

**Attachment and Reassurance Seeking in Obsessive-Compulsive Disorder**

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## Abstract

Cognitive-behavioural therapy (CBT) models of Obsessive-Compulsive Disorder (OCD) have advanced current understanding and treatment of the disorder, although they have largely focused on factors maintaining the symptoms. More recent research has highlighted the potential role of attachment-based theory suggesting that attachment factors can be integrated within current CBT models to further explain the aetiology of OCD (Doron & Kyrios, 2005; Guidano & Liotti, 1983). OCD is a heterogeneous disorder and researchers have suggested that categorising OCD presentations into subtypes based on the predominant symptom, may improve assessment and treatment of OCD (Radomsky & Taylor, 2005; Sookman, Abramowitz, Calamari, Wilhelm, & McKay, 2005). Excessive reassurance seeking is a common but relatively under-researched symptom of OCD, despite its considerable impact on the individual and their family or caregivers (Parrish & Radomsky, 2011; Williams et al., 2011). The interpersonal nature of this particular presentation of OCD indicates that attachment factors may be of particular relevance in explaining the aetiology of reassurance seeking. Therefore, drawing on cognitive-behavioural and attachment theories of OCD, the present study aimed to investigate the role of developmental factors in excessive reassurance-seeking behaviour. In a sample of 171 non-clinical participants, the first study of this thesis found a robust association between attachment anxiety and excessive reassurance seeking. The second study of this thesis aimed to examine the effects of experimentally activated specific and global attachment insecurities on reassurance-seeking behaviour, in a sample of 80 non-clinical participants. This study did not provide support for the role of experimentally activated specific attachment styles on excessive reassurance-seeking behaviour and compulsive-checking behaviour, most likely due to limitations with the attachment priming procedure. The study did however provide further evidence for the relationship between attachment anxiety and reassurance-seeking behaviour. The current thesis supports the role of attachment anxiety in the development of reassurance-seeking behaviour, likely resulting from chronic hyperactivation of the attachment system (Mikulincer & Shaver, 2003, 2007a). The thesis also provided support for an indirect pathway between attachment anxiety and excessive reassurance seeking through OCD-related beliefs, consistent with cognitive-behavioural theories of OCD (Doron & Kyrios, 2005; Rachman, 2002; Salkovskis, 1985). Different attachment styles were found to constitute

a vulnerability to developing excessive reassurance seeking compared to compulsive-checking behaviour. Individuals who hold global chronically assessable IWMs that view the self negatively and others positively are more likely to seek reassurance, as they may rely on others to determine their security. In contrast, individuals who hold negative views of others and negative view of the self are more likely to check compulsively, making repetitive and futile attempts to achieve security. The limitations and implications of these studies are discussed, and recommendations for future research are made.

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### Declaration

I declare that this thesis contains no materials that have been accepted for the award to the candidate of any other degree or diploma, except where due reference is made in the text of the examinable outcome.

I declare that <sup>[ ]</sup>~~SEP~~ to the best of the candidate's knowledge this thesis contains no materials previously published or written by another person except where due reference is made in the text of the examinable outcome.

I further declare that the ethical principles and procedures specified in the Swinburne University of Technology Human Research Ethics Committee documentation have been adhered to in the process of conducting this research.

I declare that where the work is based on joint research or publications, this thesis discloses the relative contributions of the respective workers or authors.



Kate FitzGerald

22<sup>nd</sup> May 2018

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## **Chapter 1: General Introduction and Thesis Overview**

OCD is a prevalent and disabling disorder, that impacts the individual diagnosed with OCD and their family and friends (American Psychiatric Association [APA], 2013; Boeding et al., 2013; Halldorsson, Salkovskis, Kobori, & Pagdin, 2016), making it an important area for research. OCD is characterised by obsessions, compulsions, or both (APA, 2013). Excessive reassurance seeking is a common safety-seeking behaviour in OCD, which has received less empirical attention than other obsessive-compulsive (OC) phenomena (Halldorsson & Salkovskis, 2017; Williams et al., 2011). Currently, the most predominant theory of OCD development and maintenance is the cognitive-behavioural model. However, despite its many contributions to the understanding and treatment of OCD, CBT has been associated with a significant proportion of dropout and relapse cases (Cordioli, 2008; Kyrios, Hordern, & Fassnacht, 2015). Current CBT models of OCD suggest that reassurance-seeking behaviour is maintained by OC beliefs such as an overinflated sense of responsibility and need for certainty; and while providing an initial reduction in anxiety, it is followed by a long-term increase, due to the inability to achieve complete control or certainty (Kobori, Salkovskis, Read, Lounes, & Wong, 2012; Parrish & Radomsky, 2010; Rachman, 2002; Salkovskis, 1999; Salkovskis & Kobori, 2015). Therefore, current cognitive-behavioural theories of excessive reassurance seeking have focused on the maintenance of the disorder rather than its developmental origins. Thus, the current thesis aims to draw on attachment theory to augment cognitive-behavioural models and expand our understanding of the development of excessive reassurance seeking. Attachment theory was chosen because it has been used by other researchers to broaden theories of OCD in general (Doron & Kyrios, 2005; Guidano & Liotti, 1983), to develop new and effective treatments for OCD (Doron & Moulding, 2009; Rezvan, Bahrami, Abedi, Macleod, & Ghasemi, 2013), and to explain how individuals typically develop autonomy and the ability to self-soothe in adulthood (Balbernie, 2001; Siegel, 2001; Simpson, Collins, Tran, & Haydon, 2007; Sroufe, Carlson, Levy, & Egeland, 1999; Tiwari & Garg, 2015).

At the commencement of this thesis in 2010, the area of attachment and reassurance seeking had received relatively little research attention, especially within the OCD literature. However, over the last seven years it has sparked considerable interest and empirical support. This thesis is important in contributing to this growing

body of research, and in connecting OCD-relevant factors to the investigation of the relationship between attachment and reassurance seeking.

This thesis contains eight chapters, including the present introductory chapter, Chapter 1. It begins with a comprehensive review of the literature aimed at orienting the reader to current theories and research findings in fields relevant to this thesis. More specifically, it begins by discussing the diagnosis, phenomenology, epidemiology, current aetiological models, and subtypes of OCD (Chapter 2). In Chapter 3, the main tenants and concepts of reassurance seeking are reviewed, both in the context of OCD and other psychopathologies. Attachment theory is then introduced in Chapter 4. This chapter focuses on the role of attachment in adulthood and in psychopathology. This chapter then moves on to research combining attachment and OCD, and then attachment and reassurance seeking. Chapter 5 introduces the rationale and current thinking behind this thesis, summarising the main points of the literature review. The empirical studies conducted for this thesis are then discussed. Chapter 6 outlines the first study in this thesis, which examines the relationship between attachment, reassurance seeking, and other OC phenomena in a cross-sectional analysis. Chapter 7 describes the second study in this thesis; this study replicates and then expands on study one, by using experimental methodology to examine the relationship between attachment and reassurance seeking, in the context of OCD. A general discussion of this thesis is provided in Chapter 8, it aims to combine the findings from both studies and discusses their implications and limitations, before making suggestions for future research.

## Chapter 2: Obsessive-Compulsive Disorder

OCD is a common and debilitating mental health disorder (Seibell, Hamblin, & Hollander, 2015). It is associated with high anxiety, reduced quality of life, high levels of social and vocational impairment, and a range of other difficulties depending on symptom type and severity (APA, 2013; Eisen et al., 2006). OCD is seen with similar prevalence across the world and in both males and females (Nedeljkovic, Moulding, Foroughi, Kyrios, & Doron, 2012; Rasmussen & Eisen, 1992). Given the disability and widespread impact of this disorder it is important that research continues to expand our understanding and treatment of OCD. This chapter presents an overview of OCD including the diagnostic criteria, phenomenology, epidemiology, aetiological theories and treatments.

