of overcontrolled disorders which is in turn linked to High temperamental threat sensitivity (Lynch, 2018a). Therefore, the empirical evidence obtained in this study as well as the results of Chapter 3, in conjunction with previous studies, suggest that removal of the trait of Intimacy Avoidance from the PID-5 OCPD construct is warranted. In summary, I propose the removal of the PID-5 Intimacy Avoidance subscale and the introduction of a scale to capture Social Anxiety/Social Interaction anxiety in PID-5 and others measures of OCPD. This will not only increase the specificity of the measures with regards to OCPD assessment but it may well offer new avenues in treatment formulations for patients (Gordon-King, Schweitzer, & Dimaggio, 2019).

#### 4.1.3 Emotion Dysregulation

The OCPD group scored significantly higher than the control group (IPDE <6) in all facets of Emotion Regulation difficulties, except for the Awareness facet. **Hypothesis 8** provides evidence as to link between OCPD and deficits in Emotion Regulation. The effect of OCPD on well-being was mediated by Emotion Regulation skills.

The regulation of affective states is an intricate matter which constitutes a vital aspect of mental distress. The concept has a long history (Weems & A. Pina, 2010) and a prominent role in clinical psychology. To my knowledge no prior study has focused on Emotion Regulation and OCPD. Over the last decades, a large body of scientific literature has shown that difficulties in Emotion Regulation constitute a principal element in the development and maintenance of psychopathology. Specifically, early use of Emotion Dysregulation in therapeutic formulation and therapy was linked to Borderline Personality Disorder (BPD). This was in line with the trend in clinical research to focus on the assessment and treatment

of BPD which has dominated research output among PDs ([Widiger, 2016](#)) followed by Antisocial and Schizotypal Personality Disorders ([Boschen & Warner, 2009](#)). This bias has been reinforced to a degree by the success of Dialectical Behavioural Therapy (DBT) ([Linehan et al., 2006](#)) which posits that BPD is primarily a disorder of Emotion Dysregulation ([Shearin & Linehan, 1994](#)). By contrast, other personality disorders, including OCPD are posited to be characterised by Overcontrol, i.e., a higher order trait which is typically suggested to involve Perfectionism and Emotion Inhibition ([Dimaggio et al., 2018](#)); while others have suggested that Emotion Inhibition is a putative underlying factor shared by the understudied Cluster C PDs ([Popolo et al., 2014](#)). However, there seems to be a misconception at play here. Whereas PDs such as BPD and OCPD can be construed as the opposite poles in the higher order trait of Impulsivity-Inhibition ([Clark et al., 2014](#); [Clark, 2005](#)) and even the lower order trait of Inhibition of Emotional Expression, this does not ensue that individuals with PDs such as OCPD are free from Emotion Regulation difficulties. A plausible cause of this misconception is the expression of intense emotion in BPD versus other disorders. Overwhelming negative emotions are expressed in BPD by impulsive, acting-out behaviours. In contrast, intense negative emotions in OCPD are not typically expressed by such behavioural patterns. Moreover BPD is characterised by pronounced emotional lability which is not a core personality trait of PDs such as OCPD or the Cluster C PDs ([APA, 2013](#)). In other words, there seems to be a conceptual mistake at play that equates difficulties in Emotion Regulation with Emotional Lability and disinhibition in the expression of intense negative emotion. This phenomenological misapprehension is in conflict with the conceptualisation of Emotion Dysregulation by [Gratz and Roemer \(2004\)](#) who proposed that Emotion Dysregulation does not just involve the modulation of emotional arousal, but other aspects such as understanding one's emotional experience, and acceptance of emotions. Moreover, the narrow conceptualization of Emotion Regulation outlined above, is in conflict with empirical research which has found that Emotion Regulation difficulties are present in disorders, such as generalized anxiety disorder (GAD) ([Mennin, Heimberg, Turk, & Fresco, 2002](#); [Roemer et al., 2009](#)) and posttraumatic stress disorder (PTSD) ([Ehring & Quack, 2010](#); [Tull, Barrett, McMillan, & Roemer, 2007](#)).

In summary, the results of the present Study showed that individuals with OCPD traits display deficits in five out six Emotion Regulation facets: Non-acceptance of Emotional Responses, Difficulties Engaging in Goal-Directed Behaviour, Impulse Control Difficulties, Limited Access to Emotion Regulation Strategies, and Lack of Emotional Clarity. Difficulties

in Emotion Regulation mediated the effect of OCPD on well-being. The importance of the confirmation of **Hypothesis 8** is further supported by the size of our sample and the fact two different measures of OCPD were used in the mediation analyses: the IPDE OCPD, and the OC-PDI. It should be noted that the facet of Awareness has generally not fared well in psychometric studies of the DERS and DERS-SF ([Kaufman et al., 2016](#)). In addition, a plausible explanation for the fact that individuals higher in OCPD traits did not differ significantly from the control group in Lack of Emotional Awareness is that individuals with poor emotion awareness might misconstrue mindful awareness of emotions with ruminative engagement in cognitive-emotional processes. Nevertheless, the results of the study are in line with recent research which has demonstrated that Emotion Regulation deficits constitute a transdiagnostic psychopathological domain affecting a range of disorders ([Aldao & Nolen-Hoeksema, 2010](#); [Sloan et al., 2017](#)). Therefore, the results provide sound evidence that Emotion Dysregulation is an underlying mechanism in OCPD psychopathology. These findings can inform clinical understanding, assessment and treatment of OCPD.

#### 4.1.4 Emotion Regulation, Anxiety and Depression

**Hypotheses 9** and **10** were both confirmed: within the sub-clinical OCPD sample, the link between OCPD (OC-PDI total score) and anxiety and depression-respectively- was mediated by Emotion Regulation deficits. Two facts make these findings pertinent. First, the sampling method that provided a sub-clinical OCPD group, measured by a score of six or more endorsed items on the IPDE-SQ, render these tests more clinically relevant. Although no interview method was employed for an OCPD diagnosis the size of the original sample and the strict IPDE-SQ cut-off employed to identify individuals high in OCPD traits ensure that the results are generalizable to populations with at least sub-clinical OCPD. Second, no prior study has investigated the mediating role of Emotion Regulation Difficulties on anxiety and depression in OCPD. The result on anxiety is of significance as a central postulate of this thesis is that trait anxiety is the cardinal feature and most salient symptom of OCPD. This is in line with the two most prominent theories on OCPD.

Lynch draws on Porges's polyvagal theory which posits that people are designed with the ability to shift between physiological states which promote defensive arousal and states which facilitate co-operation within the tribe as per environmental demands ([Porges, 1995](#)). According to Lynch the key problem for individuals with OCPD is that their innate susceptibility to perceived threats makes them prone to initiate defensive responses in the

absence of or in excess to situational stressors; this largely innate difficulty prompts in addition a delayed return to a calm state following withdrawal of a real or perceived threat ([Lynch et al., 2016a](#)).

Hertler ([Hertler, 2015a, 2015c, 2015d](#)) uses, aptly, the example of a storm threatening the man and the house he lives in to describe the “obsessive anxiety” ([Hertler, 2015c, p. 22](#)), a permanent state of fear, threat and tension that is the focal temperament in OCPD. This kind of anxiety is not the same as the anxiety experienced by the other two Cluster C personalities which share an anxious and fearful disposition. It is unique in OCPD; it serves different functions and it brings about an entirely different set of reactions; this uniqueness according to Hertler (p.23) should be used in differential diagnosis. However, as long as the effect of anxiety is fully mediated by deficits in Emotion Regulation, as shown here, then new avenues are offered in terms of exploring causal paths between obsessional traits and states; given the role of awareness of emotions and acceptance in cognitive ([Beck, Davis, & Freeman, 2016; Segal, Williams, Teasdale, & Kabat-Zinn, 2018; Young, 1999](#)) and acceptance based formulations and treatments ([Hayes, Strosahl, & Wilson, 2009; Roemer & Orsillo, 2011](#)).

#### 4.1.5 OCPD Comorbidity with Dysthymia and mediation

This is the first study to investigate Dysthymia in a group of people with OCPD traits. Both Hypotheses investigated were confirmed. Dysthymia was significantly higher in the sub-clinical OCPD group than the Control group and it was a better predictor of OCPD group membership than depression, measured by the depression subscale of the HADS ([Zigmond & Snaith, 1983](#)) (**Hypothesis 11**). The results indicate a clear association between Dysthymia and OCPD traits. This is another important finding of the study with potential importance in OCPD formulations. Despite early reports urging for intensive and design-specific developments of research programs to address the unmet need for therapeutic interventions of Dysthymia ([Howland, 1991; Markowitz, 1994](#)) systematic reviews on pharmacotherapy for Dysthymia have reported moderate benefits of studies for dysthymic patients. [de Lima, Hotoph, and Wessely \(1999\)](#) reported that several classes of antidepressant had the same moderate effect but for the short term, [Kocsis \(2003\)](#) found a moderate effect of short-term pharmacological trials (with remission rates lower than 50%), and [Silva de Lima, Moncrieff, and Soares \(2005\)](#) reported a poor, overall, quality of studies showing that antidepressant medication was superior to placebo but not when more stringent criteria (full remission) were employed. Despite the plethora –and success- of psychotherapeutic interventions for a range

of mental health problems, very limited clinical research has been carried out on psychological treatments focusing on Dysthymia and chronic forms of depression; a surprising fact considering that 36% to 47% of patients with mood disorders treated in outpatient mental health settings are chronically depressed ([Cuijpers et al., 2010](#); [Torpey & Klein, 2008](#)). Yet, by general consensus not only are dysthymic patients underdiagnosed and poorly treated but there has been minimal progress with respect to specific aetiopathological pathways that could lead to the development of individualised psychotherapeutic plans ([Torpey & Klein, 2008](#)). Instead, research has mostly focused on epidemiological findings including the considerably higher disability ([Wells, Burnam, Rogers, Hays, & Camp, 1992](#)), co-morbidity ([Angst, Gamma, Rossler, Ajdacic, & Klein, 2009](#)), and economic costs ([Smit et al., 2006](#)) of Dysthymia and chronic depression compared to MDD. In the meta-analysis of 16 clinical trials reporting the effect of psychotherapy for chronic major depression and Dysthymia [Cuijpers et al. \(2010\)](#) found a small effect compared to controls which was considerably smaller than the effect of SSRI medication. The study by [Cuijpers et al. \(2010\)](#) demonstrates that psychotherapeutic interventions for patients with Dysthymic Disorder have only recently started to develop.

It should be noted that [Torpey and Klein \(2008\)](#) reports higher suicidality of dysthymic patients compared to MDD and [Angst et al. \(2009\)](#) higher levels of hopelessness and fear of dying. Moreover, it was recently shown that OCPD traits are associated with suicidal thoughts, non-suicidal self-injury, and suicide attempts, i.e., three suicide-related outcomes even after controlling for depressive symptoms and mood instability ([Bowen et al., 2018](#)). Study 5, in conjunction with the above outlined findings shows that there is a need for improved mental health care of patients with OCPD traits and Dysthymia. In line with [Lynch \(2018a\)](#) clinicians should also be aware that OCPD patients are far more likely to self-harm secretly, i.e., there is an absence of attention seeking function and people with OCPD and comorbid depression are significantly more likely to commit suicide, compared to patients with depression alone ([Diaconu & Turecki, 2009](#)). As there is no data available for people with OCPD and Dysthymia and because the clinical presentations of depression (in the form of MDD) and Dysthymia may not always be clearly discernible, clinicians should be especially vigilant to assess self-harm and suicidal intent in patients with OCPD.

#### 4.1.6 Coping

People with OCPD traits employ Denial, Behavioural Disengagement and Self-blame more than the control group. This was confirmed. It was also found that people with OCPD traits employ to a higher degree planning. A great deal of literature has been dedicated to exploring the adaptive and maladaptive character of the Brief COPE facets. It is beyond doubt that most of the COPE strategies have an adaptive or maladaptive function depending on context and purpose. For instance, planning is generally considered to be an adaptive Coping mechanism that allows for effective problem solving. However, in this instance, the statistically increased used of planning by the group of people with OCPD traits, most possibly refers to the compulsive planning that permeates many of the aspects of these individuals' lives. OCPD is a disorder in which excessive preparation, in the form of planning or similar activities (such as list making) renders the task at hand impossible to finish. Behavioural Disengagement is a related facet in that problem solving is impaired by the excessive standards that people with OCPD have for that task at hand. The use of Behavioural Disengagement is therefore congruent with the current scientific understanding and literature on OCPD ([de Reus & Emmelkamp, 2012](#); [Pinto et al., 2011](#)). Similarly the increased use of Self-blame is consistent with the excessive self-imposed standards and the Perfectionism of people with OCPD ([Diedrich & Voderholzer, 2015](#); [Pfohl & Blum, 1991](#)), although to my knowledge this is the first time that these aspects have been directly linked with OCPD. This is also true for Denial which has never been linked to OCPD. Therefore, both Self-blame and Denial are new empirical findings within OCPD psychopathology. These are specific phenomenological elements which merit further investigation as they may aid assessment and conceptualisation of OCPD. Confirmation of **Hypothesis 12** demonstrated that the posited cardinal feature of patients with OCPD, anxiety, is mediated by deficits in Emotion Regulation and Coping. **Hypothesis 13** showed that Dysthymia in people with OCPD traits is also mediated by deficits in Coping and Emotion Regulation strategies. The models tested offer a useful map of deficiencies in Emotion Regulation and Coping skills that should be evaluated in terms of assessment and inform diagnoses of people who present OCPD traits in primary and secondary care, whereby OCPD should probe further investigation specifically for Dysthymic Disorder. Crucially, confirmation of Hypothesis 12-13 may offer useful avenues in terms of treatment formulation, which could target the specific Coping mechanisms met in this group of patients.

#### 4.1.7 Anxiousness and Anhedonia as OCPD traits

**Hypotheses 14** investigated whether PID-5 Anxiousness and PID-5 Anhedonia predicted OCPD (measured by the IPDE OCPD scale, in the entire sample) over and above the PID-5 OCPD traits of Rigid Perfectionism, Perseveration, and Restricted Affectivity. The hypothesis was confirmed. It is noted that in the few studies that investigated the validity of the PID-5 the Anxiousness trait, it has produced consistently moderate to strong correlations with traditional OCPD (Yam & Simms, 2014) or uniquely incremented the prediction of traditional OCPD (Anderson & Sellbom, 2018). The link between Anhedonia and OCPD has not been investigated. The confirmation of Hypothesis 4 strongly supports the conceptualisation of OCPD as a disorder of Maladaptive Overcontrol. Indeed Lynch, largely adopting the neurobehavioral model of Personality disorders by (Depue, 2009) in this instance, argues that the overcontrolled individuals experience a chronic, reduced hedonic tone. This is one of the reasons why people with OCPD traits fail to sustain benefit from social reinforcers, occurring typically within unstructured social situations. The results show that the traits of Anxiousness and Anhedonia trait deserve further research and are candidate traits for inclusion in the PID-5 OCPD and the OC-PDI. Future research should replicate the findings and further investigate if the construct of OCPD must be revised to include these traits in assessment measures.

#### 4.1.8 Conclusion

Study 5 confirmed that the OC-PDI has a robust factor structure and strong internal consistency. My analyses regarding the validity of the measure focused on the PID-5 OCPD construct which was used as measure of criterion validity. I have shown that the OC-PDI was a better predictor than the PID-5 OCPD trait profile of OCPD as measured by an independent measure of OCPD (the IPDE OCPD scale). In summary, within a sample of participants with OCPD traits the OC-PDI showed better predictive validity than the PID-5 OCPD. The results further offered important insights on the OCPD construct, including information related to refinement of the DSM-5 Section III OCPD trait profile. I suggested that Social Anxiety should be introduced in measures of OCPD and I confirmed previous evidence which supported my hypothesis that the PID-5 Intimacy Avoidance is not conceptually related to OCPD. Importantly, Study 5 demonstrated the people who score high in OCPD traits have poor Emotion Regulation and Coping skills and that deficits in these areas are in part responsible for the depression and anxiety of individuals with OCPD.

## Chapter 5: Summary, Limitations and Future Directions

### 5.1 Theoretical Considerations and Summary of Important Findings

This thesis started by outlining the theories and empirical evidence on the two approaches which have informed the literature on personality disorders and personality pathology: Dimensional and person-centered approaches. I presented a brief history of the construct of overcontrol as this was conceptualized within the typological (person-centered) approach. I then outlined theoretical and methodological/empirical limitations of the construct of overcontrol, first introduced by Block ([Block, 1971; 2017; Block & Block, 1980](#)) and later formulated into the Resilients/Undercontrollers/ Overcontrollers (RUO) typology by [Robins et al. \(1996\)](#). I concluded that despite receiving some initial empirical support, the overcontrolled type and the RUO model lack conceptual clarity and sound empirical basis and the traditional construct of overcontrol is deficient in homogeneity and stability of content. I then defined the construct of maladaptive Overcontrol and presented the Neuro-biosocial model, as the theory underlying maladaptive OC ([Lynch et al., 2016b; Lynch, 2018a](#)). Finally, I argued that there is a need for the development and validation of assessment tools that reliably measure OCPD, based on theoretical developments in this area.

In Studies 1 and 2 of Chapter 2, I described the development and validation of a 17-item scale, the Brief Overcontrol Scale (BOS), based on up to date theoretical conceptualisations and designed to be used as a screening measure for Maladaptive Overcontrol. The BOS was found to have good internal consistency, convergent, divergent, and predictive validity. With regards to the measure's construct validity the most important finding was that the BOS accounted for variance of OC-related pathology over and above the effect of stress, depression and anxiety. Given its simple format and evidence supporting its construct validity, the BOS may be an excellent screen for OC/OCPD, shorter in number of items than any other measure of OCPD. However, it should be noted that the construct validity of the measure has not been fully established. A measure which was developed to capture OC pathology in more than one disorder should be tested in samples of individuals with diagnoses which have established links with OCPD traits, e.g., Anorexia Nervosa and OCD.

In Chapter 3, I described the development of a 42-item scale, the Obsessive-Compulsive Personality Inventory (OC-PDI), designed to assess OCPD and OCPD traits.

This measure showed a robust factor structure, developed in Study 3 and confirmed in Study 4. The OC-PDI showed good convergent validity: it converged positively and highly with all measures of OCPD included in Study 4. Divergent validity was also strong as shown in Study 4. Also, in Study 4, the OC-PDI showed strong predictive/external validity: The OC-PDI produced higher correlations with measures of depression, well-being, and rumination compared to three other measures of OCPD and was the highest negative predictor of well-being and the highest positive predictor of depression compared to other personality disorders. This finding directly contradicts previous evidence that OCPD is associated with better quality of life ([Cramer, Torgersen, & Kringlen, 2006](#); [Saulsman & Page, 2004](#)) and with less functional impairment compared to other personality disorders ([Skodol et al., 2002](#)). Of some consequence to this fallible notion seem to be two facts: first, the potential adaptive value of certain OCPD traits traditionally related to OCPD (such as Perfectionism) in contexts where high performance is merited; second the dubious distinction originally suggested by [Hamachek \(1978\)](#) between two forms of Perfectionism, a negative form labelled “Neurotic Perfectionism” and a positive form named “Normal Perfectionism”. The latter term, despite being a misnomer, is still used in psychology ([Egan, Piek, & Dyck, 2015](#); [Suh, Gnilka, & Rice, 2017](#); [Wang & Li, 2017](#)).

Study 5 of Chapter 4 offered important findings in terms of assessment and conceptualisation of OCPD. First, I showed that the structure of the OC-PDI was re-confirmed in a sample which consisted of participants scoring high in OCPD traits. It was further shown that the internal consistency of the subscales was consistently above the accepted criteria of Cronbach’s alphas ( $> 0.7$  and  $> 0.8$  ([Clark & Watson, 1995](#); [Streiner, 2003](#))). Moreover, the OC-PDI total score predicted OCPD pathology over and above the PID-5, offering further evidence on the predictive validity of the OC-PDI. Therefore, taken together, the results in Studies 4 and 5, suggest that the OC-PDI is a psychometrically sound instrument that can be used to assess OCPD and OCPD traits and may prove useful in research of OCPD as well as in clinical settings, as an adjunct to structured psychiatric interviews or when such interviews are less feasible.

In Study 5, I also showed that Social Interaction Anxiety and Social Anxiety were stronger predictors of sub-clinical OCPD than Intimacy Avoidance. In fact, the PID OCPD construct performed consistently better when the Intimacy Avoidance was removed (See Appendix E.5). The introduction of Social Anxiety as part of OCPD has implications both for assessment and clinical treatments of OCPD. The only treatment developed specifically for

overcontrolled disorders/OCPD targets social signalling and interpersonal relatedness but not Social Anxiety per se. As insight into the assessment and pathology of OCPD increases, more targeted treatment of Social Anxiety/Social Interaction Anxiety should become possible.

Evidence of a strong link between OCPD and Dysthymia was found in Study 5. This confirms previous epidemiological evidence of increased prevalence of Dysthymic Disorder (DD) in OCPD ([McGlashan et al., 2000](#); [Skodol et al., 1999](#)) and is another finding that merits attention and should prompt further assessment in clinical settings for individuals with OCPD, especially because the clinical presentation of Dysthymic disorder is different to that of Major Depressive Disorder (MDD).

Moreover, it was demonstrated that the effect of OCPD on well-being was mediated by Emotion Regulation difficulties. Similarly, within the group of participants scoring high in OCPD traits the effect of OCPD on anxiety and depression was mediated by Emotion Regulation difficulties. I further tested mediational models which included Coping based on the premise that Coping and Emotion Regulation are conceptually related ([Aldao, Nolen-Hoeksema, & Schweizer, 2010](#); [Berking & Wupperman, 2012](#); [Compas et al., 2014](#)). It was found that within the group of participants scoring high in OCPD traits, the effect of OCPD on anxiety and Dysthymia was mediated by Emotion Dysregulation and Maladaptive Coping. This is the first time that OCPD is linked to specific Emotion Regulation deficits, a finding that merits attention from researchers and mental health practitioners.

As part of Study 5, I argued that the capacity to delay reward ([Pinto et al., 2014](#)), the increased distress tolerance ([Gorey et al., 2018](#); [Lynch & Mizon, 2010](#)), perseverance ([APA, 2013](#)), and in particular the high Constricted Expressivity associated with OCPD might be misconstrued as an increased capacity to regulate emotions –or as absence of dysfunction in this domain. In turn, in the already under-studied domain of OCPD, such misconception has led to a complete lack of data on the Emotion Regulation deficits in individuals with OCPD, in stark antithesis with personality disorders characterized by a dramatic style of emotional expression such as Borderline personality disorder (BPD). Indeed, in terms of displaying emotion, OCPD and BPD appear to be at the opposite pathological ends of a continuum of context appropriate emotional expression. However, in terms of the emotional experience per se, the evidence provided by the mediation analyses demonstrates an inability to regulate intense emotional responses in individuals scoring high in OCPD traits.

The strong associations of OCPD with depression, rumination, and well-being are also congruent with an increased vulnerability to high emotionality-bringing the evidence in line with the biosocial theory by [Linehan \(1993b\)](#). The clinical implication is that Dialectical Behavioral Therapy (DBT) skills that target Emotion Regulation deficits might be of benefit to patients with OCPD. RO-DBT, a therapy specifically developed to address Overcontrol ([Lynch, 2018a](#); [Lynch, 2018b](#)) has largely been based on (DBT). However, the RO-DBT model emphasizes emotional loneliness and not Emotion Regulation as the root cause of functional impairment and key target in psycho-therapeutic formulations ([Lynch et al., 2016b](#)). Unquestionably, the interpersonal domain is severely affected in individuals diagnosed with OCPD ([Wheaton & Pinto, 2019](#)). Moreover, the repertoire of Coping and Emotion Regulation in individuals with OCPD is, plausibly, different to the Emotion Regulation strategies employed by individuals with BPD. Nevertheless, the results on the role of Emotion Regulation on clinical outcomes as important as Dysthymia, depression, anxiety, and well-being constitute an important first step toward a new framework for assessment and clinical decision-making in OCPD.

Future research in patients with OCPD should replicate the mediating function of Emotion Regulation deficits in clinical outcomes and should further investigate the relationship between Emotion Regulation and interpersonal dysfunction. Indeed, the evidence on the Emotion Regulation deficits in OCPD, offered as part of Study 5 in Chapter 4, warrants a more detailed investigation of the role and facets of Emotion Regulation in OCPD and their relationship with functional impairment across a range of psychological and occupational and social spheres. An investigation that explores the links between cognitive schemas and Emotion Regulation facets in OCPD would be valuable. Evidence suggests specific patterns of association between core beliefs and psychopathology profiles as well as symptom severity in obsessive-compulsive disorder (OCD) ([Briggs & Price, 2009](#)), depression ([Dozois & Rnic, 2015](#); [Keefe, Webb, & DeRubeis, 2016](#); [Riso et al., 2003](#); [2007](#)) and personality disorders ([Butler, Brown, Beck, & Grisham, 2002](#); [Davidson, 2008](#); [Jovev & Jackson, 2004](#); [Nordahl, Holthe, & Haugum, 2005](#); [Thimm, 2010](#)). This line of research will prove relevant in assessment and treatment of OCPD and overcontrolled disorders. In summary, difficulties in Emotion Regulation can predict various indices of psychosocial functioning ([Wilks, Korslund, Harned, & Linehan, 2016](#)). Therefore, further research on this front is bound to have important implications in the conceptualization of OCPD as well as the highly comorbid depression and anxiety in individuals with OCPD ([Berking et al., 2008](#);

[Berking, Wirtz, Svaldi, & Hofmann, 2014](#); [Radkovsky, McArdle, Bockting, & Berking, 2014](#)).

## 5.2 Future Directions: an OCD Spectrum or an OCPD Spectrum of Disorders?

Viewing disorders in terms of a spectrum provides researchers a framework with which to better understand and treat these disorders. A basic premise of the model of maladaptive OC ([Lynch, 2018a](#); [Lynch, 2018b](#)) is that OCPD is the prototypical OC disorder and other disorders such as anorexia nervosa belong to the OC spectrum to the extent they share the features of OCPD. A similar argument was proposed for OCD. The concept of obsessive-compulsive disorders spectrum has been proposed by research in the early 90s', based on the premise that some disorders share the core clinical features (obsessive thoughts and compulsive behaviours) biological markers, presumed aetiology, and treatment response, with obsessive-compulsive disorder (OCD) ([Hollander, 1993](#); [Hollander & Benzaquen, 1996](#); [McElroy, Phillips, & Keck, 1994](#); [Rasmussen, 1994](#)).

The proposed OCD spectrum disorders have included, among others, Body Dysmorphic Disorder, Hypochondriasis, Anorexia Nervosa, Trichotillomania, some forms of Delusional Disorder, Tourette's disorder, Tic Disorders and Pathological Gambling. Over the last decades, advances in OCD research have led to increased attention to shared neurobiological features of the OCD spectrum of disorders offering a better understanding of OCD and related disorders. Data from a wide range of studies including genetic studies, studies on comorbidity, endophenotypes, functional imaging and neuroimmunological studies helped narrow down an over-inclusive list of OCD spectrum disorders based on different theoretical models ([Bienvenu et al., 2012](#); [Boulougouris, Chamberlain, & Robbins, 2009](#); [Denys, 2006](#); [Fineberg, Marazziti, & Stein, 2001](#); [Lochner et al., 2005](#); [Lochner & Stein, 2006](#); [Nestadt et al., 2003](#); [Phillips et al., 2010](#); [Stein, 2000](#)).

Although OCD was classified as an anxiety disorder in the DSM-IV([APA, 2000](#)) evidence on the phenotype, symptomatology, course of illness, patient population, and neurocircuitry of OCD and related disorders has led to reclassification into an obsessive-compulsive spectrum disorders cluster in the DSM-5 *Obsessive-Compulsive and Related Disorders* diagnostic category which included, in addition to OCD, Trichotillomania, Hoarding Disorder, Skin Picking Disorder, and Body Dysmorphic Disorder. ([APA, 2013](#); [Monzani, Rijdsdijk, Harris, & Mataix-Cols, 2014](#); [Van Ameringen, Patterson, & Simpson,](#)

2014). Interestingly, OCPD has not, typically, been treated as a putative OCD spectrum disorder. However, [Fineberg et al. \(2015\)](#) showed that individuals with OCPD have significantly higher set shifting and executive planning deficits compared to healthy controls, a neurocognitive profile which is similar to neurocognitive circuits of OCD.

Taking all evidence into account (evidence produced largely by studies investigating OCD with and without comorbid OCPD), [Fineberg et al. \(2015\)](#) argue that OCPD is a neurocognitive function disorder that belongs to the OCD and related disorders category, rather than among personality disorders. This argument is further supported by the fact that the trait/state distinction is not without controversy in the field of psychopathology. In an important review which considered phenomenology, heritability estimates, environmental factors, course of illness, neurocognitive endophenotypes, and treatment response of obsessive-compulsive and related disorders including OCPD. [Stein et al. \(2016\)](#) proposed that OCPD should be included in both the OCRD and the Personality Disorders category, under “dual parenting” status. This last premise was investigated by [Atmaca, Korucu, Tabara, Yildirim, and Kilic \(2019\)](#) who found that patients with OCPD had significantly smaller left and right orbito-frontal cortex volumes and greater left and right thalamus volumes compared to healthy controls. This is similar to volumetric data reported in patients with OCD ([Atmaca et al., 2006](#); [Atmaca, Yildirim, Ozdemir, Tezcan, & Poyraz, 2007](#)) suggesting that the same neuroanatomic abnormalities are implicated in the pathophysiology of OCPD and OCD, which in turn, is posited to suggest that OCPD might be neuroanatomically associated with OCD spectrum disorders.

On the other hand, with the exception of OCD, there is far from sufficient evidence on personality and clinical characteristics in patients with OCRDs to suggest consistent links with a particular personality disorder or indeed specific OCPD traits, as these are operationalised in DSM-5 or ICD-11 ([Stein et al., 2016](#)) - see for example [Christenson, Chernoff-Clementz, and Clementz \(1992\)](#) and [Hagh-Shenas et al. \(2015\)](#) for Trichotillomania. The field would benefit from empirical studies on OCPD personality traits in DSM-5 obsessive-compulsive and related disorders. Future research that would investigate links between the BOS/OC-PDI traits in DSM-5 Obsessive-Compulsive and Related Disorders would not only offer new data on the construct validity of the measures but shed further light on the classification of OCPD as part of the OCD spectrum disorders.

### 5.3 Strengths and Limitations

I have presented information regarding the development of two scales to measure the trait dimensions of Maladaptive Overcontrol and OCPD. Existing scales for overcontrol are based on a narrow conceptualisation of the construct of overcontrol, they are unreliable, have poor convergent or divergent validity, and are cumbersome in length. The 17-item BOS was developed and tested in two studies with large samples sizes and bias from random responding was controlled by the strict criterion of 100 % accuracy of responses to the random response scales employed. The BOS has excellent psychometric properties and, although developed to have maximum sensitivity, it has an equally strong specificity as shown by convergent correlations with subscales of an OCPD measure and by the fact that it predicts OC pathology over and above stress, depression and anxiety. Collectively, findings from Studies 1 and 2, suggest that this new scale is both internally consistent and valid.

A wide range of evidence for the reliability and validity of the OC-PDI was offered in Studies 3, 4, and 5. As in the case of the BOS our use of different random response scales which consisted of different style of questions dispersed in a true random order within the survey meant that random response bias was addressed efficiently and is a key strength of the studies that aimed to validate the OC-PDI. Moreover, the OC-PDI was developed in studies utilizing large samples which were wide in age, gender, and ethnicity thus increasing the generalizability of findings. Indeed, the OC-PDI not only retained its six-factor structure in three independent samples but also loadings of the items onto their respective factors retained the same magnitude across different samples. Similarly, the subscales' reliability was consistent. These findings show excellent factorial stability and reliability and demonstrate that the resulting measure could be used to assess change in therapeutic and research settings as well as aiding in diagnosis and assessment. Importantly, although using clinical populations to test the factor structure and psychometric properties of the OC-PDI was not feasible, the generalisability of the findings to populations with OCPD traits was accomplished by the use of a subsample of participants which endorsed six or more diagnostic criteria of OCPD as captured in the IPDE-SQ. Similar studies that have used self-report measures in order to recruit samples scoring high in OCPD traits have adopted the cut-off point of four out of eight diagnostic criteria ([Griffin et al., 2018](#))-as assessed by the Personality Diagnostic Questionnaire-4 (PDQ-4; ([Bagby & Farvolden, 2004](#))). Plausibly our use of a stricter cut-off increased the specificity the IPDE-SQ bringing our sample much

closer to a clinical sample, which would be secured by means of a standardized psychiatric interview.

In conclusion, although not a substitute for clinician-rated scales or in-depth diagnostic interviews, and not yet shown to be treatment sensitive, the OC-PDI appears to be a promising and simple screening instrument which may find other applications through further research.

Several limitations deserve comment. First, as noted, a limitation of both the BOS and the OC-PDI, is that structured psychiatric interviews were not incorporated in the analyses ([Furr, 2011](#); [Rust & Golombok, 2013](#)). Future research will be necessary to establish the reliability and validity of the BOS and OC-PDI in adult psychiatric patients to confirm that the measures can differentiate between normal and patient samples and to develop clinical norms.

More specifically, the utility of the BOS as a first-stage screener should be evaluated in various settings and with groups of people meeting criteria of different putative OC disorders including the DSM-5 diagnostic group of Obsessive-Compulsive and Related Disorders, as well as disorders not related to OCPD but characterized by marked anxiety and worry. In summary, the discriminant validity of the BOS needs further examination with clinical samples. Regarding the OC-PDI, the strict cut-off criterion on the IPDE-SQ entails that the clinical utility of the OC-PDI in individuals scoring high in OCPD traits is not precluded. The discriminant validity of the OC-PDI was presented as part of Study 4 in Chapter 3 and as noted, it was found to be strong. But similar to BOS, it is crucial that the ability of the OC-PDI to discriminate between patients with OCPD and patients meeting criteria for the rest of DSM-5 personality disorders, is evaluated by data which is based on clinical judgement. The lack of such data did not allow obtaining sensitivity and specificity of the total score and subscales of the measures for discriminating between patients with OC/OCPD and other disorders. The use of a sample of psychiatric patients and a matched control sample would offer the additional advantage of estimating sensitivity and specificity of the BOS and OC-PDI via a Receiver operating characteristic (ROC) curve, a standard psychometric practice which can test how well a measure performs with clinical populations and offers useful data for estimating the optimal cut-off scores ([Akobeng, 2007](#); [Hajjan-Tilaki, 2013](#); [Hanley & McNeil, 1982](#); [Perkins & Schisterman, 2006](#)).

Second, despite the validity evidence that I presented for the BOS and the OC-PDI, I note that these relied exclusively on self-report data. Cross-informant validity data are neglected in research on adult psychopathology ([Achenbach, Krukowski, Dumenci, & Ivanova, 2005](#)). However, several researchers have argued that informant data are a vital component of validity especially in measures of personality and personality disorders ([Achenbach, 2006](#); [Hofstee, 1994](#); [Oltmanns, Turkheimer, & Strauss, 1998](#); [Vazire & Mehl, 2008](#)). Individuals with personality disorders are often unable to perceive themselves accurately and realistically and are typically unaware of the effect of their behaviour on other people ([Klonsky, Oltmanns, & Turkheimer, 2002](#)). Therefore, assessing personality and validating personality questionnaires with self-report questionnaires becomes a far more challenging task compared to assessment (and validation) of constructs on which first person information is typically more reliable. Adding informant reports would have improved the validity of the measures developed, by reporting agreement of self and informant data, and would have helped to address more fully questions that cannot be investigated by self-reports alone e.g. which the core traits of OCPD should be, how well participants remember information about themselves and how honest participants are in reporting trait-related information. On the other hand, honesty and accuracy of responses were tested with the strict use of four or five-item random response scales throughout the Studies of the thesis and the use of the Balanced Inventory of Desirable Responding-SF (BIDR-16) in Study 3, thereby only data of participants with 100% accuracy in the random response scale employed were included in analyses.

Third, all surveys of the participants for all studies were conducted online via the University of Southampton i-Survey platform for surveys and experimental studies. There are both advantages and disadvantages of online administration of surveys compared to traditional paper-and-pencil surveys. Self-selection bias, i.e., the tendency of some people to respond to an invitation to participate in an online survey, while others ignore it may lead to a systematic bias ([Stanton, 1998](#); [Thompson, Surface, Martin, & Sanders, 2003](#)) and rendering generalization of estimates to population parameters somewhat more difficult. This is of significance to psychometric work that constitutes the bulk of this thesis. Also, access issues unavoidably create sampling concerns as there is no way (except for administering the survey in the traditional way) to assess how similar the online samples are with regards to demographics and other variables to samples of people who have no access to internet or do not use internet surveys. However, there are safeguards that researchers can use ([Wright,](#)

2005) in order to increase generalisability. I made sure that the sample of the studies are large enough to support the analyses and I used replication to cross-validate the results in several samples. Moreover, the samples I used were drawn from both undergraduate students and/or contributors in online crowdsourcing platforms. This combination should produce more generalizable findings than samples drawn from one population.

A lot more has become known about the reproducibility of results with crowdsourced samples, over the last decade (Stewart, Chandler, & Paolacci, 2017). The use of crowdsourcing platform for psychology research was to shown to collect more representative samples, compared with the typically used undergraduate participant pool (Baker, Fox, & Wingrove, 2016; Behrend, Sharek, Meade, & Wiebe, 2011; Crone & Williams, 2017). Moreover, the Crowd Flower (CF) platform, subsequently renamed Figure Eight (FE) platform has been found to comprise a more diverse population than comparable, commonly used platforms such as Amazon Mechanical Turk (MTurk) (Peer et al., 2017). Despite the above considerations, caution should be exercised in applying the results in the general population- and psychiatric patients (Roulin, 2015; Wright, 2005). It would have been ideal to have replicated the psychometric analyses in stratified independent samples of participants in the community and psychiatric patients by means of a paper-and-pencil survey to provide even greater confidence in the reliability and validity estimates.

Fourth, addressing potential confounding variables due to the heterogeneity of the samples is a typical requirement in development and validation of measures. A limitation that needs to be addressed in further validation studies is the lack of test-retest reliability of the BOS and OC-PDI. The test-retest method of measurement involves at least two administrations of an instrument to the same people to assess the instrument's consistency over time (Hendrickson, Massey, & Cronan, 1993; Rousson, Gasser, & Seifert, 2002) and it is especially important in measures that capture personality traits, whether these pertain to personality of individual differences or personality pathology. The high internal consistency of the subscales offers a good index of the quality of the data and the generalizability of the results (McCrae, Kurtz, Yamagata, & Terracciano, 2011), but it is not a substitute for retest reliability.

Fifth, an additional limitation of the development and validation of the scales is that one specific psychometric method was applied, informed by Loevinger (1957). Although the traditional psychometric approach continues to be the norm for scale validation in clinical

psychology other methods may produce alternative scale structures (Rasch models and item-response theory have provided an alternative framework for measurement). As part of this this, the final item pools, for both measures developed, were produced by Exploratory Factor Analysis (EFA) a data-driven statistical technique. This means that putative personality traits that have traditionally been associated with OCPD, such as Perfectionism, did not produce a factor that could be retained and further analysed with Confirmatory Factor Analysis (CFA). It should also be noted that the PID-5 Rigid Perfectionism trait fared well in the analyses of both Study 4 and Study 5 and it is the only trait that has retained its consistency in studies exploring the factor structure of the PID-5 personality disorders, including studies specific to OCPD ([Liggett et al., 2017](#); [Liggett & Sellbom, 2018](#); [Liggett et al., 2018](#)). Perfectionism has also been found to be useful in predicting diagnosis of OCPD in studies using the DSM –IV criteria ([Farmer & Chapman, 2002](#); [Grilo et al., 2001](#)). It was also one of the most stable criteria in a two-year follow-up period of the Comprehensive Longitudinal Personality Study (CLPS) ([McGlashan et al., 2005](#)). These considerations, along with the fact that the PID-5 Rigid Perfectionism is the only necessary trait that needs to be met for diagnosing OCPD, suggest that introducing a Perfectionism scale in the OC-PDI may add to the validity of the measure and future research should investigate this further.

Sixth, it is important to note that the measures' items were not balanced in terms of positively coded and reverse-coded items which means that acquiescent respondents may produce higher-score results. Use of reverse coded items was limited due to evidence suggesting presence of method effects associated with such items ([DiStefano & Motl, 2006](#); [Woods, 2006](#)) and the fact that reverse coding may not reduce response bias ([Suarez-Alvarez et al., 2018](#)) and in some cases may actually hinder psychometric performance and confound content validity ([Rodebaugh et al., 2007](#)).

In a related vein, Lynch argues that patients with maladaptive OC/OCPD have a tendency to under-report symptoms of distress and that Repressing Coping (the tendency to direct attention away from negative emotional experiences) is highly represented in people scoring high in OCPD traits ([Lynch et al., 2016b](#)). This type of coping has been associated with low scores on measures of psychological distress ([Shedler, Mayman, & Manis, 1993](#)). Repressive Coping is a term which originated in psychodynamic theories of psychopathology but it can also be conceptualised in cognitive and metacognitive models of clinical formulations ([Kempke & Luyten, 2007](#)). The argument by Lynch has been confirmed by recent research which has shown that patients with OCPD experience higher levels of

experiential avoidance compared to people without psychopathology (even when controlling for group differences in distress symptoms) ([Wheaton & Pinto, 2017](#)). In turn, this is in line with the results obtained in Study 5, whereby the sub-clinical sample scored significantly higher than the control group in the COPE denial subscale. Therefore, it seems that people with OCPD repress or avoid their negative emotions. As repression is not a conscious behaviour, this tendency of individuals with OCPD means that it will be more difficult for them to accurately describe negative emotions in self-report format. It should be noted that this issue was considered when developing the item pools for the BOS and the OC-PDI, which mostly rely on items capturing behavioural manifestations of cognitive-emotional patterns. In Study 3 (Chapter 3) I showed that the subscales of the OC-PDI correlated negatively with desirable responding, with the exception of Risk aversion which produced a positive correlation of very small magnitude.

Nevertheless, I recommend that mental health practitioners administer the BOS and the OC-PDI with self-report measures of social desirability when assessing potential OCPD patients. The Balanced Inventory of Desirable Responding ([Paulhus, 1988](#)) and the Marlowe-Crowne Social Desirability Scale ([Crowne & Marlowe, 1960](#); [Fischer & Fick, 1993](#)) are two of the most commonly used and well validated ([Barger, 2002](#); [Lambert, Arbuckle, & Holden, 2016](#); [Paulhus & Reid, 1991](#); [Stober, Dette, & Musch, 2002](#)) measures of social desirability. However, these measures are long, and some items are obsolete. Short forms have been developed to address the psychometric limitations and practical utilities: including versions by [Stober \(2001\)](#) and [Ballard \(1992\)](#). I recommend the Balanced Inventory of Desirable Responding Short Form (BIDR-16) ([Hart et al., 2015](#)) because of its robust, two factor-structure (Self-Deceptive Enhancement which captures honest but overly acquiescent responding; and Impression Management which captures bias toward pleasing others); and because of its brevity, strong reliability, and validity ([Hart et al., 2015](#)).

The vast majority of the above limitations can and will be remedied by additional studies within a clinical sample. It is both logical and imperative to further investigate the psychometric properties of both the BOS and the OC-DI against clinical diagnoses in samples of patients with putative overcontrolled disorders. In this respect, establishing the discriminant and predictive validity of the measures requires the full range of personality disorders captured in Section III of the DSM-5 and a sufficient number of patients in each diagnostic category. However, even after the new national research governance framework, under the Health Research Authority (HRA), the governance and research ethics' framework

still act as barriers to clinical research in the UK ([Galbraith et al., 2006](#); [Thompson & France, 2010](#)). The bureaucratic burden placed on the author of the thesis by the research governance approval process entailed that applying separately (i.e. for the BOS and subsequently for the OC-PDI) for approval processes would place additional burden on the Chief investigator, the Research Ethics Committee, the Health Research Authority (HRA) and, crucially, on potential participants ([Dyer & Demeritt, 2009](#); [Roy-Toole, 2011](#); [Shaw, Boynton, & Greenhalgh, 2005](#)). Therefore, I opted for applying for Research Ethics Approval, University Ethics Approval and Indemnity as well as HRA and local R&D approval within the framework of one project whereby both the BOS and OC-PDI could be tested with different groups of patients. All approvals have been obtained and acquiring the necessary samples is an ongoing progress, and as a result, this work could not be reported as part of the thesis. However, on this note, it should be emphasised that establishing the construct validity of a measure (whether self- or informant-report) is not a matter of one study or even a series of studies ([Cronbach & Meehl, 1955b](#)). Although the thesis' studies utilized large samples and I provided a wide range of evidence for the reliability and validity of the measures, future research is needed to replicate, further develop and refine the BOS and OC-PDI. However, the rich evidence offered in this thesis as part of the validation of the studies, is bound to extend beyond the measures developed, and should fundamentally change the conceptualisation, operationalisation, and assessment of OCPD.