### 2.1. Diagnosis of OCD

The diagnosis of OCD has remained fairly consistent across time and over the two main classification systems: the Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of Diseases (ICD). The current definition of OCD, as described by the DSM - fifth edition (DSM-5, APA, 2013) states that OCD is characterised by the presence of obsessions, compulsions or both. In the DSM-5, obsessions are defined as recurrent and persistent thoughts, urges, or images that are experienced as intrusive and unwanted and cause distress in most individuals. The individual responds to these thoughts, urges, or images by trying to suppress, ignore, or neutralise them with another thought or action (APA, 2013). While there has been little variation in this definition of obsessions over multiple editions of the DSM, in the most recent version, the term “urges” has replaced “impulses.” The word urges better describes the persistence of obsessional thoughts and clarifies the distinction between OCD and impulse control disorders. Also, obsessions are now defined as “unwanted” rather than “inappropriate,” as the word unwanted is more subjective and less effected by culture, age and gender (Abramowitz & Jacoby, 2014; Leckman et al., 2010; Stein et al., 2009; Van Ameringen, Patterson, & Simpson, 2014). Previous editions of the DSM also stated that obsessions should not simply be excessive worries about real life problems and must be recognised as a product of the individual’s own mind. These criteria were originally added to differentiate obsessions from other psychiatric phenomena (i.e., worries and thought insertion). In the DSM-5 these criteria were removed from the definition of obsessions but are still reflected in the differential

diagnostic criterion (Abramowitz & Jacoby, 2014; Leckman et al., 2010; Stein et al., 2009).

Compulsions are defined as repetitive behaviours or mental acts that the individual feels driven to perform in response to an obsession and according to certain rules. These compulsions are aimed at preventing a feared event or reducing distress; however, these behaviours are either not connected in a realistic way to what they are preventing or they are excessive in nature (APA, 2013). Compulsions are not carried out for pleasure, although some individuals experience relief from anxiety or distress after performing them (APA, 2013). Most individuals experience both obsessions and compulsions.

The DSM-5 criteria also specify that for an individual to be diagnosed with OCD, obsessions or compulsions must be time-consuming (i.e., more than one hour per day), cause clinically significant distress, or cause impairment in social, occupational, or another important area of daily life (APA, 2013). This is to distinguish the disorder from the less frequent and less distressing intrusive thoughts and relief behaviours performed by non-clinical populations (APA, 2013). Furthermore, to distinguish OCD from similar disorders, the DSM-5 also states that OC symptoms should not be attributed to the effects of a substance (e.g., a drug of abuse or medication), medical condition, or another mental disorder (APA, 2013).

Individuals who meet criteria for OCD vary in the level of insight they have about the accuracy of their beliefs that underlie their obsessions and compulsions. Whilst absent insight is rare, it is reported in approximately 2% of individuals diagnosed with OCD (Eisen, Phillips, Coles, & Rasmussen, 2004; Foa & Kozak, 1995; Phillips et al., 2012). To reflect that insight exists along a continuum, the criteria that obsessions and compulsions must be recognised as excessive or unreasonable at some point during the course of the disorder, was removed in the most recent version of the DSM. Instead the DSM-5 requests that clinicians specify the level of insight the individual holds; most individuals have “good or fair insight” (i.e., OCD beliefs are definitely not true, probably not true, or may or may not be true), some have “poor insight” (i.e., OCD beliefs are probably true) and a few have “absent insight/delusional beliefs” (i.e., OCD beliefs are true) (Abramowitz & Jacoby, 2014; Leckman et al., 2010; Stein et al., 2009; Van Ameringen et al., 2014). Poorer insight has been linked to poorer prognosis and treatment outcomes (APA, 2013; Catapano et al., 2010; Ravi Kishore, Samar, Janardhan Reddy, Chandrasekhar, & Thennarasu, 2004).

Around 30% of individuals diagnosed with OCD have a lifetime tic disorder. This is most common in males with childhood onset of OCD. These individuals typically differ from other individuals with OCD in their symptoms, comorbidities, and course, for this reason the DSM-5 includes the specifier “tic-related” to differentiate these individuals (APA, 2013; Eichstedt & Arnold, 2001; Leckman et al., 2010; Tanidir et al., 2015).

In the DSM-5, OCD is defined as an Obsessive-Compulsive and Related Disorder (OCRD) along with Body Dysmorphic Disorder (BDD), Hoarding Disorder, Trichotillomania (hair-pulling disorder), Excoriation Disorder (skin-picking disorder), Substance/Medication-Induced OCRDs, OCRD due to Another Medical Condition, Other Specified OCRD (e.g., obsessional jealousy and body-focused repetitive behaviour disorder) and Unspecified OCRD (APA, 2013). These mental disorders were grouped together because they are characterised by repetitive thoughts and/or behaviours, which are believed to exist on a continuum from compulsivity (e.g., OCD and BDD) to impulsivity (e.g., Trichotillomania and Excoriation Disorder). The OCRDs share similarities in phenomenology, comorbidity, familiarity and genetics, neurotransmitter/peptide systems, neurocircuitry, prognosis, demographics, and treatment responses (Bartz & Hollander, 2006; Hollander, Braun, & Simeon, 2008; Hollander, Kim, Braun, Simeon, & Zohar, 2009; Phillips et al., 2010; Ravindran, da Silva, Ravindran, Richter, & Rector, 2009).

The introduction of the OCRD grouping in the most recent edition of the DSM was arguably the most significant change to the description of OCD, which was previously classified as an anxiety disorder. The close relationship between OCD and the anxiety disorders is still recognised by the sequence of chapters in the DSM-5, with the OCRDs chapter following the anxiety disorders chapter (Abramowitz & Jacoby, 2014; APA, 2013; Stein, Craske, Friedman, & Phillips, 2011). This was a controversial change in the DSM-5, due to the prominent role of anxiety in the presentation of OCD. While some experts argue that OCD is better defined as an OCRD because anxiety is secondary to core OC symptoms (Mataix-Cols, Pertusa, & Leckman, 2007). It has also been suggested that this new categorisation focuses too much on the repetitiveness of behaviours in OCD and takes away from the importance of anxiety and avoidance (e.g., avoidance of triggers that can bring on obsessions and behaviours that aim to spread responsibility) (Abramowitz & Jacoby, 2014; Stein et al., 2010).

Another significant change in the new classification manual is the removal of hoarding symptoms from the definition of OCD and their classification as part of a new diagnosis, Hoarding Disorder, which while part of the OCRD grouping is now a separate disorder (Mataix-Cols, Fernandez de La Cruz, Nakao, & Pertusa, 2011; Mataix-Cols et al., 2010; Pertusa, Frost, Fullana, et al., 2010).

When assessing patient's symptoms to determine if an OCD diagnosis is warranted, it is important to distinguish the obsessions and compulsions of OCD from similar symptoms characteristic of other mental disorders (Okuda & Simpson, 2015). Anxiety disorders and OCD both include symptoms of anxiety, avoidance, recurrent thoughts, and reassurance seeking. However, a diagnosis of OCD is differentiated from the anxiety disorders based on the content of recurrent thoughts and the response of ritualised compulsive behaviour to neutralise these thoughts. The content of recurrent thoughts in the anxiety disorders differ from OCD because in Social Anxiety Disorder (SAD) the recurrent thoughts are specifically related to social interactions, in Specific Phobia thoughts are related to a specific object or situation and are much more circumscribed, and in Generalised Anxiety Disorder (GAD) thoughts tend to be about real-life concerns and are less ego-dystonic (Abramowitz & Foa, 1998; APA, 2013; Coelho et al., 2010; Coles, Mennin, & Heimberg, 2001). Furthermore, the obsessions in OCD can be distinguished from the rumination of Major Depression Disorder (MDD), as depressive ruminations are usually mood congruent and not necessarily experienced as intrusive or ego-dystonic. Also, depressive ruminations are not usually followed by attempts to suppress, ignore or neutralise the thoughts (APA, 2013; Okuda & Simpson, 2015; Wahl et al., 2008).