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## Appendices



Appendix A Study 1

A.1 Final Item Pool of the Brief Overcontrol Scale

Read each word and use the scale provided below to rate the extent it describes you. If you are unsure how much a word is characteristic of you, imagine what your friends or family members might say about you.

	Not at all	Very slightly	A little	Moderately	Quite a bit	Very much	Extremely
Accurate	1	2	3	4	5	6	7
Act without thinking	1	2	3	4	5	6	7
Adventurous	1	2	3	4	5	6	7
Affable	1	2	3	4	5	6	7
Affectionate	1	2	3	4	5	6	7
Aloof	1	2	3	4	5	6	7
Animated	1	2	3	4	5	6	7
Apprehensive	1	2	3	4	5	6	7
Appropriate	1	2	3	4	5	6	7
Attentive	1	2	3	4	5	6	7
Bold	1	2	3	4	5	6	7
Brash	1	2	3	4	5	6	7
Calm	1	2	3	4	5	6	7
Careless	1	2	3	4	5	6	7
Cautious	1	2	3	4	5	6	7
Changeable mood	1	2	3	4	5	6	7
Chaotic	1	2	3	4	5	6	7
Childlike	1	2	3	4	5	6	7
Clear-headed	1	2	3	4	5	6	7
Clumsy	1	2	3	4	5	6	7
Complaining	1	2	3	4	5	6	7
Compliant	1	2	3	4	5	6	7
Concerned	1	2	3	4	5	6	7
Consistent	1	2	3	4	5	6	7
Constant	1	2	3	4	5	6	7
Conventional	1	2	3	4	5	6	7

	Not at all	Very slightly	A little	Moderately	Quite a bit	Very much	Extremely
Daring	1	2	3	4	5	6	7
Delay	1	2	3	4	5	6	7
gratification							
Deliberate	1	2	3	4	5	6	7
Demanding	1	2	3	4	5	6	7
Dependable	1	2	3	4	5	6	7
Dependent	1	2	3	4	5	6	7
Despondent	1	2	3	4	5	6	7
Detached	1	2	3	4	5	6	7
Determined	1	2	3	4	5	6	7
Deviant	1	2	3	4	5	6	7
Disciplined	1	2	3	4	5	6	7
Discreet	1	2	3	4	5	6	7
Disinhibited	1	2	3	4	5	6	7
Disobedient	1	2	3	4	5	6	7
Disorganized	1	2	3	4	5	6	7
Distant	1	2	3	4	5	6	7
Dramatic	1	2	3	4	5	6	7
Dutiful	1	2	3	4	5	6	7
Earnest	1	2	3	4	5	6	7
Easy-going	1	2	3	4	5	6	7
Enduring	1	2	3	4	5	6	7
Enthusiastic	1	2	3	4	5	6	7
Erratic	1	2	3	4	5	6	7
Exact	1	2	3	4	5	6	7
Excitable	1	2	3	4	5	6	7
Expressive	1	2	3	4	5	6	7
Extreme	1	2	3	4	5	6	7
Extrovert	1	2	3	4	5	6	7
Fanciful	1	2	3	4	5	6	7
Fastidious	1	2	3	4	5	6	7
Fearful	1	2	3	4	5	6	7
Fearless	1	2	3	4	5	6	7
Fickle	1	2	3	4	5	6	7
Frugal	1	2	3	4	5	6	7

	Not at all	Very slightly	A little	Moderately	Quite a bit	Very much	Extremely
Glamorous	1	2	3	4	5	6	7
Guarded	1	2	3	4	5	6	7
Gullible	1	2	3	4	5	6	7
Haphazard	1	2	3	4	5	6	7
hard-working	1	2	3	4	5	6	7
Hoarder	1	2	3	4	5	6	7
Idle	1	2	3	4	5	6	7
Immediate gratification	1	2	3	4	5	6	7
Impatient for reward	1	2	3	4	5	6	7
Impervious	1	2	3	4	5	6	7
Impractical	1	2	3	4	5	6	7
Impressionable	1	2	3	4	5	6	7
Improper	1	2	3	4	5	6	7
Impulsive	1	2	3	4	5	6	7
Inappropriate	1	2	3	4	5	6	7
Inattentive	1	2	3	4	5	6	7
Incompliant	1	2	3	4	5	6	7
Inconsistent	1	2	3	4	5	6	7
Independent	1	2	3	4	5	6	7
Indifferent	1	2	3	4	5	6	7
Inhibited	1	2	3	4	5	6	7
Inspired	1	2	3	4	5	6	7
Intoxicated	1	2	3	4	5	6	7
Laid-back	1	2	3	4	5	6	7
Law-abiding	1	2	3	4	5	6	7
Lax	1	2	3	4	5	6	7
Lively	1	2	3	4	5	6	7
Loose	1	2	3	4	5	6	7
Loving	1	2	3	4	5	6	7
Low-key	1	2	3	4	5	6	7
Methodical	1	2	3	4	5	6	7
Mild	1	2	3	4	5	6	7
Mischievous	1	2	3	4	5	6	7

	Not at all	Very slightly	A little	Moderately	Quite a bit	Very much	Extremely
Modest	1	2	3	4	5	6	7
Naïve	1	2	3	4	5	6	7
Neglectful	1	2	3	4	5	6	7
Not easily impressed	1	2	3	4	5	6	7
Obedient	1	2	3	4	5	6	7
Obeys the norm	1	2	3	4	5	6	7
Obvious	1	2	3	4	5	6	7
Orderly	1	2	3	4	5	6	7
Organized	1	2	3	4	5	6	7
Over-confident	1	2	3	4	5	6	7
Overemotional	1	2	3	4	5	6	7
Passionate	1	2	3	4	5	6	7
Patient for reward	1	2	3	4	5	6	7
Perky	1	2	3	4	5	6	7
Plain	1	2	3	4	5	6	7
Playful	1	2	3	4	5	6	7
Practical	1	2	3	4	5	6	7
Precise	1	2	3	4	5	6	7
Predictable	1	2	3	4	5	6	7
Prodigal	1	2	3	4	5	6	7
Proper	1	2	3	4	5	6	7
Prudent	1	2	3	4	5	6	7
Quiet	1	2	3	4	5	6	7
Reactive	1	2	3	4	5	6	7
Realistic	1	2	3	4	5	6	7
Rebellious	1	2	3	4	5	6	7
Rebels against the norm	1	2	3	4	5	6	7
Reckless	1	2	3	4	5	6	7
Reserved	1	2	3	4	5	6	7
Restrained	1	2	3	4	5	6	7
Rigorous	1	2	3	4	5	6	7
Risky	1	2	3	4	5	6	7

	Not at all	Very slightly	A little	Moderately	Quite a bit	Very much	Extremely
Self-conscious	1	2	3	4	5	6	7
Self-controlled	1	2	3	4	5	6	7
Self-indulgent	1	2	3	4	5	6	7
Sensible	1	2	3	4	5	6	7
Serious	1	2	3	4	5	6	7
Short-lived	1	2	3	4	5	6	7
Showy	1	2	3	4	5	6	7
Shrewd	1	2	3	4	5	6	7
Shy	1	2	3	4	5	6	7
Sloppy	1	2	3	4	5	6	7
Sociable	1	2	3	4	5	6	7
Sparing	1	2	3	4	5	6	7
Spender	1	2	3	4	5	6	7
Spontaneous	1	2	3	4	5	6	7
Stable mood	1	2	3	4	5	6	7
Steadfast	1	2	3	4	5	6	7
Stiff	1	2	3	4	5	6	7
Stoical	1	2	3	4	5	6	7
Structured	1	2	3	4	5	6	7
Subdued	1	2	3	4	5	6	7
Susceptible	1	2	3	4	5	6	7
Talkative	1	2	3	4	5	6	7
Task-oriented	1	2	3	4	5	6	7
Temperamental	1	2	3	4	5	6	7
Thick skinned	1	2	3	4	5	6	7
Think before acting	1	2	3	4	5	6	7
Thorough	1	2	3	4	5	6	7
Thoughtful	1	2	3	4	5	6	7
Thoughtless	1	2	3	4	5	6	7
Trusting	1	2	3	4	5	6	7
Uncomplaining	1	2	3	4	5	6	7
Unconcerned	1	2	3	4	5	6	7
Unconventional	1	2	3	4	5	6	7
Undemonstrative	1	2	3	4	5	6	7

	Not at all	Very slightly	A little	Moderately	Quite a bit	Very much	Extremely
Undisciplined	1	2	3	4	5	6	7
Uninspired	1	2	3	4	5	6	7
Uninvolved	1	2	3	4	5	6	7
Unobtrusive	1	2	3	4	5	6	7
Unpredictable	1	2	3	4	5	6	7
Unreactive	1	2	3	4	5	6	7
Unrealistic	1	2	3	4	5	6	7
Unstable	1	2	3	4	5	6	7
Unsystematic	1	2	3	4	5	6	7
Vacillating	1	2	3	4	5	6	7
Vigilant	1	2	3	4	5	6	7
Volatile	1	2	3	4	5	6	7
Vulnerable	1	2	3	4	5	6	7
Wary	1	2	3	4	5	6	7
Wasteful	1	2	3	4	5	6	7
Watchful	1	2	3	4	5	6	7
Wearied	1	2	3	4	5	6	7
Wild	1	2	3	4	5	6	7
Withdrawn	1	2	3	4	5	6	7
Workaholic	1	2	3	4	5	6	7
Worldly	1	2	3	4	5	6	7

A.2 Descriptive Statistics for the Items Entered in the Exploratory Factor Analysis  
(EFA) ( $N = 520$ )

	<i>M</i>	<i>SD</i>	Skewness
Accurate	4.83	1.37	-0.50
Act without thinking	2.49	1.45	1.13
Adventurous	3.76	1.58	0.16
Affable	3.93	1.49	-0.12
Affectionate	4.65	1.50	-0.31
Aloof	2.86	1.54	0.72
Animated	3.68	1.63	0.14
Apprehensive	3.68	1.59	0.20
Appropriate	4.77	1.35	-0.40
Attentive	4.96	1.38	-0.53
Bold	3.26	1.55	0.44
Brash	2.46	1.49	0.91
Calm	4.53	1.45	-0.20
Careless	2.54	1.45	0.94
Cautious	4.42	1.41	-0.22
Changeable mood	3.58	1.56	0.37
Chaotic	2.40	1.36	0.89
Childlike	2.93	1.59	0.60
Clear-headed	4.63	1.44	-0.43
Clumsy	2.90	1.62	0.76
Complaining	2.99	1.44	0.54
Compliant	4.16	1.38	-0.15
Concerned	4.23	1.48	-0.16
Consistent	4.73	1.35	-0.46
Constant	4.51	1.32	-0.23
Conventional	3.87	1.42	0.01
Daring	3.20	1.51	0.37
Delay gratification	3.28	1.50	0.29
Deliberate	4.13	1.39	-0.12
Demanding	3.21	1.54	0.44
Dependable	5.06	1.55	-0.64
Dependent	3.21	1.52	0.40

	<i>M</i>	<i>SD</i>	Skewness
Despondent	2.57	1.51	0.89
Detached	3.01	1.44	0.36
Determined	4.78	1.42	-0.52
Deviant	2.31	1.45	1.02
Disciplined	4.50	1.43	-0.25
Discreet	4.51	1.46	-0.28
Disinhibited	2.63	1.46	0.70
Disobedient	2.41	1.34	1.02
Disorganized	2.85	1.56	0.64
Distant	3.16	1.50	0.39
Dramatic	2.98	1.51	0.56
Dutiful	4.42	1.53	-0.38
Earnest	4.38	1.42	-0.30
Easy-going	4.46	1.56	-0.26
Enduring	4.31	1.50	-0.24
Enthusiastic	4.36	1.50	-0.18
Erratic	2.54	1.41	0.91
Exact	4.45	1.42	-0.15
Excitable	3.71	1.55	0.16
Expressive	4.10	1.54	-0.09
Extreme	2.76	1.58	0.75
Extrovert	3.01	1.72	0.52
Fanciful	3.16	1.51	0.38
Fastidious	3.48	1.51	0.12
Fearful	3.08	1.59	0.54
Fearless	3.22	1.55	0.28
Fickle	2.53	1.35	0.93
Frugal	4.13	1.63	-0.05
Glamorous	2.50	1.54	0.76
Guarded	4.10	1.57	0.00
Gullible	2.50	1.35	0.76
Haphazard	2.36	1.36	0.98
hard-working	4.99	1.44	-0.47
Hoarder	2.78	1.60	0.68
Idle	2.67	1.47	0.71
Immediate gratification	3.15	1.50	0.51

	<i>M</i>	<i>SD</i>	Skewness
Impatient for reward	2.98	1.55	0.70
Impervious	2.69	1.38	0.55
Impractical	2.29	1.25	1.12
Impressionable	3.00	1.40	0.52
Improper	2.19	1.27	1.08
Impulsive	3.08	1.46	0.69
Inappropriate	2.22	1.31	1.11
Inattentive	2.22	1.22	1.11
Incompliant	2.45	1.42	1.05
Inconsistent	2.36	1.31	0.98
Independent	4.75	1.56	-0.41
Indifferent	2.74	1.47	0.75
Inhibited	3.44	1.52	0.30
Inspired	4.23	1.51	-0.17
Intoxicated	1.90	1.34	1.56
Laid-back	4.13	1.63	-0.09
Law-abiding	5.21	1.60	-0.81
Lax	2.68	1.41	0.77
Lively	4.00	1.48	0.03
Loose	2.59	1.38	0.65
Loving	5.13	1.42	-0.60
Low-key	3.98	1.58	-0.12
Methodical	4.43	1.49	-0.28
Mild	3.92	1.44	-0.12
Mischievous	3.06	1.46	0.43
Modest	4.65	1.40	-0.27
Naïve	2.67	1.41	0.71
Neglectful	2.29	1.39	1.10
Not easily impressed	4.02	1.50	0.05
Obedient	4.22	1.41	-0.22
Obeys the norm	4.25	1.50	-0.26
Obvious	3.29	1.42	0.19
Orderly	4.39	1.46	-0.18
Organized	4.49	1.55	-0.27
Over-confident	2.65	1.58	0.71
Overemotional	3.14	1.63	0.54

	<i>M</i>	<i>SD</i>	Skewness
Passionate	4.58	1.52	-0.32
Patient for reward	4.26	1.50	-0.15
Perky	3.47	1.60	0.23
Plain	3.78	1.56	0.10
Playful	4.22	1.42	-0.09
Practical	4.87	1.37	-0.39
Precise	4.60	1.40	-0.38
Predictable	3.76	1.37	0.15
Prodigal	2.87	1.45	0.37
Proper	4.23	1.41	-0.20
Prudent	4.19	1.54	-0.32
Quiet	4.45	1.68	-0.27
Reactive	3.78	1.39	0.05
Realistic	5.06	1.33	-0.49
Rebellious	2.88	1.48	0.63
Rebels against the norm	2.97	1.57	0.60
Reckless	2.45	1.43	0.94
Reserved	4.37	1.55	-0.11
Restrained	3.94	1.44	-0.03
Rigorous	3.69	1.44	0.21
Risky	2.84	1.48	0.55
Self-conscious	4.56	1.63	-0.27
Self-controlled	4.56	1.45	-0.44
Self-indulgent	3.17	1.51	0.40
Sensible	4.80	1.39	-0.56
Serious	4.17	1.41	-0.10
Short-lived	2.47	1.33	0.70
Showy	2.48	1.43	0.79
Shrewd	3.60	1.61	0.07
Shy	4.03	1.77	0.01
Sloppy	2.67	1.45	0.73
Sociable	3.88	1.61	0.11
Sparing	3.40	1.37	0.10
Spender	3.17	1.50	0.37
Spontaneous	3.50	1.46	0.23
Stable mood	4.35	1.50	-0.26

	<i>M</i>	<i>SD</i>	Skewness
Steadfast	4.29	1.47	-0.26
Stiff	2.82	1.49	0.54
Stoical	3.50	1.57	0.16
Structured	4.34	1.41	-0.14
Subdued	3.33	1.47	0.26
Susceptible	3.06	1.43	0.38
Talkative	3.66	1.69	0.20
Task-oriented	4.50	1.42	-0.25
Temperamental	3.24	1.56	0.44
Thick skinned	3.28	1.60	0.27
Think before acting	4.67	1.57	-0.45
Thorough	4.68	1.47	-0.34
Thoughtful	5.07	1.35	-0.63
Thoughtless	2.19	1.33	1.23
Trusting	4.43	1.57	-0.35
Uncomplaining	3.44	1.61	0.22
Unconcerned	2.67	1.52	0.80
Unconventional	3.40	1.59	0.30
Undemonstrative	3.02	1.51	0.48
Undisciplined	2.47	1.43	0.96
Uninspired	2.44	1.44	1.06
Uninvolved	2.69	1.41	0.74
Unobtrusive	3.62	1.58	0.06
Unpredictable	2.78	1.42	0.72
Unreactive	2.48	1.33	0.95
Unrealistic	2.39	1.36	1.02
Unstable	2.26	1.47	1.27
Unsystematic	2.41	1.37	1.13
Vacillating	2.63	1.32	0.67
Vigilant	4.19	1.50	-0.16
Volatile	2.51	1.50	1.00
Vulnerable	3.14	1.45	0.41
Wary	3.83	1.53	0.05
Wasteful	2.25	1.30	1.17
Watchful	4.41	1.38	-0.26
Wearied	3.02	1.55	0.69

	<i>M</i>	<i>SD</i>	Skewness
Wild	2.32	1.41	0.90
Withdrawn	3.23	1.60	0.40
Workaholic	3.34	1.70	0.25
Worldly	3.37	1.58	0.14

A.3 Variance Explained by the Model in the Four-Factor Solution (17 Items), Online Sample ( $N = 520$ )

Factor	Total Variance Explained			Rotation Sums of Squared Loadings
	Extraction Sums of Squared Loadings			Total
	Total	% of Variance	Cumulative %	
1	3.75	22.03	22.03	2.77
2	1.86	10.94	32.97	2.43
3	1.12	6.57	39.53	2.09
4	0.74	4.33	43.86	2.54

Extraction Method: Principal Axis Factoring.



## Appendix B Study 2

B.1 Multivariate Normality of Brief Overcontrol Scale Items in the Confirmatory Factor Analysis (CFA), ( $N = 309$ ).

Variable	Skew	CR	kurtosis	CR
Conventional	-0.29	-2.09	-0.30	-1.08
Low key	-0.03	-0.20	-0.78	-2.81
Volatile	0.50	3.55	-0.48	-1.71
Compliant	-0.36	-2.57	-0.22	-0.79
Obeys the norm	-0.59	-4.25	-0.13	-0.46
Obedient	-0.53	-3.79	-0.20	-0.71
Restrained	0.07	0.47	-0.51	-1.81
Reserved	-0.12	-0.86	-0.84	-3.01
Quiet	0.18	1.29	-0.82	-2.95
Loose	0.19	1.33	-0.81	-2.90
Chaotic	0.64	4.56	-0.35	-1.27
Impulsive	0.28	2.02	-0.73	-2.61
Erratic	0.40	2.85	-0.82	-2.92
Patient for reward	-0.27	-1.94	-0.72	-2.58
Think before acting	-0.45	-3.23	-0.47	-1.68
Self-controlled	-0.53	-3.78	0.27	0.96
Hardworking	-0.62	-4.43	0.42	1.51
Multivariate			55.64	19.24



B.2 Brief Overcontrol Scale (BOS)

Read each word and use the scale provided below to rate the extent it describes you. If you are unsure how much a word is characteristic of you, imagine what your friends or family members might say about you.

	Not at all	Very slightly	A little	Moderately	Quite a bit	Very much	Extremely
Hardworking	1	2	3	4	5	6	7
Thinks before acting	1	2	3	4	5	6	7
Patient for reward	1	2	3	4	5	6	7
Erratic	1	2	3	4	5	6	7
Impulsive	1	2	3	4	5	6	7
Chaotic	1	2	3	4	5	6	7
Loose	1	2	3	4	5	6	7
Quiet	1	2	3	4	5	6	7
Reserved	1	2	3	4	5	6	7
Restrained	1	2	3	4	5	6	7
Obedient	1	2	3	4	5	6	7
Obeys the norm	1	2	3	4	5	6	7
Compliant	1	2	3	4	5	6	7
Volatile	1	2	3	4	5	6	7
Low-key	1	2	3	4	5	6	7
Conventional	1	2	3	4	5	6	7
Self-controlled	1	2	3	4	5	6	7

## B.3 Coefficients (Pearson's R) of BOS Subscales with All Study Variables

	Gratification Delay	Volatility	Reservedness	Compliance
Excessive Worry	.12*	.01	.39***	.19**
Detached Coldness	.07	-.07	.56***	.08
Risk Aversion	.40***	-.40**	.57***	.39***
Constricted	.02	-.04	.22***	.01
Inflexible	.27***	-.22***	.42***	.31***
Dogmatism	.21***	-.11	.28***	.26***
Perfectionism	.45***	-.31***	.25***	.28***
Fastidiousness	.47***	-.33***	.26***	.32***
Punctiliousness	.53***	-.37***	.32***	.45***
Workaholism	.41***	-.19**	.15**	.19**
Doggedness	.53***	-.36***	.15**	.30***
Ruminative Deliberation	.45***	-.31***	.46***	.36***
SNAP2	-.63***	.56***	-.39***	-.42***
Disinhibition				
BIS	-.16**	.09	-.32***	-.24***

\*\*\* $p < .001$

## Appendix C Study 3

## C.1 Initial Item Pool of Items on Maladaptive Overcontrol

- Even little things can make feel upset
- In general, I have always felt miserable, unhappy
- I am usually in a melancholic frame of mind.
- I am constantly in a low mood.
- it's not just a bad day—it's always a bad day for me
- Minor setbacks don't seem to affect my mood
- It does not bother me when minor things go wrong
- I have never seen the funny side of my predicaments
- Very often I come across as serious
- Some people might say that I convey a feeling of deep seriousness and sadness.
- I have always had a grim outlook on life
- I can hardly remember myself enjoying myself
- Some people could probably say that I am a wet blanket or party pooper in just about any situation
- In general, it is difficult for me to have fun
- I am so dull or depressing who spoils other people's enjoyment
- I often lose my temper
- Too often I become very angry
- I seem to be in a chronic state of anger
- Sometimes, I feel overwhelmed by anger
- I am short-tempered
- Too often I get really angry when thinking about things that have happened to me
- Even the slightest thing seems like it can set me off
- I often feel I am on the verge of rage
- I'm impatient and easily Irritated
- Even little things have an effect on my temper
- I am a quiet, calm person
- I don't lose my temper unless it is for a good reason
- I get easily scared
- I have spent my life feeling scared
- I feel scared all the time

- I am fearful of all kinds of things like public speaking, exams, dates, parties and job interviews
- I often feel very threatened by things or situations which are not dangerous
- I feel frightened even when I am not in danger
- I'm tired of being afraid
- Life is scary
- On occasions I feel scared, but I don't know why
- Too often I have unpleasant thoughts about my life
- For the most part of my life I have had recurrent depressing thoughts about several things
- I am the sort of person who constantly replays negative situations over my mind
- Too often I focus on the negative thing that are happening in my life
- I have the habit of reflecting on negative past experiences
- I am very often stuck on the same negative thoughts
- In general, I am not an optimist
- I am not the kind of person who looks at the bright side of things
- Even when things seem to be going well I expect bad things to happen in the future
- I can easily put myself into a worst-case scenario, whatever I may be considering
- I am not a confident person
- I often think that I am a failure
- On the whole I am ashamed of myself
- I feel inadequate to face the challenges of life
- I feel that other people my age have accomplished a lot more than I have
- I am constantly having bad thoughts about myself and about what I've done in life
- I don't believe in myself
- Very often I think that I am worthless
- I lack self-esteem and a sense of self-worth.
- I can spend hours thinking about past failures
- I have wasted many years of my life
- Too often I criticise myself for major and minor mistakes
- I often blame myself for all sorts of things such as not earning more money, not being able to lose weight, not enjoy a relationship with a significant other
- I have never been able to stop criticizing myself
- I am the sort of person that often gets down on himself/herself
- I blame myself for all sorts of things
- I worry a great deal about all sorts of things

- I have what one might say a constant or free-floating anxiety
- I have always been the kind of person who is endlessly getting obsessed over problems or concerns
- I tend to worry too much about different things sometimes without an obvious reason
- It seems I always find something to worry about
- I have often found myself to be stressed out
- I am often so stressed that I feel confused and lose focus
- I am often so stressed that I have trouble relaxing
- I have very often had trouble focusing or concentrating because of too much stress
- I often feel too anxious for no good reason
- I do not tend to worry excessively about the future
- I have the resources to control excessive worry when I want to
- I am content with how I handle stress
- I tend to focus on what has gone wrong as opposed to what went right
- I am not the kind of person that you could call positive
- I have spent most of my life full of negative rather than positive feelings
- I always have a feeling that I am not good enough
- I tend to focus more on the positive rather than the negative side of things
- I look for opportunities to socialize and connect with other people
- People who know me would describe me as easy going and friendly
- For most hours of the day I am highly productive
- I get pleasure from paying a genuine compliment to a friend or a colleague and see them smile and feel good
- Even small successes can make me feel confident in my abilities and optimistic about the future
- Being broad minded and understanding comes naturally to me when people confide in me a problem or concern of theirs
- Most of the time, life seems simple and light
- I am very adaptable to new situations whatever these may be
- People find me agreeable and easy to be around
- I find something positive or at least amusing in almost every situation
- Most people would agree that I am a thoughtful and caring person
- I handle my mistakes and my failures in a positive way.
- I am energetic and confident enough to face the challenges of work and working life
- I have the passion and the persistence to work hard in order to achieve my goals in life

- People describe me as kind and broad minded
- I lead a balanced life
- I don't dwell on minor inconveniences and issues
- People find me honest and trustworthy
- I make the best out of seemingly bad situations
- I live in the present rather than dwelling on the past or worrying about the future
- I look at the bright side of things and I know that things will turn out alright
- I am grateful for the relationships that I have
- I can take chances without ruminating about failure
- I never hold a grudge
- When cooking or ordering a favourite meal from a menu I can't wait to taste it
- I really look forward to eating in a restaurant when the opportunity presents
- Before having a bath, I can almost sense the feeling of the water on my body
- When tired but knowing that I am soon to go to bed, the idea of the tension leaving my body when I lie down is very soothing.
- When it is cold outside, and I am on my way home, it is so nice knowing that I am going to be engrossed in its warmth.
- When I am invited to a social event I picture in my mind the fun from meeting people and discussing with them
- I really enjoy preparing for a night out with friends
- Before participating in a social activity, I am always very excited
- Before going on a date, I have a tantalizing feeling of excitement and anticipation
- If I got an invitation to dinner from a new neighbour, I would imagine an awkward meal
- When I am going to attend social events, I prepare myself in case things don't work out
- I feel uneasy when I am about to meet new people
- Before a meeting I always worry I will demand your full attention
- I take great pleasure from imagining the moment I will have accomplished something important in my life
- I find really exciting thinking about how my life will be when I have achieved something I have been working on for a long time
- I am very pleased when I am close to finishing a major project I have been doing
- I can almost contain my enthusiasm when I know I am about to enjoy a favourite activity
- Preparing for a holiday is almost just as exciting as the holiday itself
- I take great pleasure when thinking of all the good things that are ahead of me

- When I find myself fantasizing about a pleasant experience I take as much pleasure from it as when I am actually living the experience
- I enjoy dreaming about good things that are yet to come
- Anticipating something pleasant is just as satisfying and pleasurable as doing it
- I am excited when the team I support, scores that winning or crucial goal.
- I love unwrapping a birthday/Christmas present and discovering that it was exactly what I wanted.
- Sitting down to watch a film or some TV after doing strenuous house chores is always fulfilling and relaxing.
- I like to know that I have enough money left over to treat myself and not worry about anything else.
- I feel very happy and comfortable when I am with close friends (having a coffee, relaxing in intimate spaces etc.)
- One of the pleasures of my life is catching up with friends and enjoying their company.
- Going to a party with my friends and where people I know, are in abundance, fills me with joy.
- A holiday with either close friends or family, is always a fun and exhilarating experience.
- When I am out with friends I enjoy being fully involved in the discussions and activities that take place
- I am always filled with relief and with self-assertion when finishing an assignment or project.
- For me, nothing is more satisfying than reaching a goal I was almost afraid I would not reach.
- Being rewarded – be it academically or at work (e.g. promotions) for working hard and for being disciplined gives me great pleasure
- Facing my fears and knowing that my fears can be faced is always fulfilling
- I love the feeling of relief and of self-assertion when finishing an assignment
- I really enjoy the taste of either sweet or savoury food in my mouth
- I enjoy the refreshing swallow from a drink or glass of water when I am thirsty
- Scratching away an annoying itch on whatever part of the body (e.g. a hard-reaching place)
- I love soaking inside a warm bath when cold or at the end of an exhausting day.
- Hugs always make me feel better when I am sad and can reaffirm my happiness and joy
- I take time to enjoy my meals
- In any given situation only those who risk win

- When it comes to something important, I will think about and play every scenario in my mind before taking appropriate action.
- I am the sort of person who is not afraid to take a decision at the spur of the moment R
- I am never impulsive
- When I know I have to take a risk I will carefully think of all options beforehand
- It is always best to think twice.
- I am not a reckless person
- I have often got in trouble at school or at work because I could not control my temper
- Sometimes I attacked physically other people
- As a young child I would often get into fights and sometimes I would even provoked them
- When I was young I would harm animals
- I have always stayed away from fights
- It does not take me much to make me angry and aggressive
- I never minded lying when I could gain something out of the situation
- I have often made people feel guilty so that they do what I wanted
- I would not hesitate to exaggerate a difficulty or even lying in order to make someone do something out of pity for me
- As a young person I used to do petty thefts
- I would not mind stealing something if I knew I would not get caught
- I have always been a careful thorough person
- I have always been neat and extremely organised
- I always deliver on my promises even if it means that I do something very unpleasant to me
- I have always excelled at what I did
- It is important to pay attention to detail
- Under no circumstances would I compromise my dignity and pride
- People have told me that I am very strict
- I tend to worry a lot about my professional life
- I have always worried about my work or study
- I often get obsessed with work
- When workday ends for everyone else, I continue
- Taking a decision often seems like an endless process
- Several times I dwell on even the most minor decisions to the point of obsession
- I constantly doubt myself and my decisions

- I wish I could stop doubting myself so much
- Too often I experience so much self-doubt which is paralyzing
- I spend a lot of time second guessing decisions and conversations
- I often worry about my appearance being appropriate
- It is very important to me that others will approve the way I dress or the way I behave
- I worry too much of others disapproving of my feelings or actions
- When I am with others I want to do everything the way that pleases them
- It is hard for me to be assertive
- I find it very tiresome to interact with strangers
- After a prolonged social interaction I need to withdraw and be alone
- I prefer social situations which are structured around simple, clear rules.
- I can't stand people who are aloud and make large gestures
- Detachment
- Unless I have to, I do not use strong facial emotions
- When I am around others I never show my sadness or pain
- I am the sort of person who tries new experiences
- I will often take the opportunity to try something new like an activity or sport I have never tried before, even when I am not certain I will enjoy it
- In general, I like changes; even small changes like re-arranging the furniture or trying a food that you have not tried before can make me happy
- I like routine
- It is always worthwhile and exciting to do something that I haven't done before
- I cannot see how one might be happy without variety in their life
- I always have time for new experiences
- Each mistake is an opportunity to learn
- One should not be afraid to take risks because doing things is always rewarding
- I am always ready for new beginnings
- When I walk, I walk with my eyes open so that I may find something interesting
- I have always tried to spend my free time learn a new skills
- I often do things which can get me out of my comfort zone.
- My moto could be 'Cease the day'
- My moto is 'Ignore your fear.'
- I like meeting new people
- Life should be a daring adventure
- I am always ready to experience the "novelty" that change brings

- Change is the spice of life and I absolutely cannot do without it
- I adjust to changes easily
- Actions speak louder than words
- I am shut off from new ideas, experiences or feedback
- I help people because it is the right thing to do not because I really feel sympathetic to their predicament
- I don't see why I should appreciate others' mediocre achievements
- Often, I don't bother to understand others' point of view
- I often have difficulty understanding people's motivation and feelings
- I am the sort of person who is pretty closed emotionally
- I always pay attention to other people's body language and expressions
- I am aware of my body's movements and sensations
- I have always been pretty good at identifying my feelings
- I find interesting things where other people might not even notice
- I am in touch with my feelings
- I do not avoid my feelings
- I am tune in with my emotional world
- I can say what I am feeling at any given moment
- I am tuned into my body
- I always notice what is going on in my body; for example, I know when I am having tightness in my chest, or tension in my shoulders.
- Things and places around me have an effect on my mood
- I like getting in touch with my feelings and sensations even when they are negative; e.g., when I am in pain
- My feelings are really I experience them with my whole body and spirit
- I am the sort of person who can identify and describe their feelings well
- I have always had the ability to feel the emotions of other people
- When I talk to someone I notice many things that reveal the way they feel
- It is easy for me to understand what makes people around them miserable or happy
- The way people feel around me has an effect on me
- When someone is unhappy it sort of makes me feel unhappy too
- I am in tune with other people's emotions
- I help people because it is the right thing to do not because I really feel sympathetic to their predicament
- I don't see why I should appreciate others' mediocre achievements

- Often, I don't bother to understand others' point of view
- I often have difficulty understanding people's motivation and feelings
- I like it when someone tells me something I don't know about myself even if it is not always a positive thing
- I get excited when other people are willing to say what s their true opinion about me
- Sometimes I ask people what they really think about me
- I am always willing to hear other people's opinion about me
- It is always useful to get feedback whether it is praise, constructive criticism or bad comments
- I have learned a lot from being open to criticism from people I associate with — co-workers, peers, friends and family.
- I try not to be defensive when someone gives me feedback
- I encourage people not to tell me the things I need to hear because this way I can learn and grow
- I observe the reactions and responses of people to what I say or do
- I take advantage of opportunities to attend workshops, courses, seminars or events that focus on personal growth;
- I actively ask for feedback when I can
- I fully understand the benefit of getting feedback from a co-worker, a fellow student, a friend
- I am the sort of person who your skills, work product, and relationships
- I don't blame or be dismissive of people from whom I may receive criticism
- When someone criticises me harshly I may show them that I am more critical than him to myself and others
- I am sometimes bothered even by the slightest criticism
- It is unnecessary for others to judge me as I am already too strict on myself
- I won't let unanswered any negative comment whatsoever
- When criticised too severely I may pretend that I didn't hear what was said or that I don't really mind
- I will not let others know what I really think if I believe they will criticise me for that
- When criticised or insulted by someone I have a way of showing them that they are unworthy of my attention
- I cannot accept feedback from people who do not use correctly the English language or are imprecise in what they are saying
- When someone has criticised me I often ruminate of ways to get even
- I will often refuse to listen to criticisms

- When I am criticised by someone who is speaking I show my annoyance by staying silent or by looking away
- I am a people's person
- I am a loner
- Very often I think that there is a barrier between me and the world.
- I have good friends that I can talk to about almost anything
- None of my relationships with other people feel intimate and meaningful
- I have developed honest, authentic relationships with a number of people
- I know how to build an emotional connection with my partner
- Whenever I have been in a relationship I had managed to build a powerful emotional connection with my partner
- With some people around, me I can share my deepest and even darkest secrets
- I enjoy sharing stories and experiences with my friends or someone close to me
- I am lucky to have people around me with whom I share my concerns and fears
- With some of the people around me we can talk freely about our passions, our dreams, our goals in life
- I am lucky to know people who I can trust and confide in
- When I have a problem, I can discuss it with someone close who will listen sympathetically and try not to judge me
- I tend not to say what I really think or feel until I really know someone well
- I don't talk about things that make me appear vulnerable
- I never give the impression that I am weak even when I talk with friends or family
- I will rarely show my vulnerable side within a relationship
- I don't let people know my doubts or concerns
- I feel disconnected from the world and people around me.
- I don't feel that I am part of the society I live in.
- I am shut down and disconnected from social life
- I often find myself talking to strangers
- I have developed strong and loving connections with the world around me
- In general, I have a strong feeling of belonging with a group of friends, my community or my colleagues
- I feel alienated from people.
- For a long time, I haven't had a lot of people to relate to
- I don't find myself in a lot of conversations with people I don't know
- I am deeply connected to other people and appreciated by them

- I have strong, secure relationships with others such as my peers, co-workers or my family
- There are moments when I feel I am fully connected to the world immediately around me
- I am disconnected from the world at large.
- Some people around me are very important to my life just as I am important to theirs'
- I am an outsider
- Sometimes I enjoy exchanging a few words with people I only know casually and are part of my local community
- I often feel I am part of the neighbourhood I live in
- I feel a certain degree of warmth and connectedness with people that live close to me and I meet casually every now and then at the post office, the local supermarket or other such places
- I don't get excited easily
- I am never too excited
- When I am out with friends I get easily bored
- Sometimes I just feel numb when other persons would probably feel very angry or upset
- I feel awkward and nervous when people around me show intense emotions
- On occasions when something very upsetting has happened I am the only one who finds it easy to remain calm.
- I take pride in the fact that some situations that might upset others don't even touch me
- I am not impressed easily
- In reality, I am rather aloof and distant from people
- I am somewhat cold and detached from the emotions of other people
- I have always been the life of the party.
- I don't really feel affection for other people
- At large I am indifferent to what people feel
- When people share their concerns I often pretend that I care but I don't really empathise or feel sympathy for them
- I won't get caught up in others' emotional turmoil.
- I have a certain detachment from other people's emotions
- I am an assertive person
- I find it hard to express my disagreement even when I know that it is to my benefit
- It is very difficult for me to express my disagreement with others
- Very often I agree with people even though I know they are wrong
- I always conform to others' opinions

- I envy people who are confident enough to contradict others without worrying they may lose one's approval
- Often, I prefer to agree with others out of fear I will lose their support
- I prefer not saying to someone that I am not in agreement with them so that I don't want to alienate myself from them
- I am always trying to be nice to others, often at the expense of myself
- In general I find hard to say no
- Whenever I get requests for help I attend to them even though I may have important work to do
- I have often offered to do things for others that were unpleasant or of no benefit to me so that I may obtain their support.
- I have often offered to help others to gain their favour or trust even when by doing so I disadvantaged myself.
- My everyday life is built around pleasing others although this is not always necessary and at times very unpleasant
- I will go above and beyond in doing things for other people because it is too important to me that others like me
- Looking back when I had to make a decision, I was mostly focused on avoiding dissatisfying other people
- When having to decide something I have often taken extra care to satisfy people that are important to me
- My major concern when taking decisions is not to displease people around me
- People are unappreciative of the sacrifices I have made for their wellbeing or financial security
- People are unappreciative of what I have done for them
- Whether in my personal or professional life, people have often not appreciated the sacrifices I have made for them
- I can't help but feeling resentment for people who don't appreciate what I have done for them.
- Most people are shallow and bad
- People are insensitive and incapable of really caring for others
- I envy those who are more fortunate than I am
- I feel envious of people who have succeeded more in life than me just because they were lucky
- When something bad happens to someone more fortunate than me, I secretly feel a sense of joy

- I secretly wish people who enjoy life more than I do to fail or have a misfortune
- Sometimes I just feel resentment for people who have more money than I do
- I resent people who are in a better position than I am in life only because they had advantages I could not have
- Looking back, I believe I have always been miserable due to one or the other misfortune
- Luck has never been on my side
- I wish I haven't been so unlucky in my life
- When I think about it my life has been one of constant misery and unhappiness
- I spend a lot of time ruminating about people who have hurt me or have treated me unfairly
- I often fantasize of getting back at people who have hurt me
- I never hold any grudges
- I never really forget it when people are unfair with me.
- I still remember with resentment and anger the persons who have treated me unfairly in my life
- I detest people who have stood between me and my goals
- I resent all those who have made it impossible for me to succeed
- At large, I experience positive feelings and emotions in social situations.
- I feel that people want to be with me
- I enjoy the company of people around me.
- My relationships give me great pleasure
- In general, being with other people makes me tense and uneasy
- In general, I can communicate honestly, be myself, and feel emotionally safe when I am among other people
- I feel I have warm, and nurturing relationships with people around me
- Whenever I am upset I can always turn to friends or family for comfort
- I feel loved by others
- I feel that I am accepted by people around me
- I feel that what makes me most content in life is my relationships
- I feel that I am able to share my innermost feelings and thoughts within my relationships
- I take great pleasure from seeing and talking to people I am connected with
- I feel a pleasurable feeling of warmth when I am among people I have known for some time
- In general, I feel I have close, supportive and encouraging relationships

- The people I feel close to, pay attention to my needs and will be there when I have a problem
- When life gets stressful or tricky I have people around me who can calm me down
- I feel insecure or uncomfortable with being physically close to people, even people I know well
- My relationships are comforting and trusting
- I feel that the relationships I have will last for a long time
- Generally, I speak the truth with the people I know because I know I will be listened to non-judgementally
- Being with others makes me nervous and tense
- Showing my affection e.g. by giving a hug or something similar always makes me feel awkward
- When I am with other people I keep to myself and I don't talk a lot.
- I like to keep my feelings to myself
- I simply like to keep my business to myself
- I am open and generous around close friends
- I am an open book with others
- When interacting with others I am spontaneous
- Being with others makes me nervous
- I find it tiresome to be around others for a long time
- Socializing is invigorating
- Having to talk to others during a social event is exhausting
- When I go to a party I feel nervous about how I will come across
- I don't really enjoy going to parties or celebrations
- I don't like talking about myself
- I would much prefer to go to an event which has some structure rather than one when everyone can talk whenever they like. (crosses need for structure social)
- It takes some time to get to know me
- I go to social events because I know I must socialise not because I really enjoy interacting with others
- I rarely if ever speak boastful
- People might say that I am a cold and detached when I am around others
- I find it difficult to be affectionate to others
- When I don't take up a persona around others I am bound to come across as serious and indifferent

- I always avoid unnecessary drama in my behaviour
- When I am around others, I maintain a reserved, cold demeanour
- When I am with other people I keep my body language relatively reserved.
- I am cautious and reserved during social interactions
- I often come across as indifferent or too serious
- Some emotions like anger or sadness just don't belong to the workplace
- I come off well-composed and detached
- I am rather reserved in my gestures and expressions
- I am not a person of big gestures
- I always show that I'm in control of my emotions and of the situation I am in
- I often smile although in reality I am afraid, upset or angry
- I have learnt not to show my true emotions especially when these are negative
- Even when I am very glad about something I don't show it to others
- Whether I am very upset or very happy I don't show it to others
- It is hard for others to tell how I feel even when I experience a very intense emotion
- I tend to be spontaneous when I am with other people
- People find me open and witty
- In social situations I tend to keep a straight face even when I get angry or annoyed
- I can smile to others even when I am very upset
- I don't let others see how I really feel
- I tend to pretend that I pay attention to what other people are saying even when I am really very upset
- Sometimes I memorise funny or witty phrases to use when I am around others
- I don't show my true emotions easily
- I find it immature to show my distress
- I find it low and shameful to describe the situation I am in using very dramatic words even when I am really upset
- Most times I will just say to people that I am fine even when I am not
- I often play down my emotions even when I am among friends and family
- I feel awkward admitting that I am distressed
- I wish I were always in control of my emotions
- When people ask how I feel prefer to say that I am tired rather than admitting I am upset
- When I open myself to someone I often feel embarrassed afterwards
- People want happy faces around them
- Admitting to friends that you feel miserable jeopardises the relationship to an extent