OCD and the other OCRDs share similar symptoms of obsessive preoccupations and repetitive behaviour. However, in BDD the obsessions and compulsions are limited to concerns about physical appearance (APA, 2013; Frare, Perugi, Ruffalo, & Toni, 2004). In Trichotillomania, the compulsions are limited to hair pulling and obsessions are absent (APA, 2013; Lochner et al., 2005). In Hoarding Disorder, symptoms focus on excessive accumulation and difficulty discarding possessions without the typical beliefs and obsessional thinking associated with OCD (e.g., fear of incompleteness, harm or contamination). If hoarding presents as a compulsive response to obsessional thoughts and beliefs common in OCD, a diagnosis of OCD should be given instead (APA, 2013; Okuda & Simpson, 2015; Pertusa, Frost, Fullana, et al., 2010; Pertusa, Frost, & Mataix-Cols, 2010).



OCD can be distinguished from Anorexia Nervosa as obsessions and compulsions in OCD are not limited to concerns about weight, food, and exercise (APA, 2013; Serpell, Livingstone, Neiderman, & Lask, 2002). Compulsions in OCD differ from tics (sudden, rapid, motor movements or vocalisations such as eye blinking) and stereotyped movements (repetitive, non-functional motor behaviours such as head banging) because they are generally more complex and performed in response to an obsession (APA, 2013; Okuda & Simpson, 2015). OCD can be associated with delusional OCD beliefs in individuals without insight. However, OCD can be distinguished from delusion disorder because of the presence of obsessions and compulsions. Also, other features of schizophrenia and schizoaffective disorder should not be present in OCD (i.e., hallucinations) (APA, 2013; Eisen, Phillips, & Rasmussen, 1999). Obsessive-Compulsive Personality Disorder (OCPD) differs from OCD because it is not characterised by intrusive thoughts, urges or impulses but rather maladaptive and pervasive patterns of excessive perfectionism, rigid control, and other personality characteristics. Compulsive-type behaviours in OCPD are commonly differentiated from OCD because they are not resisted or unwanted; however, this distinction is less clear when insight is absent (Diedrich & Voderholzer, 2015; Okuda & Simpson, 2015).

The ICD - tenth revision (ICD-10, World Health Organisation [WHO], 1992) and DSM-5 definitions of OCD share many similarities and a few important differences. In the ICD-10 OCD is classified as a neurotic, stress-related and somatoform disorder (WHO, 1992). Another important difference is that whilst the DSM-5 uses specifiers related to level of insight and the presence of tics. ICD-10 uses specifiers to indicate the most predominant symptom; i.e., predominantly obsessional thoughts or ruminations, predominantly compulsive acts, and mixed obsessional thoughts and acts (WHO, 1992).

## **2.2. Phenomenology of OCD**

The core features of OCD are obsessions and compulsions. Obsessions are persistent intrusions to which the individual is a passive recipient and has limited control. These intrusive phenomena are experienced as unwanted and inconsistent with the core values of the self, such that the individual attempts to subjectively resist them (Abramowitz & Jacoby, 2014; Clark, 2004; de Silva, 2003). Obsessions are usually triggered by an internal or external cue, but can also occur unprompted (Abramowitz & Jacoby, 2014; McGuire et al., 2012). Most individuals diagnosed with OCD experience obsessions in the form of thoughts (e.g., thoughts of dying from an illness or one's house burning down), 17% experience images in the form of urges/impulses (e.g., an

urge to jump onto the train tracks) and 7% experience obsessions in the form of images (e.g., a fleeting image of an inappropriate sexual act) (Akhtar, Wig, Varma, Pershad, & Verma, 1975). Individuals with OCD may experience only one or multiple types of obsessions, and their obsessions may change over time. The content of obsessions is influenced by the individual's personal experience, culture, and demographics (Clark, 2004). It is common for obsessions to focus on content that is valued by the individual; e.g., a deeply religious person may experience intrusive thoughts about blasphemy or a loving parent may experience intrusive images of harming their child (Abramowitz & Jacoby, 2014). Despite being highly personalised on an individual level, there are common themes of obsessions including contamination, harm to self or others, pathological doubt, symmetry, sexuality, religion, and somatic concerns (Clark, 2004). Foa and Kozak (1995) reported that contamination was the most common primary obsessional theme (37.8%), then a fear of harm to oneself or others (23.6%), and then symmetry (10%).

Compulsions are repetitive overt behaviours or covert cognitive acts that aim to neutralise an obsession, reduce distress, or prevent a dreaded event or situation. They are generally excessive or unrelated to the feared event or obsession they aim to counteract in a realistic way (Abramowitz & Jacoby, 2014; Clark, 2004; de Silva, 2003; Starcevic et al., 2011). Compulsions are considered intentional acts; however, the individual experiences subjective pressure (i.e., a compulsive urge) to perform them and a diminished sense of voluntary control (Abramowitz & Jacoby, 2014; Clark, 2004; de Silva, 2003). Compulsions are reinforcing as they can allow the individual to temporarily reduce or avoid discomfort and they can strengthen the belief that the compulsion was important in preventing the feared outcome (Abramowitz & Jacoby, 2014; Veale, 2007). Compulsions are often stereotypical and have strict rules (e.g., the ritual cannot be interrupted or the individual will have to start again). Common compulsive behaviours include cleaning, checking, ordering, mental compulsions (e.g., counting), hoarding, and reassurance seeking (Starcevic et al., 2011; Veale, 2007). Individuals usually experience more than one compulsion and compulsions can change over time.

Checking and cleaning are the most common compulsions (Ball, Baer, & Otto, 1996; Starcevic et al., 2011). Checking can be physical (e.g., checking a door is locked or a homework assignment contains no spelling errors) or mental (e.g., reviewing or evaluating a memory of locking a door to ensure it was completed correctly)

(Radomsky & Alcolado, 2010). Compulsive checking typically occurs in a repetitive and ritualised manner to ensure safety to the self or others, and to ensure high standards of completion of a task. Checking behaviour increases the individual's experience of doubt and uncertainty, which in turn increases checking behaviour in the long-term (Rachman, 2002; Radomsky & Alcolado, 2010). While the phenomenology of compulsive checking has been well-researched and well-recognised in the literature, other behaviours such as excessive reassurance seeking have been under recognised (Parrish & Radomsky, 2011; Williams et al., 2011). Obsessions and compulsions usually co-occur. Between 96% and 99% of individuals diagnosed with OCD experience both obsessions and compulsion, with 0.5% to 2% experiencing only obsessions and 0.5% to 2% experiencing only compulsions (Foa & Kozak, 1995; Shavitt et al., 2014).

There are a number of ways that individual's with OCD resist obsessions. For example: avoidance, distraction, rationalisation, neutralisation, thought suppression and reassurance seeking. There has been some inconsistency in the literature about which of these forms of resistance constitute compulsions and which are better defined as non-compulsive safety behaviours or coping mechanisms (Belloch, Carrió, Cabedo, & García-Soriano, 2015; Clark, 2004; Freeston, Rheaume, & Ladouceur, 1996). Abramowitz and Jacoby (2014) report that non-compulsive safety behaviours are those subjective forms of resisting obsessions that are not repetitive or rule-bound. For the purpose of this thesis the behaviours listed above can be considered compulsions when they are repetitive, rule-bound, and occur in response to an intrusive thought; and non-compulsive safety behaviours when they do not meet the above criteria. For instance, ritualised avoidance can be considered a compulsion (McGuire et al., 2012) and passive avoidance can be considered a non-compulsive safety behaviour (Abramowitz & Jacoby, 2014).