- When someone starts crying because they are upset I will try to make them stop by being humorous
- When someone I know starts crying I will show I wasn't affected all that much
- I express my feelings far less openly than most people I know.
- I hate situations like the New Year's Eve that call for display of emotion such as hugging
- It is always good to show that you are in control of your emotions, especially when it comes to work
- I only express my feelings when it is appropriate
- When I am with my partner I let them do all the talking and emotional stuff,
- I think that one should always be rational and in control of their emotions
- I would hardly ever show that I am feeling vulnerable to others no matter how intimately I relate to them
- I don't like being asked about personal matters
- When people ask me something personal I will not give them a true or a direct answer
- When asked about a very personal issue I often reply vaguely
- Very often I don't want to admit feeling low and I just say 'I'm a bit tired' or something similar
- There are times that I really want to open up to someone, but I just can't do it.
- I want to be spontaneous, but I don't out of fear of saying something which is not appropriate.
- My mind always goes blank when I have to speak about my feelings
- When I try to show to others that I am upset I get nervous and become stiff
- There are times when I want to share a bad feeling with other people, but I don't do it
- Telling someone how important they are to me and how much I like them seems like an impossible task
- Often, I want to express my emotions openly, but I don't because people may get the wrong impression about me
- Sometimes I need to share with someone else my fears, but I am embarrassed to do it
- I would like to talk about my concerns and problems with another person, but I don't want to burden them
- When someone is aggressive with me I don't say anything even though I want to express my anger or indignation
- I prefer not to show my true emotions because I know people are cruel
- I very reluctantly talk about my emotions
- I will only talk about how I feel when it is absolutely necessary

- I hate it when I put on a happy face
- I don't like it when I can't help being sulky around people because they might think that something is wrong with me
- I don't like talking about my weaknesses because I don't want to invite pity from others.
- I never liked admitting my feelings of sadness or helplessness because I prefer people to think of me as a strong and competent person
- I prefer not to share how I feel with others because it raises expectations about my behaviour in the future
- I always feel guilty when I express my anger
- When I smile and put on a happy face I think that I am not strong enough to show my real mood to other people
- When I open up to people about a problem or stressful situation I later feel that I shouldn't have because I appeared as incompetent
- In some cases, I regret talking about my emotions because I think I will be judged for having them
- When I am upset and talk about it with someone I always worry they might perceive me as a Drama Queen
- When I am upset, and I share my emotions with people I feel shameful afterwards
- I will only say what I want to say after reflecting on it
- I think twice before sharing my emotions because I fear that I may not receive understanding or sympathy
- I will consider carefully what I am going to say before expressing an intimate emotion
- Before I talk to someone about something important that concerns me I will prepare what I will say and rehearse with the appropriate tone of voice, body and facial language
- Although I can generally contain my emotions, on occasions I have had excessive outbursts of anger.
- Even if I am furious I will avoid quarrelling in a public place
- It is only my family that have seen me infuriated and acting violently
- My anger will often eat at me for days, maybe even weeks, until something, an incident, an impulse will trigger it and I will not be able to control it
- I have temper tantrums
- I have always been able to control my temper in public but I cannot say the same about my private life
- I have an explosive temper which I only show in the privacy of my home
- People who don't know me well will probably think I am extroverted and easy to be around

- In brief encounters with people I don't often associate with I try to appear cheerful and polite
- When someone in a good mood I will try to act the same way
- Although I will never discuss something that really concerns me I often pretend to be enjoying a conversation
- I often mentally rehearse what I am going to say when I meet new people or before going to a social event
- When I meet people, I will make a conscious effort to appear warm and polite
- I try to show I am fully engaged in a conversation although I often don't really pay attention to what others say
- I try so that people find me agreeable and outgoing
- When expressing an opinion, I am more careful with words than most people I know
- Before starting an activity, I need to be fully prepared
- I need everything to be correct and perfect.
- I make sure that I do things exactly right
- I get annoyed at the lack of symmetry in my surroundings
- I find it disturbing when items on a wall or bookcase are asymmetrically placed
- I am annoyed by the lack of symmetry such as when words on a page are not lined up evenly
- I cannot stand it when a place of work is uneven
- I need things to line up evenly
- I like arranging items in a certain order, such as symmetrically arranging clothes in a closet
- I can very easily spot when objects in an area or a room are not symmetrically arranged
- It is quite important to pay attention to details
- I have a keen attention to detail, which comes naturally to me
- I can easily spot the mistakes in grammar or syntax when others speak
- I never forget to check the small details before I finish a task
- Sometimes I fixate on the details too much
- I am 'overly concerned about the fine details of something
- Some people might say that I can get very fussy about small details
- I can be very thorough with tasks such as checking, proofreading, or even hanging wallpaper
- I have a set, meticulous way of doing work which I cannot change easily when I have to
- I don't like changing the order I have set myself for doing things

- I get very annoyed by last minute changes to my schedule
- If I am in danger of not keeping a promise I will push myself to the human limits in order to keep my promise
- I have great difficulty establishing a new routine even when I know it is to my benefit
- I hold very strong convictions on certain issues which I would never imagine changing
- I live my life by certain rules I never violate
- It is hard for me to change the way I do things
- I don't like bending the rules I have set myself
- I much prefer games which are based on ability or concentration to those which are based on luck
- Table manners are important even and I tend to follow them even when I eat alone
- My standards are exceptionally high whether in professional, personal or moral issues
- I am not really satisfied unless exceptional standards have been met in the things I do
- I have extremely high expectations in certain areas of life
- I hold myself to a particularly high set of personal standards
- When setting standards to live up to I am very strict
- I have very often spent too much time in order to make sure that I take the right decision
- I tend to worry a lot about taking the wrong decision
- In the past I have spent an excessive amount of time thinking about what the correct decision is to take in a given situation
- When it comes to decision making I am not impulsive
- I have often blamed myself that I don't take decisions quickly
- I often ruminate over decisions I have taken
- When I feel a decision I made is wrong I will spend too much time going through in my head of several alternative options I could have taken
- I wish I could take decisions without thinking all that much
- I wish I trusted more my guts in taking decisions
- In the past I have lost considerable time in thinking about which the correct decision is
- Very often I will spend a lot of time thinking through
- Taking decisions is not my strong suit
- I tend to avoid risk as much as possible
- Between a safe solution with a moderate outcome and risky solution which is potentially more rewarding I will always go for the first
- I have always strived for cautiousness and safety
- Some people might say that I live a boring life

- I value safety and security far more than the potentially more advantageous risky way of life
- I will often try to avoid even minimal risks
- Very often I have opted for safety when other people would clearly not be afraid to risk
- I am far too cautious and safe
- I have always been extremely cautious
- I have often spent a great deal of time and effort to minimize risk
- I am the sort of person than enjoys taking a risk
- I have always dealt with risk as something potentially exciting
- I have taken many risks in my life
- I have always associated risk with negative feelings
- I have always felt a great need for having clear, unambiguous plans in whatever I did
- I feel very comfortable with rules and structure because they lay out the guidelines for how I'm supposed to act.
- Although I may not always succeed to, I feel a pressing need to organise my daily life around a clear and well-structured schedule
- I don't just want rules, I need them.
- I have always found that in life one must have clear goals and a simple, clear-cut plan to accomplish them
- I can't imagine my life without a routine
- Whether I manage it or not I always strive for setting and keeping to a clear, well-specified program
- A perfectly planned and organised life can only be tedious and mind-numbing
- When in holiday I need to have a simple, well-planned agenda of my activities in order to be able to enjoy myself
- I have always spent a considerable amount of time organizing my space
- I need to know that every little thing in my space has its specific spot
- Before I go on a long trip with lots of stop I take all the time I need to plan ahead and get to know my itinerary well
- I have always felt unsettled when plans were changed suddenly,
- I find it very irritating when something was agreed to be done at a certain time and the schedule was not respected.
- Knowing how to act properly is something that I struggle with.
- If I think that structure and clarity is missing from a situation I get confused and irritated
- I feel completely lost when I think I am not following a clear-cut, specific schedule

- I am much less able to work efficiently when I have not prioritised my work e.g. by writing down a list of the tasks I have to carry out
- Whenever I have not got a clear idea of what I must do and when I feel very uneasy and fearful
- Not having a simple, well-defined tactic of how to approach a situation makes me feel tense and apprehensive
- When I started my day without a simple, specific plan of what to do first, second etc. I got frustrated and agitated
- If you put me in a situation without clear, unambiguous rules of how to behave and what to do it's like
- I have been told that I can handle uncertain situations
- If someone removed structure from my life it would be like pulling the rug from under my feet
- I will try to keep a promise I made no matter what
- People have often said that I am dogmatic
- When I deviate from a moral principle I have set to myself I am very upset
- In life there is a set of rules and principles that one should never fail to adhere to
- When I think about it I have and act on strong moral principles
- I have often gone to great pains to stick to a moral principle
- I have very often tried to stick to what is right even when that was extremely unpleasant to me
- I have very strong and long held beliefs about several things
- There is always one correct way to act
- I have often spent time in order to think whether something is right or wrong
- I have always been hard on how I view myself
- On the whole, I judge myself and others by a set of strict criteria which are either met or not
- Others might say that I am too strict in my view of people and things
- I have not given enough time to myself to enjoy important accomplishments
- Very often I have worked beyond what is necessary, in order to avoid criticism or bad feedback
- I hardly ever schedule for time off even after I have worked hard to achieve my goal
- In the past when I have set an important goal I did not give up even when continuing meant I may damage my health
- I will continue working incessantly until I finish even though doing so may be counterproductive or bad for my health

- I am constantly tired
- Being too focused on work or study means that I don't have time for other important areas of life
- When I am working I cannot relax or take a good break until it is finished
- Often, I won't take a break from work even if I am sure it would help
- People who know me well know that I get the stuff done
- My friends would say that I am a very committed worker
- What I always strived for is to get things done no matter how hard I had to work
- For most of my life I was successful in getting the job done
- Very often I finish my day and it seems like I am further behind than when I started
- When I am upset because of something that happened I find that focusing on my work helps me not to think about it
- My work or study is extremely important to me
- I can prevent myself from eating out of boredom as opposed to when I am hungry.
- I would rather eat what is beneficial for me health wise than eat because of the taste.
- I cannot resist having something sweet when I crave for it
- I always find the patience to prepare something from scratch even when I am very hungry, rather than have ready-meal or a snack.
- I make sure I eat in moderation, knowing the implications of indulging in food.
- If I choose to go on a diet, I will stick to it accordingly and will not give into temptation.
- I could never stick to a special diet even for a short time because I like eating too much
- Whenever I tried to go on a diet I failed
- I would rather be alone than be with someone who just pleases me physically
- I would not sleep with someone on the first date.
- I would never fail to stick to the rule that protection is more important than pleasure.
- I'll can wait until I am able to trust the person I'm in a relationship with before it is taken to the next level.
- Although I find it tempting I would rather wait for love than engage in casual sex,
- I would hardly ever put off doing something physically demanding just because it is difficult
- I have often managed to stay awake despite feeling very sleepy
- I have always been unfailing at keeping strict exercise regimes
- I find it hard to exercise although I know it is good for my health
- I have often continued exercising, when I felt I had to, despite feeling very tired
- I can be considerate and very much aware of other people's feelings.

- I always try to be patient in putting my point across instead of speaking over other people.
- I have invested my energy in building a few long-lasting friendships with people who care for me instead of just hanging around with of a large group of friends who don't.
- I would rather stay in with a friend who needs cheering up than go out to a club if the offer is there.
- If someone has upset me, I prefer to clear everything up in a cordial, adult manner and resist hurting them
- I am very conscious of how I spend my money and where my money goes.
- I know not to spend money on things just for the sake of having them.
- I will first pay my bills before I spend money on clothes, nights out etc.
- I look out for bargains and deals when shopping for clothes or food to save money.
- I will always wait for an item I want to decrease in price, instead of buying it immediately.
- I do not spend money impulsively.
- I have always wanted to spend less and save more but I never seemed to manage
- I have always found that keeping a savings account is very important in case there comes a time I need money for something important.
- I can spend a lot less money than most of my friends in a given situation
- I never spend money in anything I absolutely don't need to
- I would rather work hard to reach my goal than take short cuts.
- Going ahead in life means that if a project or my job requires me to stay up late, I will do so instead of dismissing it.
- To be successful, I have always preferred to push myself than procrastinate.
- Whatever I have achieved so far is because ever since I was very young I have been working hard
- I can motivate myself to finish my work before indulging in anything outside of it.
- I can make sacrifices in order to achieve something important.
- I have always been able to control my desire for fun and play so that I can one day enjoy the fruits of my labour
- Most of what I do I do it because I must not because I am enjoying it
- I don't remember going on holiday just because I felt like it at the time
- My entire day is structured not according to how I feel but according to what I need to do
- All it matters to me is to achieve what I set myself to, not how much I am enjoying the process
- I won't stop work to have a break, even if I get tired.

- If I am working on a problem I can't solve I will continue to do so until I am completely exhausted
- I won't rest until I find a solution to a problem that has been troubling me
- When I think that something is wrong I must get to it immediately
- For long periods of my life I managed to work very hard despite facing strong emotional problems
- Few people can endure what I have
- In my life I often had to withstand a lot in order to achieve the goals I set for myself
- I have often had to bear great physical and mental pain to accomplish something
- If I know I need to do something I will do it even if it means not taking care of my health
- I can manage not talking to someone who has made me angry for days, weeks or months even when I have to see them everyday
- I can stay focused when I must even if what I am doing is boring
- I find it hard to finish a job when I am doing something very boring
- No matter how boring a job may be I can stay concentrated long enough to finish it
- I have no trouble finishing routine, repetitive tasks when I need to
- If a task I am working on is extremely demanding I will start thinking about other things, taking too many breaks and in the end, I will not finish it in time
- When I find a task is too hard I get easily distracted and I often fail to complete it
- It is very hard for me to keep working on a project which I find difficult
- When I am assigned with a challenging job it is not easy for me to stay focused and finish it in time
- I will stay focused for long enough to get the job done however long or difficult a task may be
- No matter how big a project may be I will find the power and concentration to complete it
- Even when I find it really challenging to stay concentrated on a job which takes time, if I have started it I will finish it
- I tend to give up when I am asked to carry out long, tedious activities.
- When I have many things to do get so frustrated that I often don't do any of them
- I generally get things done when I have to
- I won't let something unfinished just because it is hard
- I like to finish things
- I am the kind of person who likes to see things through
- When I am given a job to do I can focus entirely on it in order to pull it off
- If I am assigned an urgent job I will do it even if I feel tired

- No matter how distracted I am I will always manage to finish a task that needs to be done
- I will stay focused on a job until I finish it even if I am upset
- When I set a goal, I know I will work very hard in order to achieve it
- I don't allow myself to get so distracted that will stop me from completing a task that needs to be done
- I excel at accomplishing things even if they require long and hard work
- When I must do something, I do it
- I often start things which I don't finish
- Often, I do almost everything else except for the things I am supposed to
- I have always managed to stay focused even when I had to work on a very boring job
- I have always hated leaving things unfinished
- I never managed to get stuff done, even when I knew that they were really important
- In general, I have always been a productive individual who does not fail to get stuff done
- I have always been the sort of person who gets things done successfully
- Staying focused on a task has been an ability that I have since I was very young
- It has always been extremely difficult for me to keep doing a dull task
- Finishing things is not really my strong suit
- I am the sort of person who thinks before acting
- I make sure I think carefully of the consequences of my actions
- I usually weigh pros and cons before acting on
- I have always been the sort of person who will think something through before deciding to act
- I rarely fail to plan my actions carefully
- Too often in my life I have taken very poor decisions because I did something without first considering the consequences
- I am a master at thinking ahead before acting on a situation, a problem, or an opportunity
- For the most part my actions are rational and carefully analysed.
- In general, I act on the principle that thinking well before you speak always pays off.
- When I trust my gut feeling I don't have to think carefully or reflect on the consequences before doing something.
- I live my life on the principle that one should act according to their forecasts and their plans.
- One of my mottoes might be: 'Act, then let life take its course. See what happens'.
- Even if it is not always necessary I prefer to think of the consequences and plan as best as I can

- I find it invaluable to think of the worst-case scenario before embarking upon a course of action
- I am so good at thinking ahead, that I could make a career of it.
- I try to establish a range of likely possibilities and make several plans so that I could act accordingly.
- Before taking a decision or embarking on a course of action I try to find out everything that might be relevant by asking others or brainstorming or gathering information that is relevant to all eventualities
- Too often I have found myself in a position when I should clean up the mess created by acting without considering the possible outcomes of my actions
- My way of dealing efficiently with life's dilemma is to sit down and think
- I have often said things without thinking
- I cannot imagine my life without pursuing new, stimulating experiences
- Life is about trying new things
- The real fun in life comes out of trying new things
- I don't have to be prepared to try sports and activities that can lead to sensational experiences like bungee jumping or hang gliding
- I find that taking risks is exciting especially when the risk is not a calculated one
- If a friend offered me to join him in parachute jumping I would say yes on the spot.
- I love changes. I love new cities, apartments, jobs, and friends
- I never shy away from a new experience or opportunity
- One should live every day as if it were their last
- I am very easily bored
- Whenever I walk to work or to somewhere I go very often I try to take a different path.
- Rearranging furniture always makes my space more exciting
- I like my work space to be stimulating and exciting
- Often, I have tried, on the spur of the moment, challenging adventures like water rafting or sky diving
- I would never say no to an activity which promises to get my adrenaline pumping
- I like gambling or betting on things
- I hate routine
- I don't want to be one of the people who live their lives too cautiously
- In the movie Yes Man, the protagonist says yes to absolutely everything: that's the way to live life
- When I feel very excited, I tend to do things that can get me into trouble

- When I am very excited, I tend to be impulsive
- At times, when I am in a very positive mood, I have trouble controlling myself from taking risks even when they are unnecessary
- Too often, feeling very happy makes to want to act on impulse
- At times I feel so full of positive energy, that I have strong impulses to do something without thinking of the consequences whatsoever
- On occasions when I am experiencing a powerful positive emotion I have an urge to do something straightaway, without thinking it through first
- It is difficult for me to stop myself from acting on impulse when I am very happy
- When I am very happy I tend to be unpredictable
- I have often paid the consequences of being impulsive while having good fun
- It is easy to get myself into trouble when I am feeling excited
- When being extremely happy I tend to have powerful urges to do something on impulse
- Sometimes I am so animated and full of positive emotions that I cannot control my actions
- Too often being very happy has made me do things that I regretted
- I take very poor decisions when I feel particularly excited
- People have told me that when I am over excited I act on impulse
- Some people might say that I tend to lose control of my actions when I am very happy
- I often pay the price of acting on impulse when I am
- When I am excited I tend not to care about the consequences of my actions
- When I am in high spirits, I often act without thinking
- At times when I am upset or anxious I have a strong desire to act on impulse
- When I am too sad or anxious I experience strong urges to do things which may quickly make me feel better
- Being low makes me act on the spur of the moment
- When I have a negative feeling be that extreme anger, sadness, anxiety I have a strong urge to act in haste in order to get rid of that feeling
- Generally, I have a strong need to do something in order to feel better asap, when I feel bad
- When I am very miserable or very anxious I think carefully about what to do rather than acting on impulse
- I have never had strong urges to act impulsively when I am upset or anxious
- If I am low I have a strong need to quickly do something which can make me feel less distressed

- At times, intense negative emotions trigger strong impulses that I may act on
- On occasions when I am experiencing a powerful negative emotion I have an instinctual urge to do something immediately to make up for this emotion
- When I am very irritated I have a compelling force to act on my irritation
- No matter how angry I may be I have never felt an irresistible desire to get rid of these feelings immediately by doing something
- Very often, when I am too stressed I act impulsively
- If I am I angry or upset I tend to act impulsively
- I have always had trouble controlling my impulses when I felt angry or distressed
- It has always been difficult for me to stop myself from acting on impulse if I felt low or anxious
- When I am aggravated or upset I may do something that I haven't planned
- I have difficulty stopping rash behaviour when I don't feel well
- I am not one of these persons who can restrain their impulses no matter how bad they feel
- The ability to control my impulses is linked to how well I feel
- Some people would say that I am very poor in stopping myself acting impulsively when I am in a bad mood
- When I am very miserable I tend to act on impulse
- At times I have felt so cut-off from life and other people that I did things on impulse
- When I am seriously upset or agitated I have the tendency to take decisions on the spur of the moment (though in OC this is may be more complicated)
- When I am disappointed or miserable I tend to do the first thing that comes to mind
- Some of the worse decisions I have taken or action I did were because I could not control an impulse following a horrible feeling
- I have often been unnecessarily impulsive
- People have told me that I am too impulsive
- At times I was so distraught, that I did things that I later regretted
- I never show my resentment directly but at times when I am upset, or I feel bad I may fly into a rage
- I tend to lose my temper more easily with people that I have resented for a long time
- Although I can control my anger towards someone for a long time, I may go wild in a matter of seconds when I feel especially bad or resentful
- On occasions I feel so angry that I take it all out on anybody who might be around even if they are not be responsible for how I feel
- Although I can generally control my urges, when I feel depressed or anxious I can just go mad

- Even though I may think very hard and very long about what is the best course of action in a certain instance, I may eventually act on impulse
- Sometimes, I am so tired of thinking things over and over that I just do the first thing that comes to mind
- When I am very sad tend to lose control over how much I am eating
- On occasions when I have been very depressed, I cannot resist strong urges to eat myself until I get sick
- Sometimes when I am too upset or too anxious, I have irresistible urge forcing me to eat until I make myself feel sick
- On occasions when I feel lonely, I tend to overeat
- When I feel stressed, I may impulsively start eating huge amounts of food
- Sometimes I am so upset that I start eating without realizing it
- When I am very I lose control and I drink too much alcohol or misuse other substances
- Extremely stressful situations trigger strong urges to drink excessive amounts of alcohol or use illegal substances
- When I am nervous I may feel a strong desire to use drugs or drink too much, which I cannot harness
- When I experience a very negative feeling like extreme sadness, anger or intense stress I have cravings for alcohol and/or using illegal drugs that that I cannot control
- Whenever I feel very lonely I cannot keep under control my desire to misuse alcohol or illegal substances
- If I am in a very bad mood I cannot restrain my impulse to use drugs or drink too much alcohol
- At times when I feel too bad I fail to control a strong desire to engage in a risky behaviour like driving in a high speed
- When I am angry or upset I tend to do risky keep a grip on my strong urges to do things that are dangerous
- I tend to engage in reckless behaviours such as getting into a fight when I am emotionally vulnerable
- I am not able to control indulging in high risk activities such as antisocial or even criminal activities, when I a feel sad or angry
- Sometimes when I a feel very lonely I cannot suppress powerful urges to engage in risky behaviours such as experimenting with substances or having casual sex without protection
- At times when I am very sad and lonely I cannot resist hurting myself physically in parts of the body that other people cannot see

- I feel so drown in my sorrow that I cannot control urges to hide from everybody and hurt myself physically
- Occasionally I feel such doubt and despair that I may impulsively start to hurt myself in private
- There have been times when the negative feelings I experienced were so deep that I deliberately hurt myself without letting anyone know
- I have often experienced such extreme frustration or anger that I could not restrain an impulse to intentionally injure my body
- On occasion I have felt such an overwhelming emotional distress that I just couldn't resist engaging in self-harm such as cutting or burning my skin
- Sometimes I feel such an unbearable feeling of tension that I may impulsively start to injure myself by punching myself or burning my skin
- At times I feel so furious or resentful that I give in to urges of secretly injuring my body
- I have often failed to contain to strong urges of hurting my body in secret, when feeling sad or tense
- I have often felt so sad and tired of everything that I simply could not do anything else but eating nothing or almost nothing without sharing it
- I have given in to urges of secretly not eating anything or almost anything for days, when I have been overwhelmed by an intense negative feeling
- I have often not been able to control seriously injuring myself and keeping it a secret, when feeling down in the dumps
- In the past my bouts of depression have led me to impulsively hurt myself in private
- There have been times when I felt so hopeless or sad, that without thinking too much about it I tried to kill myself
- In the past I have acted on an impulsion to hurt myself e.g. by inflicting pain on a part of my body and no one noticed
- Feeling so isolated has often made me unable to control an impulse to secretly hurt myself
- When I asked for help in a challenging task my parents would say to me: 'it can't be that difficult, get on with it'
- If I disagreed with a decision my parents made I would be sworn at
- I would often listen things like 'this should be over by now; you are not trying enough'
- I did not share it with my parents when I was angry or upset because they would probably ignore me
- When I cried my parents used to tell me that 'only very little boys/ girls cry' or something along these lines.