It is widely accepted that OC phenomena are not unique to OCD but are experienced by other clinical and non-clinical populations. Research suggests that between 80% and 99% of non-clinical samples experience unwanted intrusions, illustrating their universal nature (Freeston, Ladouceur, Thibodeau, & Gagnon, 1991; Purdon & Clark, 1993; Rachman & de Silva, 1978; Salkovskis & Harrison, 1984). Research has suggested that non-clinical and clinical obsessions are similar in content, form, relation to mood, and meaningfulness to the individual. However, clinical obsessions are of longer duration, more frequent, more distressing, more intense, more

ego-dystonic, more strongly resisted, and provoke more urges to neutralise than non-clinical obsessions (Morillo, Belloch, & Garcia-Soriano, 2007; Purdon & Clark, 1993; Rachman & de Silva, 1978; Salkovskis & Harrison, 1984). Thus, clinical and non-clinical obsessions can be viewed as differing quantitatively rather than qualitatively, and existing along a continuum from unwanted intrusion to clinical obsession (Abramowitz et al., 2014; Gibbs, 1996; Salkovskis, 1985). This view of obsessions as a more severe form of the intrusions experienced by the general population is one of the assumptions underlying the cognitive model of OCD, which will be discussed later in this chapter.

Similarly, the majority of participants in non-clinical samples also report performing compulsive or neutralising behaviours (Freeston et al., 1991; Muris, Merckelbach, & Clavan, 1997). Non-clinical compulsions are believed to be similar in content to clinical compulsions, but are less frequent, less intense, less distressing, easier to resist, and not necessarily performed in response to an obsession (Ladouceur et al., 2000; Muris et al., 1997). Therefore, OC phenomena can occur on a continuum, from infrequent, relatively neutral phenomena in non-clinical populations to frequent, distressing and time consuming in individuals diagnosed with OCD. This has made it possible to use non-clinical samples as analogues of clinical samples in research on OCD (Abramowitz et al., 2014; Burns, Formea, Keortge, & Sternberger, 1995; Gibbs, 1996).

## **2.3. Epidemiology of OCD**

### **2.3.1. Prevalence.**

OCD was historically considered a relatively rare disorder (APA, 1980; Black, 1974). For example, Rüdin (1953) reported a lifetime prevalence rate of 0.05% in the general population. The Epidemiologic Catchment Area (ECA) study was the first to challenge this view of OCD as rare. The ECA study was conducted using DSM- third edition (DSM-III) criteria and data collected from 1980 to 1984 from over 20,500 participants in five communities in the United States of America (USA). The ECA study found the lifetime prevalence of OCD to be between 1.9% and 3.3% and the 12-month prevalence to be between 0.8% and 2.3% in the general population (Karno, Golding, Sorenson, & Burnam, 1988; Robins et al., 1984). This is much higher than previously thought. The same methodology used in the ECA study was applied in an epidemiological survey conducted in a number of countries (Canada, Puerto Rico, Germany, Taiwan, Korea, and New Zealand) by the Cross National Collaborative

Group (CNCG). 12-month prevalence rates from these countries were comparable to those reported by the ECA study and ranged from 1.1% in Korea and New Zealand to 1.8% in Puerto Rico (Weissman, 1994). The only exception was Taiwan, which had a 12-month prevalence rate of 0.4%. This is consistent with the low prevalence rates of all psychiatric disorders in Taiwan (Weissman et al., 1994). Another major epidemiological survey, the National Comorbidity Survey Replication (NCS-R) assessed the prevalence of OCD in 2073 respondents in the USA using DSM-fourth edition (DSM-IV) criteria. The NCS-R found the lifetime prevalence rate of OCD to be 2.3% and the 12-month prevalence rate of OCD to be 1.2% in the general population (Ruscio, Stein, Chiu, & Kessler, 2010).

Prevalence rates of OCD in the general population have varied considerably over time and across studies. This is at least partially due to variation in methodology (e.g., diagnostic materials, the skill of the interviewer, the setting of the evaluation) and the characteristics of the sample (e.g., age, gender, geographic region) (Fontenelle, Mendlowicz, & Versiani, 2006). Many large scale epidemiological studies including the ECA and NCS-R use lay interviewers, which can inflate the prevalence rates as they have a tendency to over diagnose OC symptoms (Pigott, 1998; Stein, Forde, Anderson, & Walker, 1997). Ruscio et al., (2010) argued that inconsistency in the threshold between subclinical and clinical OCD may be responsible for variation in prevalence studies. The NCS-R found that 28.2% of respondents experienced OC symptoms whilst only 2.3% met full diagnostic criteria at some point in their lives. This illustrates that prevalence rates can vary significantly based on where the threshold for a diagnosis of OCD sits.

Despite variation in this area, it is currently accepted that international 12-month prevalence rates of OCD range from 1.1% to 1.8% as reported in the DSM-5 (APA, 2013; Kessler, Petukhova, Sampson, Zaslavsky A.M., & Wittchen, 2012; McEvoy, Grove, & Slade, 2011; Ruscio et al., 2010; Torres et al., 2006). OCD is considered the fourth most common psychiatric disorder after substance abuse, specific phobias, and MDD (Pigott, 1998; Robins et al., 1984).

### **2.3.2. Demographics.**

As illustrated by the research on prevalence rates, OCD occurs globally. Similar patterns of gender distribution, comorbidity, and age of onset are seen across time, culture, geographic location and socioeconomic status (APA, 2013; Lewis-Fernández et al., 2010; Matsunaga & Seedat, 2007; Staley & Wand, 1995). Research suggests that

whilst common core themes (e.g., contamination) appear to remain similar across cultures, the content and presentation of OCD symptoms and OCD-related beliefs are influenced by cultural belief systems especially religion and superstition. For example, two or three decades ago contamination concerns frequently involved asbestos whereas currently they more frequently involve AIDS/HIV, reflecting popular health concerns (de Silva, 2006; Nedeljkovic et al., 2012).

Gender ratios of OCD in adults have varied across studies, generally an equal ratio of males and females has been reported or a slightly higher prevalence of females (Lochner & Stein, 2001). Clinical samples of OCD tend to report equal ratios of males and females (e.g., Rasmussen & Eisen, 1992) whilst epidemiological samples tend to show a slightly higher rate of females (e.g., Karno et al., 1988; Weissman, 1994). On the other hand, gender ratios of OCD in childhood suggest a higher prevalence of males than females. Males are more likely to have an earlier age of onset of OCD and a co-morbid tic disorder (APA, 2013; Eichstedt & Arnold, 2001). Gender differences in symptom content have also been reported with females believed to have more symptoms in the contamination/cleaning domain whilst males tend to have more sexual/religious and symmetry related symptoms (APA, 2013; Lochner & Stein, 2001; Mathis et al., 2011). This difference in OC symptom presentation in males and females may be due to sociocultural factors (Mathis et al., 2011).

### **2.3.3. Course and prognosis.**

Onset of OCD typically occurs between middle childhood and early adulthood (Calamari, Chik, Pontarelli, & DeJong, 2012). In the NCS-R study the mean age of onset was 19.5 years, with 25% of onsets starting before 14 years of age. Few new onsets were reported after 35 years of age (APA, 2013; Ruscio et al., 2010). Many researchers suggest that early and late onset of OCD may indicate separate subtypes of OCD, with a cut off age of 21 years (Taylor, 2011). Early onset OCD is more common in males (Ruscio et al., 2010; Taylor, 2011), associated with comorbid tics (Taylor, 2011), and associated with greater OC symptom severity (Anholt et al., 2014; Taylor, 2011).

The development of OCD symptoms is usually gradual but more acute presentations have been associated with stressful life events; e.g., pregnancy (Fontenelle, Cocch, Harrison, Miguel, & Torres, 2011; Neziroglu, Anemone, & Yaryuratobias, 1992). OCD usually follows a chronic course with waxing and waning symptoms; however, some individuals experience an episodic or deteriorating course

(APA, 2013; Rasmussen & Tsuang, 1986; Visser, van Oppen, van Megen, Eikelenboom, & van Balkom, 2014). The course of OCD is often complicated by comorbidity with other disorders (APA, 2013). The longest naturalistic follow-up study on OCD followed 144 individuals diagnosed with OCD for over 40 years; most of these individuals did not receive effective treatment. This study found that the duration of the disorder was lengthy, with approximately half of the sample experiencing clinically significant symptoms decades later and another third still experiencing subclinical symptoms (Skoog & Skoog, 1999). In the NCS-R study those who met criteria for OCD spent an average of 8.9 years of life with the disorder (Ruscio et al., 2010). Better prognosis is commonly associated with milder OC symptoms, higher global functioning, higher social functioning, shorter duration, insight, and being married (Catapano et al., 2010; Skoog & Skoog, 1999; Steketee, Eisen, Dyck, Warshaw, & Rasmussen, 1999).

#### **2.3.4. Disability and impairment.**

OCD is associated with reduced quality of life (APA, 2013; Schwartzman et al., 2017). OCD is associated with a greater impairment in quality of life than panic disorder, social phobia, heroin dependency, patients on haemodialysis and kidney transplant recipients especially in the domains of social, emotional, and mental health (Macy et al., 2013). Reduced quality of life in individuals diagnosed with OCD was associated with low social support, fewer years of education, greater symptom severity, greater contamination/cleaning symptoms, greater hoarding symptoms, and other comorbid mental health symptoms especially depression (Jacoby, Leonard, Riemann, & Abramowitz, 2014; Macy et al., 2013). In the NCS-R study two thirds of participants reported severe role impairment, especially in terms of social functioning. Obsessions consume an average of 5.9 hours and compulsions consume an average of 4.6 hours per day (Ruscio et al., 2010), thus impacting on one's ability to engage in social, occupational, and leisure activities.

Suicide behaviour is more common in OCD populations than the general population, and individuals who are unmarried, endorse symmetry or ordering symptoms, have a comorbid depressive disorder, and a history of prior suicide attempts are more likely to attempt or commit suicide (Alonso et al., 2010). In addition to the impact on the individual, OCD can also have a considerable impact on those close to the individual with OCD. Families and caregivers are frequently involved in compulsive

rituals and in reassurance-seeking behaviour (Boeding et al., 2013; Halldorsson et al., 2016; Storch et al., 2007).

### **2.3.5. Comorbidity.**

OCD is associated with high rates of comorbidity with other psychiatric disorders (APA, 2013; Calamari et al., 2012; Pallanti, Grassi, Sarrecchia, Cantisani, & Pellegrini, 2011). The NCS-R found that 90% of individuals who met criteria for OCD also met criteria for another psychiatric disorder at some point in their lives (Ruscio et al., 2010). The most common comorbid conditions in the NCS-R study were anxiety disorders (75.8%), mood disorders (63.3%, of which MDD was the most common at 40.7%), impulse-control disorders (55.9%) and substance use disorder (38.6%) (Ruscio et al., 2010). Co-morbidity in OCD is associated with greater symptom severity, greater disability, and poorer treatment outcomes (Calamari et al., 2012).

The occurrence of depressive symptoms in individuals diagnosed with OCD is high, with lifetime prevalence rates of MDD in OCD patients ranging from 40.7% to 67.5% (e.g., Brown, Campbell, Lehman, Grisham, & Mancill, 2001; Crino & Andrews, 1996; LaSalle et al., 2004; Quarantini et al., 2011; Ruscio et al., 2010). OCD patients with comorbid depression reported greater OC symptom severity and poorer prognosis (Quarantini et al., 2011; Storch et al., 2012; Viswanath et al., 2012). In the majority of cases OCD precedes depressive symptoms (APA, 2013; Karno et al., 1988), suggesting that low mood occurs as a result of the functional impairment and distress associated with OCD (Yap, Mogan, & Kyrios, 2012). OCD is also commonly comorbid with the anxiety disorders, in the NCS-R study 20% of patients with OCD were also diagnosed with Panic Disorder, 7.8% with Agoraphobia without Panic, 42.7% with Specific Phobia, 43.5% with Social Phobia, 8.3% with GAD, and 37.1% with Separation Anxiety Disorder (Ruscio et al., 2010). Post-Traumatic Stress Disorder was reasonably frequent among OCD patients, with a lifetime comorbidity rate of 8.4% to 19.1% (LaSalle et al., 2004; Ruscio et al., 2010). Comorbid eating disorders among OCD patients have also been seen to be substantial, with a lifetime comorbidity rate of 4.7% to 9.6% for Bulimia Nervosa and 5.9% to 9.3% for Anorexia Nervosa (Du Toit, van Kradenburg, Niehaus, & Stein, 2001; LaSalle et al., 2004).

Individuals diagnosed with OCD also experience higher lifetime comorbidity rates of neuropsychiatric disorders and other OCDs than the general population. Lifetime comorbidity rates of BDD in OCD patients range from 6.3% to 12.9% (Costa et al., 2012; Du Toit et al., 2001; LaSalle et al., 2004). Up to 30% of individuals



with OCD also have a tic disorder in their lifetime (APA, 2013), and lifetime comorbidity rates of Tourette's Syndrome in OCD patients range from 2.4% to 3.9% (Du Toit et al., 2001; Jaisoorya, Reddy, & Srinath, 2003; LaSalle et al., 2004). The rate of comorbid personality disorders in individuals diagnosed with OCD is between 33% and 87% (Bejerot, Ekselius, & Von Knorring, 1998). The Cluster C personality disorders are most common in OCD patients and include OCPD, Avoidant Personality Disorder, and Dependent Personality Disorder (Denys, Tenney, van Megen, de Geus, & Westenberg, 2004; Wu, Clark, & Watson, 2006).

## **2.4. Theories of OCD**

The following section provides a brief overview of the main aetiological theories and associated treatments for OCD.

### **2.4.1. Neurobiological, neuropsychological and genetic models of OCD.**

Biological theories of OCD propose that OC symptoms result from neurological dysfunction in the brain, neuropsychological deficits and genetic vulnerabilities. Despite furthering our understanding of OCD this area has been plagued by inconsistencies (for review see, Graybiel & Rauch, 2000; Kuelz, Hohagen, & Voderholzer, 2004; Langen, Durston, Kas, Van Engeland, & Staal, 2011; Milad & Rauch, 2011; Nakao, Okada, & Kanba, 2014; Pauls, 2010; Wilson, 1998).

Neurobiological perspectives suggest that structural, functional and chemical irregularities in the brain are at the core of OCD. While often equivocal, research findings suggest that structural and functional abnormalities in the cortico-striato-thalamo-cortical (CSTC) circuitry are associated with OC symptoms (Del Casale et al., 2011; Nakao et al., 2014; Peng et al., 2012; Radua & Mataix-Cols, 2009; Whiteside, Port, & Abramowitz, 2004). However, several brain regions that fall outside this pathway have also been implicated; e.g., the cerebellum, parietal cortex, and limbic regions (Menzies et al., 2008; Milad & Rauch, 2011). Furthermore, abnormalities in serotonin (5-HT), dopamine, and glutamate neurotransmitter systems have been hypothesised to play a role in OCD (Koo, Kim, Roh, & Kim, 2010; Pittenger, Bloch, & Williams, 2011; Stein & Ludik, 2000). Dysfunction in these regions of the brain could explain the poor impulse control, perseveration, and focus on one aspect of the environment seen in OCD. However, the specific mechanism that links neurological impairment with OC symptoms is not well understood (Friedlander & Desrocher, 2006). The direction of causality is also not well understood and can only be thought of as correlational. That is, it is unclear if neurological dysfunction in the brain causes OC

symptoms or OC symptoms cause neurological dysfunction (Menzies et al., 2008; Whiteside et al., 2004).