- Whenever I said I couldn't do my homework, a household chore or another task, my parents would get mad
- If I failed to do what I was supposed to because I found it difficult and would say so, my parents said things like 'you are just being lazy!'
- When I was sharing my fears with my parents they would tell me to stop acting like a child
- When I said I didn't want to eat because I was not hungry my parents would say 'You are lying, you just do want to eat *that*'
- When I said to my parents I was tired and could not continue working on something they would say that I am lying
- When I could not find a solution to a problem my parents would make me feel stupid
- When I talked about my interests my parents were keen to listen
- When I was asking to know more about different professions and my plans my parents would always be willing to discuss
- When I was happy my parents used to say that they are happy for me
- When I was upset my parents would just ignore me
- If I was very upset because something had happened to me during the day my parents used to say something like 'It's really not such a big deal; get over it'
- My parents used to ignore me when I talked about my opinions or preferences
- When I cried my parents would say to me 'you are not really that upset' or something along these lines
- I did not show my emotions to my parents because I knew they would ignore me
- My parents would always listen to me if I had a problem and we would try to find a solution together
- I was made to feel worthless or stupid when I made mistakes, even minor ones
- My parents tended to be annoyed or irritated whenever they realised I was very upset
- When I was present during a discussion I would hesitate to say to my parents that they were wrong because I knew they did not like to be contradicted
- When I got into trouble my parents would swear at me, even if it had not always been my fault
- My parents did not have time to listen to my problems or concerns
- My parents would often say to me that they work too hard to have to have to deal with my problems too, or something like that.
- When I cried because of something really upsetting my parents used to shout at me that if I don't stop crying I would be punished
- My parents were hardly ever around when I needed them

- My parents used to fight a lot
- I was abused as a child by my father (or mother)
- When I lied I would get punished?
- Whenever I was in trouble at school, with friends I dreaded the consequences I would face at home if they found out
- I was sexually abused by my father or mother
- My father or mother used to hit me
- I was shouted at or punished when I made mistakes
- When I was in trouble with the law I would receive punishments by me parents
- Several times I acted as I was happier than I really was to please either my mother or my father
- My mother (or father) didn't like me
- It was not clear to me whether my parents were content when I told them or showed to them that I am happy
- Showing that I am happy, even when was I wasn't, was one way to get emotionally closer to my parents
- Saying to my father or my mother that I loved them, would make me feel very awkward
- I never asked my mother or father to give me a hug
- I can hardly remember any of my parents giving me a hug or a kiss
- My parents would hardly ever be affectionate with me
- My parents would act awkward whenever I gave them a gift on their name day, birthday or other occasion
- My parents would hardly ever console me or give me a hug when I was upset
- Sometimes I feel so angry with myself that I must hurt myself physically to feel better
- There are occasions when hurting myself is the only way I can stop feeling miserable
- Inflicting physical pain to myself has helped me escape from my problems even if for a little while
- There have been times when I considered committing suicide so that other people may understand that I am serious about the way I feel
- I have often thought that attempting to commit suicide will force people around me to pay attention to my feelings.
- Several times I have injured myself deliberately, hoping that other people will notice.
- When I hurt myself, I choose a somewhat dramatic way to do it.
- Several times I have hurt myself so that others realise in how much pain I am
- Self-harm is my way of communicating to people that I need support.

- My scars from self-inflicted wounds reveal suffering and show to others my will to survive.
- My scars are my identity, they are part of my personal history.
- Sometimes I inflict pain to my body as a reminder that I am still alive
- Self-harm is my way of gaining people's attention
- I feel that cutting myself or otherwise inflicting injuries on my body is the only way to let others know what I am going through
- On occasions I harmed myself physically to punish someone else
- At times my life feels so overwhelmingly confusing that I need to hurt myself physically to feel more in control of things
- Self-harm often seems the only way I can control my emotions
- Self-harm brings me back to reality when I feel that my world around me is unreal or when I feel that my consciousness lies outside my body
- Cutting, burning or otherwise traumatizing myself is my way of coping with intrusive, repetitive thoughts
- I would not like it if others found out that I have been hurting myself on purpose.
- I have often hurt myself in private
- I have a specific way of inflicting pain on my body that no one knows
- At times I feel so isolated that I must secretly hurt myself to feel better
- At times I have hurt myself physically in parts of the body that other people could not possibly notice
- I would find it very embarrassing to admit to someone that I hurt myself physically
- I self-harm by cutting myself, burning my skin in my own room
- I hide from others the fact that I hurt myself by punching, biting, cutting myself, burning my skin or doing something similar
- At times, I secretly injure my body
- When I self-harm I do it in the privacy of my own home
- I take great care in hiding my injuries and scars
- inflicting injuries or pain on my body is embarrassing and shameful
- I have always been very secretive about my self-harm
- If someone I don't really like asks for my help I may offer it later than they expect me to
- I may neglect to do something I don't really want to do
- I am very often passive aggressive with people
- When someone whom I dislike asks for my help I won't refuse to give it, but I will make it hard for them

- On several occasions I have on purpose not given my best
- If I really don't want to do something that is imposed on me I will just not go all out.
- On occasions, I may use nice words and still be able to talk down on people
- Sometimes I will show my anger by staying silent for hours
- If I cannot show my anger otherwise I will stay silent
- I quarrel with others often
- If I am annoyed by someone I will show it to them
- When I am really irritated by something I show my feelings to the person whom I hold responsible
- I would not hesitate to show my anger in public if I must
- I have often hit someone because I could not control my temper
- I always choose direct conflict
- I will not hesitate to quarrel with someone if I must
- I won't think twice about having a serious argument with someone when I am right
- Some people may think I am snobbish or arrogant
- It is difficult for me to apologize even when I know I am wrong
- I find it much more difficult to express a positive rather than a negative emotion when I am around others
- I can resist peer pressure due to my strong character
- I won't stand being disrespected no matter what
- On occasions I find social events so overwhelming that afterwards I need some time on my own to recover
- Having to be around others for long is exhausting
- Having to work with others for long periods of time is tiresome and emotionally draining
- Before social occasions I may prepare thoroughly what I need to say
- I really resent people whom I have treated with respect and have on their part been unkind or unfair to me
- I may not show immediately my anger and resentment when I am unfairly treated impolitely by someone
- On occasions I have been kind to or even praised people that I completely disagreed with
- I have often pretended to be concerned about or compassionate to people.
- I worry excessively about others' disapproval
- Very often I try to find out whether people I associate with have been annoyed by something I may have done
- I would rather talk about other people's concerns than my feelings

- When I lose my temper, no strangers are around.
- I have often apologized many times and in many ways to show that I am sorry for what happened
- I would rather appear kind, caring or easy going than risking losing the favor of the people around me

C.2 Final Item Pool of the OC-PDI (108 items)

Listed below are a number of statements. Please read them carefully and decide how much each statement applies to you in general. In completing this questionnaire, it is important to understand that there are no "right" or "wrong" answers.

Use the 6-point scale to rate the extent you agree or disagree with each statement

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
After a failure I feel that I am completely worthless	1	2	3	4	5	6
Behaving correctly is the most important thing in life.	1	2	3	4	5	6
Being open to new experiences is for the foolish or the immature	1	2	3	4	5	6
Caring others have often suggested in the past that I should change but I have resisted.	1	2	3	4	5	6
Decision making has always been easy for me: I just follow my gut feeling.	1	2	3	4	5	6
Despite being given repeated feedback that something is wrong I know my opinion is right	1	2	3	4	5	6
Failing makes me worry that people will lose interest in me.	1	2	3	4	5	6
Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	1	2	3	4	5	6
Finding answers to dilemmas has always been a huge struggle for me	1	2	3	4	5	6
For me, the process leading up to taking a decision is long and painful	1	2	3	4	5	6
Having to be around others for long periods of time is exhausting	1	2	3	4	5	6
I always love socializing and interacting with people.	1	2	3	4	5	6
I always make time for enjoyment or fun	1	2	3	4	5	6
I am a I hard to read person	1	2	3	4	5	6
I am always on the lookout for opportunities to socialize and connect with other people	1	2	3	4	5	6
I am always open to new ideas	1	2	3	4	5	6
I am generally forgiving and tolerant with myself when I make mistakes	1	2	3	4	5	6

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
I am generally spontaneous in social interactions	1	2	3	4	5	6
I am naturally relaxed and sociable with those around me	1	2	3	4	5	6
I am not afraid to fail	1	2	3	4	5	6
I am not at ease in the company of others	1	2	3	4	5	6
I am not really a particularly warm or affectionate person, although I often give that impression	1	2	3	4	5	6
I am not the kind of person that engages in risky business ventures	1	2	3	4	5	6
I am not willing to take risks that stretch my comfort level	1	2	3	4	5	6
I am often stressed out, but no one knows it	1	2	3	4	5	6
I am often stuck in the same ways of dealing with new circumstances	1	2	3	4	5	6
I am often unable to change my perspective when facing new situations or problems.	1	2	3	4	5	6
I am often unable to make decisions and feel stuck	1	2	3	4	5	6
I am relaxed and pleasant with people around me	1	2	3	4	5	6
I am so upset when I fail that I often make the failure seem worse than it is	1	2	3	4	5	6
I am sometimes so open to new ideas that people have described me as naive or gullible	1	2	3	4	5	6
I am usually so overcommitted that I hardly ever have any spare time	1	2	3	4	5	6
I am very critical of myself when I am not succeeding.	1	2	3	4	5	6
I avoid risky behaviours	1	2	3	4	5	6
I believe that relaxing, playing, or recreation must be earned	1	2	3	4	5	6
I can't help spending too many hours on my work and having too little time for myself.	1	2	3	4	5	6
I carefully consider all possibilities before taking any chances	1	2	3	4	5	6
I come across as sociable and outgoing but in reality I need a lot of time alone	1	2	3	4	5	6
I downplay my emotions when I am around other people	1	2	3	4	5	6
I enjoy hearing other people's points of view	1	2	3	4	5	6

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
I enjoy the excitement of taking risks	1	2	3	4	5	6
I feel extremely anxious when I realise I may not be able to do what I promised I would do	1	2	3	4	5	6
I feel relaxed and comfortable around other people	1	2	3	4	5	6
I feel that I cannot cope with failure	1	2	3	4	5	6
I feel that the worst thing that could ever happen to me is failure	1	2	3	4	5	6
I find it difficult to accept that someone is right even when I know they are	1	2	3	4	5	6
I find it difficult to truly pause and consider the possibility that I may be wrong and I need to change	1	2	3	4	5	6
I find it hard to question my point of view	1	2	3	4	5	6
I find it hard to self soothe, relax, or experience pleasure without guilt	1	2	3	4	5	6
I find it very hard to put my failures into perspective	1	2	3	4	5	6
I find most social interactions unrewarding or unpleasant	1	2	3	4	5	6
I find prolonged social interactions emotionally draining	1	2	3	4	5	6
I frequently believe that I am right about something, no matter what the person says or how things seem.	1	2	3	4	5	6
I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	1	2	3	4	5	6
I have always been extremely uncomfortable with uncertainty	1	2	3	4	5	6
I have at least one meaningful and fulfilling intimate relationship	1	2	3	4	5	6
I have often been given feedback that I work too hard or that I need to relax	1	2	3	4	5	6
I have to sacrifice my time and energy to get it right because others are incompetent.	1	2	3	4	5	6
I like to take chances	1	2	3	4	5	6
I often feel I have no options to choose from when dealing with a problem	1	2	3	4	5	6
I often feel that I live my life in fear of failure	1	2	3	4	5	6

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
I often mask or hide my inner feelings from others	1	2	3	4	5	6
I often see the funny side of my failures	1	2	3	4	5	6
I rarely relax just to relax	1	2	3	4	5	6
I regularly step outside my comfort zone to take risks	1	2	3	4	5	6
I sometimes find it difficult to even temporarily let go of my point of view	1	2	3	4	5	6
I struggle with uncertainty	1	2	3	4	5	6
I think twice before revealing my true emotions to others	1	2	3	4	5	6
I worry more than I care to admit	1	2	3	4	5	6
If I don't do it myself then it will never get done or done properly.	1	2	3	4	5	6
If I'm invited to a party I usually attend out of obligation, not because I expect it to be fun	1	2	3	4	5	6
It doesn't matter what you say or how things seem, when I am right about something I know I am correct.	1	2	3	4	5	6
It is hard for others to know how I feel even when I am experiencing an intense emotion	1	2	3	4	5	6
It takes me a lot of time to recover from failures	1	2	3	4	5	6
Making the right decision is often such a demanding task for me that when I have finally made up my mind I feel exhausted	1	2	3	4	5	6
Most people never really know how much I am not telling them about myself	1	2	3	4	5	6
My anxiety often interferes with my ability to hear what another person is saying	1	2	3	4	5	6
My ideal life would be free from any risk	1	2	3	4	5	6
My mind often goes blank when I have to speak about my feelings	1	2	3	4	5	6
No matter how hard I work I always feel like I have not been doing enough.	1	2	3	4	5	6
Often I feel so anxious that I find it hard to find the right words to say	1	2	3	4	5	6

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
Often, I feel so exhausted from working too hard for too long that I am unable to concentrate or I completely neglect my well-being	1	2	3	4	5	6
Often, I feel the need to be honest with others about my feelings but something is holding me back	1	2	3	4	5	6
On the surface I appear calm, but inwardly I am often fearful or irritable	1	2	3	4	5	6
One of the worst experiences in life is struggling with the uncertainty of making the right choice	1	2	3	4	5	6
People call me stubborn	1	2	3	4	5	6
People have often told me that I cannot appreciate another person's viewpoint	1	2	3	4	5	6
People have often told me that I come across as serious and reserved	1	2	3	4	5	6
People have often told me that I refuse to appreciate their point of view	1	2	3	4	5	6
People have often told me that I take matters too seriously	1	2	3	4	5	6
People often tell me that I am too strict with myself	1	2	3	4	5	6
People tell me I always play safe	1	2	3	4	5	6
People who know me well have told me that I am rigid	1	2	3	4	5	6
Rules are there to be followed especially mine.	1	2	3	4	5	6
Some people might describe me as a hermit	1	2	3	4	5	6
Some people might describe me as being very opinionated	1	2	3	4	5	6
The outward expression of my emotions often doesn't match what's going on inside me	1	2	3	4	5	6
There are many ways to live, behave, or think	1	2	3	4	5	6
There are never enough hours in the day to finish my work and be content with the result	1	2	3	4	5	6
Very few people know that I can have an explosive temper	1	2	3	4	5	6
Very few people know the real me	1	2	3	4	5	6
Very often, I examine so carefully all possible options in order to minimize risk that I end up feeling exhausted	1	2	3	4	5	6

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
Very often, the process of making the right decision is so nerve-racking that after I finally decide on an option I feel exhausted	1	2	3	4	5	6
When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	1	2	3	4	5	6
When I am with other people I am very cautious for fear of saying the wrong thing	1	2	3	4	5	6
When I fail in a task I feel that I am a total failure	1	2	3	4	5	6
When I make a serious mistake I am so upset that I am often unable to put it behind me and get on with my life	1	2	3	4	5	6
When it comes to work good is never good enough for me	1	2	3	4	5	6

C.3 Descriptive Statistics of the 105 OC-PDI Items Entered into the Exploratory Factor Analysis (EFA) ( $N = 525$ )

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
After a failure I feel that I am completely worthless	3.13	1.37	0.23	-0.68
Behaving correctly is the most important thing in life.	3.11	1.28	0.06	-0.65
Caring others have often suggested in the past that I should change but I have resisted.	2.75	1.18	0.28	-0.54
Decision making has always been easy for me: I just follow my gut feeling.	3.05	1.15	0.17	-0.32
Despite being given repeated feedback that something is wrong I know my opinion is right	2.51	1.16	0.55	-0.17
Failing makes me worry that people will lose interest in me.	3.30	1.39	0.06	-0.85
Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	3.30	1.24	-0.05	-0.38
Finding answers to dilemmas has always been a huge struggle for me	3.38	1.19	-0.03	-0.35
For me, the process leading up to taking a decision is long and painful	3.53	1.23	-0.09	-0.37
Having to be around others for long periods of time is exhausting	3.23	1.49	0.11	-0.97
I always love socializing and interacting with people.	4.12	1.23	-0.55	-0.02
I always make time for enjoyment or fun	4.48	1.06	-0.61	0.38
I am a I hard to read person	3.51	1.24	-0.13	-0.50
I am always on the lookout for opportunities to socialize and connect with other people	3.71	1.23	-0.23	-0.47
I am always open to new ideas	4.50	0.92	-0.59	1.21
I am generally forgiving and tolerant with myself when I make mistakes	3.58	1.09	0.02	-0.21
I am generally spontaneous in social interactions	3.70	1.11	-0.46	-0.03
I am naturally relaxed and sociable with those around me	4.16	1.11	-0.50	-0.09
I am not afraid to fail	2.97	1.30	0.27	-0.63
I am not at ease in the company of others	2.59	1.26	0.54	-0.39

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
I am not really a particularly warm or affectionate person, although I often give that impression	2.50	1.20	0.61	-0.20
I am not the kind of person that engages in risky business ventures	3.64	1.25	-0.19	-0.52
I am not willing to take risks that stretch my comfort level	3.31	1.14	0.17	-0.09
I am often stressed out, but no one knows it	3.64	1.33	-0.43	-0.58
I am often stuck in the same ways of dealing with new circumstances	3.22	1.01	-0.19	0.06
I am often unable to change my perspective when facing new situations or problems.	3.05	1.08	0.20	-0.15
I am often unable to make decisions and feel stuck	3.32	1.26	0.04	-0.57
I am relaxed and pleasant with people around me	4.15	1.11	-0.71	0.40
I am so upset when I fail that I often make the failure seem worse than it is	3.67	1.40	-0.25	-0.74
I am sometimes so open to new ideas that people have described me as naive or gullible	2.83	1.19	0.42	-0.30
I am usually so overcommitted that I hardly ever have any spare time	2.85	1.25	0.34	-0.51
I am very critical of myself when I am not succeeding.	4.27	1.18	-0.75	0.52
I avoid risky behaviours	3.57	1.19	-0.12	-0.44
I believe that relaxing, playing, or recreation must be earned	3.25	1.19	-0.11	-0.49
I can't help spending too many hours on my work and having too little time for myself.	3.09	1.25	0.19	-0.59
I carefully consider all possibilities before taking any chances	4.12	1.03	-0.48	0.39
I come across as sociable and outgoing but in reality I need a lot of time alone	3.54	1.40	-0.06	-0.80
I downplay my emotions when I am around other people	3.76	1.24	-0.43	-0.12
I enjoy hearing other people's points of view	4.59	0.95	-0.69	1.31
I enjoy the excitement of taking risks	3.57	1.14	-0.40	-0.10

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
I feel extremely anxious when I realise I may not be able to do what I promised I would do	4.43	1.12	-0.89	0.94
I feel relaxed and comfortable around other people	4.15	1.10	-0.47	-0.05
I feel that I cannot cope with failure	3.11	1.28	0.27	-0.34
I feel that the worst thing that could ever happen to me is failure	2.91	1.42	0.48	-0.62
I find it difficult to accept that someone is right even when I know they are	2.59	1.16	0.57	-0.18
I find it difficult to truly pause and consider the possibility that I may be wrong and I need to change	2.93	1.11	0.14	-0.48
I find it hard to question my point of view	2.92	1.03	0.17	-0.10
I find it hard to self soothe, relax, or experience pleasure without guilt	2.88	1.36	0.28	-0.76
I find it very hard to put my failures into perspective	3.36	1.28	0.04	-0.52
I find most social interactions unrewarding or unpleasant	2.23	1.08	0.78	0.32
I find prolonged social interactions emotionally draining	3.11	1.45	0.18	-0.91
I frequently believe that I am right about something, no matter what the person says or how things seem.	2.98	1.17	0.25	-0.33
I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	3.86	1.29	-0.31	-0.47
I have always been extremely uncomfortable with uncertainty	3.39	1.23	-0.03	-0.51
I have often been given feedback that I work too hard or that I need to relax	3.02	1.30	0.19	-0.66
I have to sacrifice my time and energy to get it right because others are incompetent.	2.95	1.22	0.32	-0.36
I like to take chances	3.69	1.02	-0.40	0.44
I often feel I have no options to choose from when dealing with a problem	2.92	1.10	0.16	-0.25
I often feel that I live my life in fear of failure	3.07	1.36	0.24	-0.68
I often mask or hide my inner feelings from others	3.73	1.31	-0.30	-0.57
I often see the funny side of my failures	3.48	1.18	-0.26	-0.42