Neuropsychological theories propose that impairments in cognitive processes (primarily memory, attention, concentration and executive functioning) lead to OC symptoms (Greisberg & McKay, 2003; Kuelz et al., 2004; Olley, Malhi, & Sachdev, 2007; Shin, Lee, Kim, & Kwon, 2014; Tallis, 1997). Again, research in this area has been inconsistent and the causal relationship between neuropsychological difficulties and OC symptoms is not clear (Abramovitch, Abramowitz, & Mittelman, 2013). This has lead researchers to investigate the role of beliefs about cognitive functioning (e.g., confidence in memory and attention) rather than actual deficits in OCD aetiology. Research findings suggest that poor cognitive confidence, which is a metacognitive belief, can increase doubt and uncertainty about one's functioning in the world and lead to the repetitive behaviours seen in OCD (Hermans et al., 2008; Nedeljkovic & Kyrios, 2007; Nedeljkovic, Moulding, Kyrios, & Doron, 2009; van Den Hout & Kindt, 2003). This shift towards a focus on belief systems links neuropsychological theories with cognitive-behavioural theories of OCD, which will be discussed later in this chapter.

A genetic basis for OCD is supported by findings of a greater concordance rate of OC symptoms in monozygotic twins than dizygotic twins (van Grootheest, Cath, Beekman, & Boomsma, 2005), familial aggregation of OC symptoms and related disorders (Steinhausen, Bisgaard, Munk-Jorgensen, & Helenius, 2013), support for transmission of OCD in a Mendelian fashion (Nestadt et al., 2000), linkage of OCD to specific chromosomal regions (Mathews et al., 2012), and associations between functional candidate genes and OCD (Hemmings & Stein, 2006). However, there have been inconsistencies in the literature and the genetic basis for OCD is likely to be complex with interactions between multiple genes and environmental factors (Pauls, 2010; Samuels, 2009).

Despite advances in technology and imaging, this area of research has been equivocal. Inconsistencies in biological theories of OCD may be due to the heterogeneous nature of OCD with a different neurological mechanism underlying different OCD subtypes based on symptom dimensions (Leopold & Backenstrass, 2015), or age of onset (Hwang et al., 2007). Variation in this area may also be the result of methodological inconsistencies, a non-unique neuronal profile for OCD compared to other psychiatric disorder, and quantitative differences rather than qualitative

differences between OCD sufferers and non-clinical controls (Abramovitch, Mittelman, Tankersley, Abramowitz, & Schweiger, 2015; Mataix-Cols & van den Heuvel, 2012).

Treatments associated with the biological approach to OCD are largely pharmacological and are aimed at correcting brain circulatory and functioning. Serotonin reuptake inhibitors are the first line pharmacological treatment for OCD especially selective serotonin reuptake inhibitors (SSRIs) and clomipramine (Bloch, McGuire, Landeros-Weisenberger, Leckman, & Pittenger, 2010; Fineberg, Reghunandanan, Brown, & Pampaloni, 2013; Soomro, Altman, Rajagopal, & Oakley-Browne, 2008). Higher doses of SSRIs than are usually recommended for MDD are associated with better prognosis in OCD (Bloch et al., 2010). SRI non-responders or partial responders may benefit from SRI augmentation or alternative monotherapies (Bloch et al., 2006; Dougherty, Rauch, & Jenike, 2004; Kellner, 2010; Veale et al., 2014). Pharmacotherapy is one of the most widely used and accepted treatments for OCD, especially in combination with psychological therapies (Romanelli, Wu, Gamba, Mojtabai, & Segal, 2014; Wheaton, Rosenfield, Foa, & Simpson, 2015). Alternative biological approaches to treatment including neurosurgery, transcranial magnetic stimulation (TMS), and deep brain stimulation may be beneficial for severely treatment resistant individuals; however, further research in this area is required (Dougherty et al., 2004; McLaughlin & Greenberg, 2012).

#### **2.4.2. Psychodynamic model of OCD.**

Sigmund Freud (1896) was the first to distinguish a condition characterised by clinical obsessions from other conditions described by the umbrella term neurasthenia, he termed this condition ‘obsessional neurosis’ (Cassin & Rector, 2012; May-Tolmann, 1998). Traditional psychoanalytic theory proposes that fixation or regression to the anal stage of psychosexual development with associated conflict between aggressive and sexual impulses (id) and a harsh and hypermoral critique (superego) is central to OCD. The ego attempts to reduce anxiety and shame associated with the conflict between these forces by using defence mechanisms (Cassin & Rector, 2012; Fenichel, 1999; Jakes, 1996). Defence mechanisms or compulsions aimed at controlling sexual and aggressive impulses include reaction formation (manifesting personality traits that are the opposite to feared impulses; e.g., adopting a personality of perfectionism and consciousness in an attempt to control aggressive and sexual impulses), undoing (carrying out a behaviour or thought with the goal of undoing the consequences of an intrusive impulse), and isolation (separating the emotion from an

intrusive impulse in consciousness) (Davey, Dash, & Meeten, 2014; Fenichel, 1999; Rubino, Saya, & Siracusano, 2007). According to this approach to OCD, obsessions are understood as repressed id impulses breaking through defence mechanisms into conscious awareness, or the result of punishment from the harsh superego (Cassin & Rector, 2012; Fenichel, 1999; Jakes, 1996). The conflict between order (superego) and disorder (id) seen in the anal stage is a part of normal development. OC symptoms develop when the ego of the individual cannot integrate these aspects of the self and persistent ambivalence results; e.g., in the case of the rat man described by Freud the patient was faced with love (superego) and hatred (id) for his father (Kempke & Luyten, 2007; Williams, 2008). This has received some empirical support from recent research on the role of self-ambivalence in OCD (Bhar & Kyrios, 2007; Bhar, Kyrios, & Hordern, 2015).

Psychodynamic treatment for OCD usually involves bringing forbidden impulses and ego defences into consciousness. However, psychodynamic treatments have not been shown to be effective and although individuals may become consciously aware of internal conflicts, OC symptoms are likely to persist (Gabbard, 2004; Malan, 2013). Psychodynamic theories have received little empirical support and with the move towards evidence-based treatment the attention on psychodynamic theories has been mostly for historical significance and to inform phenomenology in recent years (Cassin & Rector, 2012; Esman, 2001; Gibbons, Crits-Christoph, & Hearon, 2008).

#### **2.4.3. Behavioural model of OCD.**

Mowrer's two-stage theory of fear and avoidance forms the basis of behavioural/learning models of OCD (Mowrer, 1939; Mowrer, 1960). The first stage of the model suggests that obsessions become anxiety provoking through a process of classical conditioning. The theory proposes that neutral stimuli (both physical and mental) become conditioned stimuli after being paired with an unconditioned stimulus that naturally produces fear (Cassin & Rector, 2012; Mowrer, 1939; Mowrer, 1960). For example, the conditioned stimulus (i.e., the stove) elicits fear after being associated with a traumatic event or unconditioned stimulus (i.e., a house fire caused by a faulty stove) that naturally elicits fear. The conditioning can then generalise to include more events, objects and thoughts (e.g., all electrical appliances, leaving the house, images of fire) so that these also trigger fear and increase obsessional doubts about safety.