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
I rarely relax just to relax	2.72	1.28	0.44	-0.50
I regularly step outside my comfort zone to take risks	3.28	1.05	-0.01	0.15
I sometimes find it difficult to even temporarily let go of my point of view	3.14	1.19	0.09	-0.46
I struggle with uncertainty	3.66	1.20	-0.25	-0.18
I think twice before revealing my true emotions to others	4.13	1.18	-0.49	-0.06
I worry more than I care to admit	4.03	1.33	-0.67	-0.11
If I don't do it myself then it will never get done or done properly.	3.38	1.24	-0.11	-0.45
If I'm invited to a party I usually attend out of obligation, not because I expect it to be fun	2.85	1.24	0.33	-0.54
It doesn't matter what you say or how things seem, when I am right about something I know I am correct.	3.20	1.24	0.14	-0.43
It is hard for others to know how I feel even when I am experiencing an intense emotion	3.31	1.26	0.06	-0.56
It takes me a lot of time to recover from failures	3.31	1.25	-0.05	-0.52
Making the right decision is often such a demanding task for me that when I have finally made up my mind I feel exhausted	3.29	1.37	-0.06	-0.76
Most people never really know how much I am not telling them about myself	3.76	1.37	-0.36	-0.57
My anxiety often interferes with my ability to hear what another person is saying	2.85	1.42	0.37	-0.80
My ideal life would be free from any risk	3.18	1.23	0.22	-0.28
My mind often goes blank when I have to speak about my feelings	3.26	1.40	0.14	-0.84
No matter how hard I work I always feel like I have not been doing enough.	3.82	1.36	-0.24	-0.61
Often I feel so anxious that I find it hard to find the right words to say	3.19	1.43	0.10	-0.97
Often, I feel so exhausted from working too hard for too long that I am unable to concentrate or I completely neglect my well-being	3.25	1.30	0.00	-0.74

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Often, I feel the need to be honest with others about my feelings but something is holding me back	3.66	1.25	-0.29	-0.37
On the surface I appear calm, but inwardly I am often fearful or irritable	3.43	1.36	-0.17	-0.80
One of the worst experiences in life is struggling with the uncertainty of making the right choice	3.66	1.23	-0.26	-0.28
People call me stubborn	3.63	1.43	-0.13	-0.91
People have often told me that I cannot appreciate another person's viewpoint	2.27	1.12	0.91	0.63
People have often told me that I come across as serious and reserved	2.97	1.35	0.25	-0.87
People have often told me that I refuse to appreciate their point of view	2.35	1.11	0.59	-0.34
People have often told me that I take matters too seriously	3.32	1.24	-0.14	-0.64
People often tell me that I am too strict with myself	3.40	1.31	0.02	-0.62
People tell me I always play safe	3.24	1.17	0.08	-0.44
People who know me well have told me that I am rigid	2.653	1.15	0.52	-0.16
Rules are there to be followed especially mine.	3.28	1.20	0.05	-0.44
Some people might describe me as a hermit	2.54	1.35	0.59	-0.61
Some people might describe me as being very opinionated	3.42	1.34	0.04	-0.70
The outward expression of my emotions often doesn't match what's going on inside me	3.62	1.28	-0.19	-0.48
There are never enough hours in the day to finish my work and be content with the result	3.57	1.44	-0.05	-0.75
Very few people know that I can have an explosive temper	3.24	1.57	0.10	-1.13
Very few people know the real me	3.51	1.53	-0.11	-1.04
Very often, I examine so carefully all possible options in order to minimize risk that I end up feeling exhausted	3.27	1.30	0.03	-0.70

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	3.33	1.33	-0.09	-0.64
When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	3.79	1.37	-0.28	-0.60
When I am with other people I am very cautious for fear of saying the wrong thing	3.60	1.31	-0.16	-0.47
When I fail in a task I feel that I am a total failure	3.20	1.39	0.13	-0.72
When I make a serious mistake I am so upset that I am often unable to put it behind me and get on with my life	3.27	1.35	-0.01	-0.84
When it comes to work good is never good enough for me	3.39	1.24	0.13	-0.45

C.4 Variance Accounted for by Each OC-PDI Factor in the Exploratory Factor Analysis  
( $N = 525$ )

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	% of Variance
Fear of Failure	16.81
Social Anxiety	10.22
Risk Aversion	9.04
Obstinacy	10.30
Compulsive Striving	12.37
Constricted Expressivity	15.93
Indecisiveness	13.96

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Appendix D Study 4

D.1 Descriptive Statistics of the OC-PDI Items in Study 4 ( $N = 572$ )

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
When I fail in a task I feel that I am a total failure	2.98	1.53	0.30	-0.97
It takes me a lot of time to recover from failures	3.20	1.42	0.10	-0.76
I feel that I cannot cope with failure	3.01	1.38	0.23	-0.67
I often feel that I live my life in fear of failure	3.08	1.52	0.12	-1.07
I am not afraid to fail	3.46	1.44	-0.02	-0.84
I am very critical of myself when I am not succeeding	4.10	1.34	-0.56	-0.26
When I make a serious mistake, I am so upset that I am often unable to put it behind me and get on with my life	3.33	1.54	-0.01	-1.03
I always love socializing and interacting with people	3.82	1.39	-0.23	-0.66
I feel relaxed and comfortable around other people	3.91	1.28	-0.30	-0.53
I am naturally relaxed and sociable with those around me	3.98	1.28	-0.41	-0.41
I find most social interactions unrewarding or unpleasant	2.90	1.42	0.33	-0.76
I am not at ease in the company of others	2.91	1.43	0.31	-0.79
I am always on the lookout for opportunities to socialize and connect with other people	3.57	1.36	-0.12	-0.68
Some people might describe me as a hermit	3.05	1.52	0.16	-1.06
I enjoy the excitement of taking risks	3.53	1.36	-0.20	-0.65
I like to take chances	3.91	1.22	-0.34	-0.30
My ideal life would be free from any risk	3.60	1.51	-0.09	-0.93
People tell me I always play safe	3.46	1.31	-0.16	-0.66
I regularly step outside my comfort zone to take risks	3.38	1.29	-0.01	-0.67
I am not willing to take risks that stretch my comfort level	3.34	1.35	-0.01	-0.77
I am not the kind of person that engages in risky business ventures	3.63	1.40	-0.17	-0.82

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Despite being given repeated feedback that something is wrong I know my opinion is right	3.26	1.25	-0.11	-0.61
I frequently believe that I am right about something, no matter what the person says or how things seem.	3.61	1.30	-0.33	-0.50
People have often told me that I refuse to appreciate their point of view	2.81	1.30	0.27	-0.65
I find it hard to question my point of view	3.25	1.23	-0.04	-0.56
I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	3.15	1.25	-0.03	-0.64
It doesn't matter what you say or how things seem, when I am right about something I know I am correct	3.93	1.32	-0.49	-0.30
I find it difficult to accept that someone is right even when I know they are	2.70	1.32	0.40	-0.73
I am usually so overcommitted that I hardly ever have any spare time	3.13	1.37	0.11	-0.76
I have often been given feedback that I work too hard or that I need to relax	3.28	1.43	0.01	-0.86
I can't help spending too many hours on my work and having too little time for myself	3.19	1.36	-0.08	-0.81
I rarely relax just to relax	3.10	1.38	0.20	-0.66
When it comes to work, good is never good enough for me	3.49	1.37	-0.19	-0.67
There are never enough hours in the day to finish my work and be content with the result	3.24	1.42	0.06	-0.80
I believe that relaxing, playing, or recreation must be earned	4.09	1.38	-0.46	-0.44
I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	3.86	1.33	-0.36	-0.50
I often mask or hide my inner feelings from others	3.89	1.41	-0.42	-0.56
When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	3.56	1.55	-0.20	-1.06
I think twice before revealing my true emotions to others	4.22	1.37	-0.59	-0.36

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
The outward expression of my emotions often doesn't match what's going on inside me	3.54	1.45	-0.11	-0.87
I am a hard to read person	3.55	1.51	-0.12	-0.90
My mind often goes blank when I have to speak about my feelings	3.17	1.51	0.15	-1.03
For me, the process leading up to taking a decision is long and painful	3.05	1.33	0.15	-0.68
Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	3.27	1.40	-0.03	-0.84
Finding answers to dilemmas has always been a huge struggle for me	3.25	1.35	0.00	-0.81
I am often unable to make decisions and feel stuck	2.86	1.42	0.35	-0.83
Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	3.14	1.40	0.03	-0.88
One of the worst experiences in life is struggling with the uncertainty of making the right choice	3.61	1.40	-0.22	-0.71
Decision making has always been easy for me: I just follow my gut feeling	3.64	1.31	-0.15	-0.53

D.2 Descriptive Statistics of the OC-PDI items in the Confirmatory Factor Analysis (CFA) of Study 4 ( $N = 518$ )

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
When I fail in a task I feel that I am a total failure	2.99	1.48	.27	-.94
It takes me a lot of time to recover from failures	3.25	1.34	.06	-.64
I feel that I cannot cope with failure	3.03	1.33	.22	-.61
I often feel that I live my life in fear of failure	3.08	1.46	.08	-1.05
I am not afraid to fail	3.42	1.36	-.02	-.75
I am very critical of myself when I am not succeeding	4.06	1.27	-.52	-.17
When I make a serious mistake, I am so upset that I am often unable to put it behind me and get on with my life	3.35	1.45	-.06	-.95
I always love socializing and interacting with people	3.80	1.35	-.21	-.61
I feel relaxed and comfortable around other people	3.86	1.22	-.33	-.42
I am naturally relaxed and sociable with those around me	3.93	1.22	-.41	-.30
I find most social interactions unrewarding or unpleasant	2.90	1.36	.26	-.77
I am not at ease in the company of others	2.92	1.37	.28	-.73
I am always on the lookout for opportunities to socialize and connect with other people	3.57	1.30	-.15	-.61
Some people might describe me as a hermit	3.05	1.48	.13	-1.04
I enjoy the excitement of taking risks	3.48	1.29	-.25	-.57
I like to take chances	3.85	1.16	-.36	-.24
My ideal life would be free from any risk	3.56	1.45	-.07	-.84
People tell me I always play safe	3.42	1.26	-.19	-.64
I regularly step outside my comfort zone to take risks	3.38	1.23	-.04	-.62
I am not willing to take risks that stretch my comfort level	3.34	1.28	-.03	-.69
I am not the kind of person that engages in risky business ventures	3.68	1.32	-.17	-.73
Despite being given repeated feedback that something is wrong I know my opinion is right	3.24	1.20	-.15	-.57

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
I frequently believe that I am right about something, no matter what the person says or how things seem.	3.63	1.24	-.33	-.43
People have often told me that I refuse to appreciate their point of view	2.83	1.27	.22	-.64
I find it hard to question my point of view	3.26	1.18	-.09	-.54
I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	3.17	1.21	-.05	-.60
It doesn't matter what you say or how things seem, when I am right about something I know I am correct	3.89	1.27	-.52	-.20
I find it difficult to accept that someone is right even when I know they are	2.72	1.28	.34	-.77
I am usually so overcommitted that I hardly ever have any spare time	3.17	1.33	.09	-.68
I have often been given feedback that I work too hard or that I need to relax	3.31	1.38	-.01	-.79
I can't help spending too many hours on my work and having too little time for myself	3.19	1.32	-.13	-.78
I rarely relax just to relax	3.07	1.31	.19	-.60
When it comes to work, good is never good enough for me	3.47	1.30	-.23	-.55
There are never enough hours in the day to finish my work and be content with the result	3.23	1.35	.03	-.75
I believe that relaxing, playing, or recreation must be earned	4.07	1.35	-.44	-.39
I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	3.84	1.29	-.37	-.43
I often mask or hide my inner feelings from others	3.88	1.36	-.41	-.49
When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	3.54	1.52	-.20	-1.02
I think twice before revealing my true emotions to others	4.16	1.35	-.55	-.37
The outward expression of my emotions often doesn't match what's going on inside me	3.58	1.42	-.14	-.82
I am a hard to read person	3.58	1.45	-.15	-.81

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
My mind often goes blank when I have to speak about my feelings	3.19	1.46	.13	-.98
For me, the process leading up to taking a decision is long and painful	3.08	1.28	.12	-.62
Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	3.28	1.34	-.06	-.77
Finding answers to dilemmas has always been a huge struggle for me	3.26	1.33	.00	-.75
I am often unable to make decisions and feel stuck	2.89	1.38	.29	-.83
Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	3.15	1.35	-.01	-.83
One of the worst experiences in life is struggling with the uncertainty of making the right choice	3.60	1.35	-.23	-.65
Decision making has always been easy for me: I just follow my gut feeling	3.58	1.23	-.15	-.46

Appendix E Study 5

E.1 Final Version of the OC-PDI

Listed below are a number of statements. Please read them carefully and decide how much each statement applies to you in general. In completing this questionnaire, it is important to understand that there are no "right" or "wrong" answers. Use the 6-point scale to rate the extent you agree or disagree with each statement

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
I always love socializing and interacting with people	1	2	3	4	5	6
I feel relaxed and comfortable around other people	1	2	3	4	5	6
I am naturally relaxed and sociable with those around me	1	2	3	4	5	6
I find most social interactions unrewarding or unpleasant	1	2	3	4	5	6
I am not at ease in the company of others	1	2	3	4	5	6
I am always on the lookout for opportunities to socialize and connect with other people	1	2	3	4	5	6
Some people might describe me as a hermit	1	2	3	4	5	6
I enjoy the excitement of taking risks	1	2	3	4	5	6
I like to take chances	1	2	3	4	5	6
My ideal life would be free from any risk	1	2	3	4	5	6
People tell me I always play safe	1	2	3	4	5	6
I regularly step outside my comfort zone to take risks	1	2	3	4	5	6
I am not willing to take risks that stretch my comfort level	1	2	3	4	5	6
I am not the kind of person that engages in risky business ventures	1	2	3	4	5	6

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
Despite being given repeated feedback that something is wrong I know my opinion is right	1	2	3	4	5	6
I frequently believe that I am right about something, no matter what the person says or how things seem.	1	2	3	4	5	6
People have often told me that I refuse to appreciate their point of view	1	2	3	4	5	6
I find it hard to question my point of view	1	2	3	4	5	6
I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	1	2	3	4	5	6
It doesn't matter what you say or how things seem, when I am right about something I know I am correct	1	2	3	4	5	6
I find it difficult to accept that someone is right even when I know they are	1	2	3	4	5	6
I am usually so overcommitted that I hardly ever have any spare time	1	2	3	4	5	6
I have often been given feedback that I work too hard or that I need to relax	1	2	3	4	5	6
I can't help spending too many hours on my work and having too little time for myself	1	2	3	4	5	6
I rarely relax just to relax	1	2	3	4	5	6
When it comes to work, good is never good enough for me	1	2	3	4	5	6
There are never enough hours in the day to finish my work and be content with the result	1	2	3	4	5	6
I believe that relaxing, playing, or recreation must be earned	1	2	3	4	5	6
I generally give the impression that I have everything under control because I am reluctant to share my problems or concerns with others	1	2	3	4	5	6

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
I often mask or hide my inner feelings from others	1	2	3	4	5	6
When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	1	2	3	4	5	6
I think twice before revealing my true emotions to others	1	2	3	4	5	6
The outward expression of my emotions often doesn't match what's going on inside me	1	2	3	4	5	6
I am a hard to read person	1	2	3	4	5	6
My mind often goes blank when I have to speak about my feelings	1	2	3	4	5	6
For me, the process leading up to taking a decision is long and painful	1	2	3	4	5	6
Very often, the process of making the right decision is so nerve-wracking that after I finally decide on an option I feel exhausted	1	2	3	4	5	6
Finding answers to dilemmas has always been a huge struggle for me	1	2	3	4	5	6
I am often unable to make decisions and feel stuck	1	2	3	4	5	6
Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	1	2	3	4	5	6
One of the worst experiences in life is struggling with the uncertainty of making the right choice	1	2	3	4	5	6
Decision making has always been easy for me: I just follow my gut feeling	1	2	3	4	5	6

E.2 Descriptive Statistics of Study 5 Variables (*N* = 1088)

	Sub-clinical group ( <i>N</i> = 227)				Control ( <i>N</i> = 861) group			
	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
IPDE-SQ OCPD	6.60	.71	.75	-.70	3.15	1.47	-.37	-.92
OC-PDI Total	3.71	.60	-.30	.19	3.18	.60	-.17	.18
OC-PDI Social	3.35	1.02	.09	-.64	2.75	1.00	.52	-.20
Anxiety								
OC-PDI Risk	3.71	.85	-.12	-.52	3.41	.86	.03	-.20
Aversion								
OC-PDI	3.29	.92	.16	-.31	2.81	.89	.31	.22
Obstinacy								
OC-PDI	4.03	.80	-.16	.38	3.26	.86	.09	.11
Compulsive								
Striving								
OC-PDI	4.12	.93	-.40	-.04	3.68	1.02	-.16	-.38
Constricted								
Expressivity								
OC-PDI	3.78	1.02	-.20	-.34	3.19	1.00	.17	-.33
Indecisiveness								
PID-5 OCPD	2.28	.51	.06	-.16	1.84	.45	.39	-.34
PID-5 Rigid	2.73	.59	-.37	.08	2.00	.60	.26	-.66
Perfectionism								
PID-5	2.35	.62	-.03	-.37	1.85	.57	.35	-.75
Perseveration								
PID-5 Restricted	2.22	.74	.28	-.55	1.91	.67	.68	-.06
Affectivity								
PID-5 Intimacy	1.80	.76	.98	.13	1.57	.64	1.37	1.51
Avoidance								
PID-5 Anhedonia	2.17	.70	.51	-.48	1.80	.61	1.00	.45
PID-5	2.69	.72	.10	-1.00	2.16	.71	.54	-.56
Anxiousness								
Anxiety	15.52	4.99	.37	-.60	13.21	4.19	.65	-.12
Depression	13.12	3.99	.51	-.01	11.06	3.39	.96	.74
Well Being	16.93	5.98	.22	-.67	19.63	5.48	-.28	-.69
Dysthymia	2.21	.46	.46	-.31	1.97	.41	.88	.57

	Sub-clinical group ( <i>N</i> = 227)				Control ( <i>N</i> = 861) group			
	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Social Interaction	2.71	.94	.10	-.91	2.18	.86	.61	-.45
Anxiety								
Emotion	8.01	2.24	.32	-.52	6.81	2.08	.58	-.18
Dysregulation								
ER Strategies	8.26	3.42	.27	-.95	6.47	2.93	.84	.06
ER Acceptance	8.06	3.64	.44	-.90	6.82	3.18	.72	-.25
ER Impulse	7.06	3.56	.67	-.61	5.83	3.02	1.10	.52
ER Goals	10.19	3.32	-.27	-.89	8.90	3.49	.20	-1.03
ER Awareness	7.27	2.96	.39	-.71	6.99	2.73	.50	-.31
ER Clarity	7.21	3.08	.58	-.42	5.86	2.80	1.01	.38
COPE Self-	2.52	.76	.08	-.35	2.40	.78	.00	-.54
distraction								
COPE Active	2.73	.77	-.40	-.22	2.73	.80	-.34	-.42
coping								
COPE Denial	1.57	.66	1.15	.64	1.41	.61	1.58	2.06
COPE Substance	1.33	.72	2.40	5.07	1.32	.69	2.38	5.04
Use								
COPE Emotional	2.25	.94	.20	-.97	2.30	.92	.17	-.91
Support								
COPE	2.26	.94	.21	-.97	2.24	.88	.20	-.86
Instrumental								
Support								
COPE	1.80	.76	.88	.30	1.54	.65	1.12	.79
Behavioural								
Disengagement								
COPE Venting	2.09	.73	.35	-.30	1.93	.73	.48	-.41
COPE Positive	2.63	.84	-.17	-.67	2.68	.79	-.28	-.47
reframing								
COPE Planning	2.95	.77	-.54	-.36	2.70	.80	-.29	-.48
COPE Humour	2.06	.92	.56	-.64	2.13	.90	.42	-.72
COPE	2.76	.71	-.22	-.15	2.69	.78	-.30	-.37
Acceptance								
COPE Religion	1.89	1.02	.80	-.73	1.90	.99	.83	-.55

	Sub-clinical group ( $N = 227$ )				Control ( $N = 861$ ) group			
	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
COPE Self-blame	2.50	.98	.01	-1.15	2.04	.89	.62	-.52

E.3 Descriptive Statistics of OC-PDI Items in the CFA Sub-clinical Sample ( $N = 215$ )

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
I always love socializing and interacting with people	3.47	1.37	-.03	-.81
I feel relaxed and comfortable around other people	3.52	1.21	.03	-.44
I am naturally relaxed and sociable with those around me	3.61	1.27	-.10	-.82
I find most social interactions unrewarding or unpleasant	3.11	1.38	.37	-.65
I am not at ease in the company of others	3.20	1.31	.26	-.60
I am always on the lookout for opportunities to socialize and connect with other people	3.35	1.29	.08	-.67
Some people might describe me as a hermit	3.30	1.49	.08	-.90
I enjoy the excitement of taking risks	3.27	1.28	.24	-.59
I like to take chances	3.61	1.27	-.12	-.64
My ideal life would be free from any risk	3.86	1.32	-.16	-.66
People tell me I always play safe	3.58	1.15	-.14	-.49
I regularly step outside my comfort zone to take risks	3.21	1.21	.13	-.82
I am not willing to take risks that stretch my comfort level	3.54	1.21	-.14	-.62
I am not the kind of person that engages in risky business ventures	3.96	1.31	-.47	-.61
Despite being given repeated feedback that something is wrong I know my opinion is right	3.17	1.19	.10	-.60
I frequently believe that I am right about something, no matter what	3.51	1.29	-.12	-.82

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
the person says or how things seem.				
People have often told me that I refuse to appreciate their point of view	2.91	1.27	.38	-.50
I find it hard to question my point of view	3.35	1.16	.15	-.48
I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	3.15	1.16	.04	-.58
It doesn't matter what you say or how things seem, when I am right about something I know I am correct	3.78	1.24	-.21	-.42
I find it difficult to accept that someone is right even when I know they are	2.93	1.39	.36	-.81
I am usually so overcommitted that I hardly ever have any spare time	4.03	1.19	-.43	-.01
I have often been given feedback that I work too hard or that I need to relax	4.22	1.09	-.45	.29
I can't help spending too many hours on my work and having too little time for myself	4.08	1.25	-.46	-.13
I rarely relax just to relax	3.61	1.29	-.11	-.67
When it comes to work, good is never good enough for me	4.36	1.07	-.65	.25
There are never enough hours in the day to finish my work and be content with the result	4.02	1.32	-.29	-.54
I believe that relaxing, playing, or recreation must be earned	4.03	1.16	-.41	-.11
I generally give the impression that I have everything under control	4.13	1.13	-.57	.44