The second stage of the model suggests that compulsions maintain the anxiety provoking nature of obsessions through the process of operant conditioning. The theory

proposes that anxiety produced by the conditioned stimulus triggers compulsive behaviour to reduce this anxiety, especially active avoidance and escape behaviours. The resulting short-term reduction in anxiety is negatively reinforcing and increases the likelihood that compulsions are used in the future. Compulsions remain rewarding and entrenched ways of coping with anxiety, thereby preventing natural habituation or extinction processes (Cassin & Rector, 2012; Mowrer, 1960). For example, checking the stove is off before leaving the house temporarily reduces anxiety, which is reinforcing and therefore increases future checking behaviour.

This model led to the development of behavioural-based treatments, which involve the extinction of classical and operant conditioning. Exposure and response prevention (ERP) has been the most successful of these treatments and was introduced by Meyer (1966). Systematic desensitisation was also used by behavioural therapists following the development of Mowrer's model (Wolpe, 1958), but was less successful (Furst & Cooper, 1970). ERP involves intentional and prolonged exposure to obsessional cues that create anxiety, whilst abstaining from compulsions until the anxiety dissipates. According to the model, this allows the individual to habituate to the anxiety leading the conditioned stimulus to lose its power over time, as well as preventing negative reinforcement from maintaining compulsions (Abramowitz, Taylor, & McKay, 2012; de Silva, Menzies, & Shafran, 2003; Foa, 2010; Rachman, de Silva, & Röper, 1976). For example, ERP could involve systematic exposure to a stove whilst refraining from any checking behaviour until the anxiety associated with this stimulus subsides. Over time the stove will no longer be associated with the unconditioned stimulus, which will alleviate the need for compulsive checking. Research findings have supported the efficacy of treatment with ERP (Abramowitz, 1996; Eddy, Dutra, Bradley, & Westen, 2004; Fisher & Wells, 2005; Lindsay, Crino, & Andrews, 1997; Whittal, Thordarson, & McLean, 2005). However, 25% - 50% of OCD patients do not show significant improvements following ERP (Fisher & Wells, 2005; Whittal et al., 2005).

The behavioural model has helped inform the relationship between obsessions and compulsions and new treatment options; however, it has a number of limitations. First, OCD onset is typically gradual and few individuals remember a traumatic or conditioning event that triggered OCD onset (Abramowitz, Taylor, & McKay, 2007; Mineka & Zinbarg, 2006; Taylor, Abramowitz, McKay, & Cuttler, 2012). Also, OC symptoms vary over time in a way that cannot be explained by generalisation or new

traumatic events (Abramowitz et al., 2007; Taylor et al., 2012). However, some individuals do report stressful and traumatic life events around the onset of OCD (Fontenelle et al., 2011; Rosso, Albert, Asinari, Bogetto, & Maina, 2012), and stressful events are often associated with greater symptom severity (Cromer, Schmidt, & Murphy, 2007), which has led to suggestions of a post-traumatic subtype of OCD (Dykshoorn, 2014; Fontenelle et al., 2012). Secondly, the behavioural model fails to account for individual differences in response to traumatic events; e.g., how two individuals exposed to the same traumatic situation respond differently (Mineka & Zinbarg, 2006; Rachman, 1977). Thirdly, this model fails to differentiate between OCD and the anxiety disorders, based on this model the same two processes of fear and avoidance are present in all neuroses (Salkovskis, 1998). Finally, compulsions are not only motivated by reduced fear but also to achieve a “just right” feeling or share responsibility for harm as seen in reassurance seeking (Coles, Heimberg, Frost, & Steketee, 2005; Salkovskis, 1985; Salkovskis, Shafran, Rachman, & Freeston, 1999; Starcevic et al., 2012). Therefore, alternative approaches were sought to address the limitations of the behavioural model. As obsessions involve distorted thinking, the focus shifted towards a cognitive model.

#### **2.4.4. Cognitive-behavioural model of OCD.**

Cognitive-behavioural models of OCD have been the most prominent and well researched theories of the development and maintenance of OCD. These models originated from cognitive theories developed by Beck (1976) and Ellis (1962) who proposed that specific psychopathology is associated with distinct patterns of dysfunctional beliefs. Several prominent cognitive models exist, these models differ in the specific appraisals and belief systems they emphasise but share similar central tenets (e.g., Clark, 2004; Clark & Purdon, 1993; Clark & Purdon, 1995; Obsessive Compulsive Cognitions Working Group [OCCWG], 1997, 2001, 2003, 2005; Purdon & Clark, 1993; Purdon & Clark, 1994; Purdon & Clark, 1999; Rachman, 1997, 1998, 2002, 2003, 2004; Radomsky & Rachman, 2004; Salkovskis, 1985, 1989, 1999; Salkovskis & Freeston, 2001; Salkovskis & McGuire, 2003; Veale, 2007).

A central tenet of cognitive theories of OCD is that intrusive thoughts, images and urges form the basis of clinical obsessions (Rachman, 1981, 1997). This concept developed out of empirical evidence that unwanted intrusions are experienced by both clinical and non-clinical populations, as previously discussed in the section on phenomenology (Morillo et al., 2007; Purdon & Clark, 1993; Rachman & de Silva,

1978; Salkovskis & Harrison, 1984). In cognitive-behavioural theory, intrusions have been conceptualised as commonplace and experienced by the vast majority of the population (Gibbs, 1996; Rachman, 1997). Obsessions and intrusions are similar in content and form, but obsessions are longer, more frequent, more distressing, and more strongly resisted (Morillo et al., 2007; Purdon & Clark, 1993; Rachman & de Silva, 1978; Salkovskis & Harrison, 1984). Therefore, they are theorised to exist on a continuum from non-clinical intrusions to clinical obsessions, with obsessions conceptualised as a more severe form of intrusions (Abramowitz et al., 2014; Gibbs, 1996; Rachman, 1997; Salkovskis, 1985).

According to cognitive theories of OCD intrusive phenomena may be triggered by external stimuli (e.g., dirty objects, a sharp knife) or internal stimuli (e.g., mood state, other thoughts related to the intrusion) in non-clinical and clinical populations (Rachman, 1998; Rachman & de Silva, 1978; Salkovskis, 1997). Rachman (1998) suggests that as intrusions escalate into obsessions the number of triggers increases. External triggers increase as previously neutral stimuli begin to trigger intrusions due to the process of generalization, whilst internal triggers increase due to increased anxiety and depression associated with OC symptoms.

Another central tenet of cognitive theories of OCD is the idea that intrusions develop into obsessions because of the interpretation or appraisal the individual makes about the content and occurrence of the intrusion (e.g., inflated responsibility, personal significance) and the use of maladaptive coping strategies (e.g., neutralisation) (Rachman, 1997; Salkovskis, 1985, 1999; Salkovskis & McGuire, 2003). Appraisals are the interpretation or meaning that the individual attaches to an unwanted intrusion (OCCWG, 1997). According to cognitive models of OCD intrusions are initially neutral, until the individual attaches meaning to its content or occurrence. If the unwanted intrusion is viewed as unimportant and easily dismissed further processing is unlikely to occur. However, if interpreted as meaningful, important, and/or harmful, the frequency and duration of the intrusion is likely to increase. As these characteristics increase, its processing priority increases, and the intrusion may escalate to an obsession (Clark, 2004; Rachman, 1998; Salkovskis & Freeston, 2001; Salkovskis & McGuire, 2003; Salkovskis, Richards, & Forrester, 1995). Faulty appraisals lead to associating intrusions with distress, which focuses attention on the intrusion and its triggers, which increases behavioural responses, and increases the intrusion in the long term (Abramowitz, 2006; Clark, 2004; Rachman, 1997; Salkovskis, 1985, 1999; Salkovskis

& McGuire, 2003). Faulty appraisals are generally considered necessary but not sufficient for producing obsessions (Clark, 2004). The way in which unwanted intrusions are appraised depends on the belief systems the individual holds about the self, others, and the world. These belief systems are shaped by early life experiences and relationships (Beck, 1976; Salkovskis et al., 1999).