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
because I am reluctant to share my problems or concerns with others				
I often mask or hide my inner feelings from others	4.36	1.23	-.69	.18
When asked how I am doing, I prefer to lie or be vague rather than admit I am having a hard time	3.90	1.53	-.38	-.89
I think twice before revealing my true emotions to others	4.57	1.23	-.85	.54
The outward expression of my emotions often doesn't match what's going on inside me	4.09	1.30	-.39	-.59
I am a hard to read person	3.91	1.32	-.40	-.52
My mind often goes blank when I have to speak about my feelings	3.76	1.54	-.26	-.98
For me, the process leading up to taking a decision is long and painful	3.63	1.30	-.11	-.81
Very often, the process of making the right decision is so nerve-racking that after I finally decide on an option I feel exhausted	3.87	1.32	-.23	-.75
Finding answers to dilemmas has always been a huge struggle for me	3.73	1.24	-.13	-.62
I am often unable to make decisions and feel stuck	3.54	1.38	-.08	-.81
Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	3.73	1.28	-.23	-.44
One of the worst experiences in life is struggling with the uncertainty of making the right choice	4.12	1.25	-.37	-.55

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	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Decision making has always been easy for me: I just follow my gut feeling	3.10	1.25	.08	-.68

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E.4 Descriptive Statistics of Study 5 Variables in the CFA Sub-clinical Sample ( $N = 215$ )

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
IPDE-SQ OCPD	6.60	.72	.76	-.69
OC-PDI Total Score	3.71	.61	-.31	.14
OC-PDI Social Anxiety	3.37	1.02	.08	-.64
OC-PDI Risk Aversion	3.69	.84	-.18	-.51
OC-PDI Obstinacy	3.26	.91	.17	-.26
OC-PDI Compulsive Striving	4.05	.79	-.12	.38
OC-PDI Constricted Expressivity	4.10	.94	-.39	-.02
OC-PDI Indecisiveness	3.79	1.02	-.20	-.31
PID-5 OCPD	2.26	.50	.12	-.05
PID-5 Rigid Perfectionism	2.71	.58	-.45	.15
PID-5 Perseveration	2.34	.61	-.04	-.42
PID-5 Restricted Affectivity	2.21	.74	.29	-.55
PID-5 Intimacy Avoidance	1.79	.76	1.03	.27
PID-5 Anhedonia	2.17	.71	.51	-.48
PID-5 Anxiousness	2.70	.72	.07	-.99
Anxiety	1.23	.71	.33	-.65
Depression	.90	.56	.49	.00
Social Interaction Anxiety	2.72	.95	.10	-.94
Dysthymia	2.20	.46	.51	-.27
Well Being	2.35	1.16	.22	-.65
Emotion Dysregulation	2.85	.78	.30	-.43
ER Strategies	2.74	1.13	.27	-.94
ER Non-acceptance	2.69	1.21	.44	-.90
ER Impulse	2.33	1.17	.69	-.52
ER Goals	3.38	1.08	-.27	-.82
ER Awareness	3.54	.97	-.39	-.69
ER Clarity	2.40	1.02	.60	-.40
COPE Self-distraction	2.52	.76	.08	-.35
COPE Active coping	2.70	.76	-.40	-.17
COPE Denial	1.56	.65	1.16	.72
COPE Substance Use	1.32	.72	2.40	5.05

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	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
COPE Emotional Support	2.26	.93	.18	-.96
COPE Instrumental Support	2.27	.94	.21	-.95
COPE Behavioural Disengagement	1.79	.75	.89	.34
COPE Venting	2.08	.71	.34	-.28
COPE Positive Reframing	2.60	.82	-.15	-.64
COPE Planning	2.92	.77	-.51	-.36
COPE Humour	2.04	.92	.57	-.67
COPE Acceptance	2.76	.70	-.23	-.12
COPE Religion	1.88	1.01	.80	-.71
COPE Self blame	2.50	.98	-.01	-1.16

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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
18. Social Interaction Anxiety	<b>.18</b>	<b>.69</b>	<b>.31</b>	<b>.27</b>	<b>.24</b>	<b>.55</b>	<b>.55</b>	<b>.19</b>	<b>.50</b>	<b>.35</b>	<b>.36</b>	<b>.61</b>	<b>.51</b>	<b>.51</b>	<b>.55</b>	<b>-.52</b>	<b>.65</b>	1.00										
19. ER Strategies	.11	<b>.46</b>	<i>.14</i>	<b>.25</b>	<b>.33</b>	<b>.40</b>	<b>.49</b>	<b>.37</b>	<b>.54</b>	<b>.27</b>	<b>.30</b>	<b>.63</b>	<b>.60</b>	<b>.63</b>	<b>.57</b>	<b>-.53</b>	<b>.69</b>	<b>.55</b>	1.00									
20. ER Acceptance	.10	<b>.30</b>	<i>.15</i>	.11	<b>.30</b>	<b>.29</b>	<b>.38</b>	<b>.21</b>	<b>.36</b>	<b>.14</b>	.06	<b>.36</b>	<b>.43</b>	<b>.45</b>	<b>.38</b>	<b>-.28</b>	<b>.51</b>	<b>.52</b>	<b>.60</b>	1.00								
21. ER Impulse	.11	<b>.33</b>	<i>.09</i>	<b>.26</b>	<i>.14</i>	<b>.24</b>	<b>.30</b>	<b>.32</b>	<b>.43</b>	<b>.20</b>	<i>.14</i>	<b>.44</b>	<b>.43</b>	<b>.45</b>	<b>.43</b>	<b>-.34</b>	<b>.50</b>	<b>.36</b>	<b>.64</b>	<b>.48</b>	1.00							
22. ER Goals	.06	<b>.31</b>	<b>.19</b>	<b>.15</b>	<b>.29</b>	<b>.30</b>	<b>.51</b>	<b>.36</b>	<b>.52</b>	<i>.16</i>	<b>.17</b>	<b>.40</b>	<b>.55</b>	<b>.53</b>	<b>.41</b>	<b>-.40</b>	<b>.51</b>	<b>.49</b>	<b>.69</b>	<b>.56</b>	<b>.57</b>	1.00						
23. ER Clarity	.02	<b>.32</b>	.00	<b>.17</b>	<b>.19</b>	<b>.46</b>	<b>.34</b>	<b>.27</b>	<b>.43</b>	<b>.40</b>	<b>.36</b>	<b>.50</b>	<b>.42</b>	<b>.43</b>	<b>.41</b>	<b>-.33</b>	<b>.52</b>	<b>.49</b>	<b>.54</b>	<b>.45</b>	<b>.44</b>	<b>.37</b>	1.00					
24. COPE Denial	.07	<b>.24</b>	<i>.14</i>	<i>.15</i>	.12	<b>.24</b>	<b>.29</b>	<i>.16</i>	<b>.35</b>	<b>.24</b>	<b>.18</b>	<b>.39</b>	<b>.34</b>	<b>.36</b>	<b>.33</b>	<b>-.25</b>	<b>.38</b>	<b>.34</b>	<b>.37</b>	<b>.27</b>	<b>.40</b>	<b>.31</b>	<b>.32</b>	1.00				
25. COPE Substance Use	.05	.12	<i>.07</i>	<i>.07</i>	.11	.11	<b>.23</b>	<i>.14</i>	<b>.22</b>	<b>.24</b>	.12	<b>.33</b>	<b>.26</b>	<b>.19</b>	<b>.26</b>	<b>-.30</b>	<b>.22</b>	<i>.15</i>	<b>.30</b>	<b>.20</b>	<b>.23</b>	<b>.20</b>	<b>.23</b>	<b>.22</b>	1.00			
26. COPE Behavioural Disengagement	.12	<b>.31</b>	<b>.22</b>	<i>.17</i>	<b>.18</b>	<b>.30</b>	<b>.32</b>	<b>.22</b>	<b>.37</b>	<b>.26</b>	<b>.30</b>	<b>.43</b>	<b>.36</b>	<b>.42</b>	<b>.44</b>	<b>-.32</b>	<b>.48</b>	<b>.41</b>	<b>.42</b>	<b>.38</b>	<b>.31</b>	<b>.25</b>	<b>.36</b>	<b>.40</b>	<b>.18</b>	1.00		
27. COPE Self-blame	.09	<b>.40</b>	<b>.25</b>	<b>.14</b>	<b>.18</b>	<b>.35</b>	<b>.49</b>	<b>.23</b>	<b>.48</b>	<b>.23</b>	<b>.25</b>	<b>.52</b>	<b>.59</b>	<b>.54</b>	<b>.53</b>	<b>-.52</b>	<b>.61</b>	<b>.49</b>	<b>.55</b>	<b>.43</b>	<b>.38</b>	<b>.44</b>	<b>.36</b>	<b>.45</b>	<b>.21</b>	<b>.48</b>	1.00	

Note Correlations in italics are significant at  $p < .05$ . Correlations in Bold are significant at  $p < .01$

E.6 OC-PDI with Instructions, Scoring and Norms

**E.6.1 Obsessive-Compulsive Personality Disorder Inventory (OC-PDI)**

Listed below are a number of statements. Please read them carefully and decide how much each statement applies to you in general. In completing this questionnaire, it is important to understand that there are no "right" or "wrong" answers. Use the 6-point scale to rate the extent you agree or disagree with each statement

	<i>Disagree completely</i>	<i>Disagree strongly</i>	<i>Disagree somewhat</i>	<i>Agree somewhat</i>	<i>Agree strongly</i>	<i>Agree completely</i>
1. I believe that relaxing, playing, or recreation must be earned	1	2	3	4	5	6
2. For me, the process leading up to taking a decision is long and painful	1	2	3	4	5	6

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
3. <i>I am naturally relaxed and sociable with those around me</i>	1	2	3	4	5	6
4. <i>Decision making has always been easy for me: I just follow my gut feeling</i>	1	2	3	4	5	6
5. <i>Despite being given repeated feedback that something is wrong I know my</i>						

	<i>Disagree completely</i>	<i>Disagree strongly</i>	<i>Disagree somewhat</i>	<i>Agree somewhat</i>	<i>Agree strongly</i>	<i>Agree completely</i>
opinion is right						
6. I am not at ease in the company of others	1	2	3	4	5	6
7. When it comes to work, good is never good enough for me	1	2	3	4	5	6
8. Some people might describe me as a hermit	1	2	3	4	5	6
9. <i>I enjoy the excitement</i>	1	2	3	4	5	6

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
<i>of taking risks</i>						
10. I have often been given feedback that I work too hard or that I need to relax	1	2	3	4	5	6
11. My ideal life would be free from any risk	1	2	3	4	5	6
12. People tell me I always play safe	1	2	3	4	5	6
13. I am a hard to read person	1	2	3	4	5	6
14. I find it difficult to	1	2	3	4	5	6

	<i>Disagree completely</i>	<i>Disagree strongly</i>	<i>Disagree somewhat</i>	<i>Agree somewhat</i>	<i>Agree strongly</i>	<i>Agree completely</i>
accept that someone is right even when I know they are						
15. I am not the kind of person that engages in risky business ventures	1	2	3	4	5	6
16. I rarely relax just to relax	1	2	3	4	5	6
17. I frequently believe that I am right about something,	1	2	3	4	5	6

	<i>Disagree completely</i>	<i>Disagree strongly</i>	<i>Disagree somewhat</i>	<i>Agree somewhat</i>	<i>Agree strongly</i>	<i>Agree completely</i>
18. People have often told me that I refuse to appreciate their point of view	1	2	3	4	5	6
19. I think twice before revealing my true emotions to others	1	2	3	4	5	6
20. I am often unable to make	1	2	3	4	5	6

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
decisions and feel stuck						
21. <i>I always love socializing and interacting with people</i>	1	2	3	4	5	6
22. I am not willing to take risks that stretch my comfort level	1	2	3	4	5	6
23. <i>I am always on the lookout for opportunities to socialize</i>	1	2	3	4	5	6

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
<i>and connect with other people</i>						
24. I can't help spending too many hours on my work and having too little time for myself	1	2	3	4	5	6
25. <i>I like to take chances</i>	1	2	3	4	5	6
26. I generally give the impression that I have everything under control because I	1	2	3	4	5	6

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
27. One of the worst experiences in life is struggling with the uncertainty of making the right choice	1	2	3	4	5	6
28. <i>I feel relaxed and comfortable around other people</i>	1	2	3	4	5	6

	<i>Disagree completely</i>		<i>Disagree strongly</i>		<i>Disagree somewhat</i>		<i>Agree somewhat</i>		<i>Agree strongly</i>		<i>Agree completely</i>
29. I am usually so overcommitted that I hardly ever have any spare time	1		2		3		4		5		6
30. Very often, the process of making the right decision is so nerve-racking that after I finally decide on an option I feel exhausted	1		2		3		4		5		6
31. When asked how I am	1		2		3		4		5		6

	<i>Disagree completely</i>	<i>Disagree strongly</i>	<i>Disagree somewhat</i>	<i>Agree somewhat</i>	<i>Agree strongly</i>	<i>Agree completely</i>
doing, I prefer to lie or be vague rather than admit I am having a hard time						
32. I find it hard to question my point of view	1	2	3	4	5	6
33. The outward expression of my emotions often doesn't match what's going on inside me	1	2	3	4	5	6
34. I find most social	1	2	3	4	5	6

	<i>Disagree completely</i>	<i>Disagree strongly</i>	<i>Disagree somewhat</i>	<i>Agree somewhat</i>	<i>Agree strongly</i>	<i>Agree completely</i>
interactions unrewarding or unpleasant						
35. My mind often goes blank when I have to speak about my feelings	1	2	3	4	5	6
36. It doesn't matter what you say or how things seem, when I am right about something I know I am correct	1	2	3	4	5	6

	Disagree completely	Disagree strongly	Disagree somewhat	Agree somewhat	Agree strongly	Agree completely
37. There are never enough hours in the day to finish my work and be content with the result	1	2	3	4	5	6
38. Finding answers to dilemmas has always been a huge struggle for me	1	2	3	4	5	6
39. <i>I regularly step outside my comfort zone to take risks</i>	1	2	3	4	5	6

	<i>Disagree completely</i>		<i>Disagree strongly</i>		<i>Disagree somewhat</i>		<i>Agree somewhat</i>		<i>Agree strongly</i>		<i>Agree completely</i>
	1	2	3	4	5	6					
40. Finding an answer to a dilemma is often so debilitating that I am unable to concentrate on anything else	1	2	3	4	5	6					
41. I find it difficult to truly pause and consider the possibility that I may be wrong, and I need to change	1	2	3	4	5	6					

	<i>Disagree completely</i>		<i>Disagree strongly</i>		<i>Disagree somewhat</i>		<i>Agree somewhat</i>		<i>Agree strongly</i>	<i>Agree completely</i>
42. I often mask or hide my inner feelings from others	1		2		3		4		5	6
<i>OCP-PDI Total</i>										
<i>Score</i>										

### E.6.2 Scoring instructions

The inventory consists of positive (+) keyed items and negative (–) keyed items.

For the +keyed items just place the numbers corresponding to the responses (i.e. Disagree completely =1, Disagree strongly =2 etc.) in the last column.

For the eight –keys items (*Items: 3, 4, 9, 21, 23, 25, 28 and 39, in italics in the inventory*) first reverse the scores (the response Disagree completely =1 is assigned a number of 6, Disagree strongly =2 is assigned a number of 5 etc.) and then place the numbers in the last column.

For the composite score of a subscale add the values in the last column of the items as follows.

- Social Anxiety: 3, 6, 8, 21, 23, 28, 34
- Risk Aversion: 9, 11, 12, 15, 22, 25, 39
- Obstinacy: 5,14,17,18, 29, 32, 36, 41
- Compulsive Striving: 1, 7, 10, 16, 24, 29, 37
- Constricted Expressivity 13, 19, 26, 31, 33, 35, 42
- Indecisiveness 2 4 20, 27, 30, 38, 40

For the OC-PDI Total Score sum all the values in the last column. Below you will find descriptive statistics for the subscales and Total scores for men and women. *Please note:* Clinical cut-offs are yet to be tested. The scores below will give you an indication of how far a person's score falls from the 'norm' as established in a general population sample

**E.6.3 Study 5. Descriptive statistics for OC-PDI  
Subscales and Total Score (N=1088)**

	Mean	Range	SE Mean	SD	Skewness	SE of Skewness	Kurtosis	SE of Kurtosis
OC-PDI Social Anxiety	2.87	1-7	.03	1.03	.42	.07	-.41	.15
OC-PDI Risk Aversion	3.47	1-7	.03	.87	.00	.07	-.29	.15
OC-PDI Obstinacy	2.91	1-7	.03	.92	.29	.07	.05	.15
OC-PDI Compulsive Striving	3.42	1-7	.03	.91	.04	.07	-.03	.15
OC-PDI Constricted Expressivity	3.77	1-7	.03	1.02	-.21	.07	-.36	.15
OC-PDI Indecisiveness	3.31	1-7	.03	1.03	.11	.07	-.42	.15
OC-PDI	3.29	1-7	.02	.63	-.11	.07	.08	.15
OC-PDI Social Anxiety Composite Score	20.10	7-49	.22	7.24	.42	.07	-.41	.15
OC-PDI Risk Aversion Composite Score	24.30	7-49	.18	6.06	.00	.07	-.29	.15
OC-PDI Obstinacy Composite Score	20.39	7-49	.19	6.42	.29	.07	.05	.15
OC-PDI Compulsive Striving Composite Score	23.96	7-49	.19	6.34	.04	.07	-.03	.15
OC-PDI Constricted Expressivity Composite Score	26.39	7-49	.22	7.11	-.21	.07	-.36	.15
OC-PDI Indecisiveness Composite Score	23.19	7-49	.22	7.20	.11	.07	-.42	.15
OC-PDI Composite Score	138.33	42-294	.81	26.58	-.11	.07	.08	.15

**E.6.4 Study 5. Descriptive statistics for OC-PDI Subscales and Total Score (N=1088) for women and men**

			Statistic	SE
OC-PDI Social Anxiety	Female	Mean	2.84	.04
		Std. Deviation	1.01	
		Skewness	.39	.10
		Kurtosis	-.39	.21
	Male	Mean	2.91	.05
		Std. Deviation	1.06	
		Skewness	.43	.11
		Kurtosis	-.46	.21
OC-PDI Risk Aversion	Female	Mean	3.54	.04
		Std. Deviation	.87	
		Skewness	-.05	.10
		Kurtosis	-.28	.21
	Male	Mean	3.40	.04
		Std. Deviation	.86	
		Skewness	.05	.11
		Kurtosis	-.27	.21
OC-PDI Obstinacy	Female	Mean	2.75	.04
		Std. Deviation	.91	
		Skewness	.56	.10
		Kurtosis	.52	.21
	Male	Mean	3.08	.04
		Std. Deviation	.90	
		Skewness	.03	.11
		Kurtosis	-.04	.21
OC-PDI Compulsive Striving	Female	Mean	3.37	.04
		Std. Deviation	.93	
		Skewness	.08	.10
		Kurtosis	-.25	.21
	Male	Mean	3.48	.04
		Std. Deviation	.87	
		Skewness	-.02	.11
		Kurtosis	.23	.21
OC-PDI Constricted Expressivity	Female	Mean	3.74	.04
		Std. Deviation	1.05	
		Skewness	-.25	.10
		Kurtosis	-.35	.21
	Male	Mean	3.80	.04
		Std. Deviation	.98	

			Statistic	SE
OC-PDI Indecisiveness	Female	Skewness	-.16	.11
		Kurtosis	-.39	.21
		Mean	3.45	.05
		Std. Deviation	1.07	
	Male	Skewness	-.01	.10
		Kurtosis	-.48	.21
		Mean	3.16	.04
		Std. Deviation	.96	
OC-PDI	Female	Skewness	.16	.11
		Kurtosis	-.33	.21
		Mean	3.28	.03
		Std. Deviation	.65	
	Male	Skewness	-.14	.10
		Kurtosis	-.03	.21
		Mean	3.31	.03
		Std. Deviation	.61	
OCPDI Social Anxiety Composite Score	Female	Skewness	-.08	.11
		Kurtosis	.23	.21
		Mean	19.88	.30
		Std. Deviation	7.07	
	Male	Skewness	.39	.10
		Kurtosis	-.39	.21
		Mean	20.37	.32
		Std. Deviation	7.42	
OC-PDI Risk Aversion Composite Score	Female	Skewness	.43	.11
		Kurtosis	-.46	.21
		Mean	24.75	.26
		Std. Deviation	6.10	
	Male	Skewness	-.05	.10
		Kurtosis	-.28	.21
		Mean	23.80	.26
		Std. Deviation	5.99	
OC-PDI Obstinacy Composite Score	Female	Skewness	.05	.11
		Kurtosis	-.27	.21
		Mean	19.27	.27
		Std. Deviation	6.36	
	Male	Skewness	.56	.10
		Kurtosis	.52	.21
		Mean	21.58	.27
		Std. Deviation	6.29	
		Skewness	.03	.11
		Kurtosis	-.04	.21

			Statistic	SE
OC-PDI Compulsive Striving Composite Score	Female	Mean	23.59	.28
		Std. Deviation	6.54	
		Skewness	.08	.10
		Kurtosis	-.25	.21
	Male	Mean	24.33	.27
		Std. Deviation	6.08	
		Skewness	-.02	.11
		Kurtosis	.23	.21
OC-PDI Constricted Expressivity Composite Score	Female	Mean	26.20	.31
		Std. Deviation	7.32	
		Skewness	-.25	.10
		Kurtosis	-.35	.21
	Male	Mean	26.59	.30
		Std. Deviation	6.87	
		Skewness	-.16	.11
		Kurtosis	-.39	.21
OC-PDI Indecisiveness Composite Score	Female	Mean	24.17	.32
		Std. Deviation	7.47	
		Skewness	-.01	.10
		Kurtosis	-.48	.21
	Male	Mean	22.15	.29
		Std. Deviation	6.72	
		Skewness	.16	.11
		Kurtosis	-.33	.21
OCPDI Composite Score	Female	Mean	137.87	1.15
		Std. Deviation	27.24	
		Skewness	-.14	.10
		Kurtosis	-.03	.21
	Male	Mean	138.83	1.13
		Std. Deviation	25.83	
		Skewness	-.08	.11
		Kurtosis	.23	.21