Faulty appraisals of intrusions lead to distress, and individuals with OCD may engage in maladaptive coping strategies to alleviate this distress. Salkovskis (1985) coined the term neutralisation to refer to compulsions and other strategies aimed at avoiding or reducing the possibility of being responsible for harm to the self or others. For the purpose of this thesis, neutralisation can be conceptualised as any response to an intrusive thought that aims to counteract the negative consequences associated with the intrusion. This can include overt or covert compulsions, thought suppression, avoidance, or reassurance seeking. The individual is believed to engage in neutralisation to reduce the distress caused by the intrusion or obsession, this initial reduction in distress and increase in perceived control is negatively reinforcing (Clark, 2004). Commonly, the effort required for neutralisation is considered slight compared to the severe consequences of not neutralising, at least in the early stages. However, certainty that a feared event will not occur and blamelessness will ensure is difficult to achieve and can lead to repetition of neutralisation (Salkovskis, 1985). Neutralisation is generally followed by non-occurrence of the feared event, which strengthens beliefs about neutralisation as an effective way of preventing the feared event. Therefore, neutralisation maintains maladaptive beliefs and prevents reality testing, and the natural extinction of anxiety. This leads to increased anxiety and distress in the long-term. Increased distress can lead to increased neutralising in response to intrusions, and generalisation of neutralisation as a coping mechanism. Thus, in similar situations of obsessional anxiety neutralisations will be used again (Rachman, 1998). In this way neutralisation maintains the vicious cycle of OCD, as it reinforces the importance of neutralising an intrusion, which can increase the frequency of intrusions, focus attention on intrusions, and increase distress associated with intrusions. For example, an individual with OCD has an intrusive thought that a family member will not return home safely after a shopping trip, so they perform an ordering ritual to reduce their fear. The family member returns home safely, and this outcome is attributed to the ordering ritual rather than the relatively low chance of the family member not returning. The individual may then perform the ordering ritual every time the family member leaves



the house, which may strengthen the belief that the ritual is responsible for ensuring the family members returns. The ritual may also be negatively reinforcing, as it reduces anxiety and distress that occurs whenever the family member leaves the house. Thus, the ritual reduces initial discomfort and supports maladaptive beliefs that the intrusion is important and significant and needs to be neutralised. Research has supported the hypothesised self-perpetuating nature of neutralising (e.g., Freeston et al., 1991; Salkovskis, Westbrook, Davis, Jeavons, & Gledhill, 1997).

These central tenets are present in most contemporary cognitive models of OCD, although there is some variation in which aspects are emphasised and the specific belief systems highlighted. Salkovskis (1985) provided the first comprehensive cognitive model of OCD, which reignited interest and research into OCD. Salkovskis' model (1985, 1989, 1999; Salkovskis & Freeston, 2001; Salkovskis, & McGuire, 2003) proposes that intrusions develop into obsessions only when the individual appraises the occurrence or content of the intrusion as posing a threat for which he or she is responsible. That is, the individual holds an inflated belief about their responsibility for causing harm to self or others, or their failure to prevent harm. Intrusions that have some meaning to the individual, are unacceptable and personally salient are more likely to escalate to obsessions. Salkovskis (1985, 1999) argued that this responsibility appraisal is what differentiates OCD from other anxiety disorders. There is empirical support for Salkovskis' inflated responsibility model, with OCD symptoms being associated with inflated responsibility beliefs in most questionnaire (e.g., Cogle, Lee, & Salkovskis, 2007; Rheume, Freeston, Dugas, Letarte, & Ladouceur, 1995; Wilson & Chambless, 1999) and experimental studies (e.g., Arntz, Voncken, & Goosen, 2007; Bouchard, Rheume, & Ladouceur, 1999; Ladouceur, Rheume, & Aublet, 1997; Ladouceur et al., 1995). However, inflated responsibility beliefs account for less variation in OC symptoms than might be expected suggesting other maladaptive belief systems may also contribute to OCD processes (Clark, 2004; Rheume et al., 1995; Wilson & Chambless, 1999). Responsibility beliefs may also relate more strongly to some OCD subtypes (e.g., compulsive checking) than others (Clark, 2004; Rachman, 1993b). Also, some researchers have found evidence of inflated responsibility beliefs correlating with other clinical symptoms, including social anxiety and worry (Amir, Freshman, & Foa, 2000; Clark, 2004; OCCWG, 2003).

Rachman's cognitive model of obsessions (1997, 1998, 2003) proposes that catastrophic misinterpretation of the significance of unwanted intrusions is central in the

escalation of unwanted intrusions to obsessions. That is, intrusions appraised as important, personalised, ego-alien, serious, and as having potential consequences are more likely to develop into obsessions. He proposes that obsessions will persist as long as the misinterpretation of the intrusion persists, and will reduce as the misinterpretation weakens or disappears (Rachman, 1997). Rachman proposes that individual's who are taught or learn that their value-laden cognitions are of great significance, hold thought-action fusion (TAF) or inflated responsibility beliefs, are depressed or anxious are more vulnerable to developing OCD (Rachman, 1993a, 1997, 2003). TAF is the belief that having an unwanted thought may influence the probability of the feared event actually occurring (TAF-Likelihood), or the belief that having an unwanted thought is morally equivalent to performing the act (TAF-Morality) (Rachman, 1993a, 1997). TAF can increase the person's sense of responsibility for a feared event and increase guilt resulting in increased vulnerability to OCD (Rachman, 1993a). Rachman's theory also suggests that intrusive thoughts related to a person's moral or value system are more likely to be interpreted as significant and threatening. This is based on the finding that the common obsessional themes (e.g., aggression, sex, blasphemy) are important themes in moral systems (Rachman, 1997). In support of Rachman's model, research has supported the hypothesis that intrusions, which are ego-dystonic and contradict valued aspects of the self, are more likely to escalate into obsessions (Freeston & Ladouceur, 1993; Rowa & Purdon, 2003). There is also significant support of TAF biases being associated with OCD symptoms (for review see, Shafran & Rachman, 2004). These findings have been more consistent for TAF-Likelihood beliefs than TAF-Morality beliefs (Rassin, Merckelbach, Muris, & Schmidt, 2001; Shafran, Thordarson, & Rachman, 1996) and are not unique to OCD (Rachman & Shafran, 1999).

Rachman (2002) developed a specific cognitive model of compulsive checking, thereby acknowledging that the aetiology of OCD could vary between symptom subtypes. Rachman's cognitive theory of compulsive checking (2002) suggests that when an individual perceives a heightened sense of responsibility to prevent harm, especially to others, combined with uncertainty about whether they have sufficiently reduced or removed the harm, repeated checks for safety are likely to develop. Rachman (2002) suggests that the intensity and duration of checking behaviour is determined by the intensity of inflated responsibility beliefs, the perceived probability of harm, and the perceived seriousness of that harm. According to this model, compulsive checking is a self-perpetuating mechanism that once established, ensures repeated checking in four

ways. Firstly, it is rarely possible to achieve certainty that a feared future event will not occur. These feared events are often broad, unclear, and unlimited in time or space, for this reason fear that they may occur is unending. This means checking can continue indefinitely. Secondly, repeated checking increases anxiety, which reduces recall of specific events, as attention is focused on the threat and on scanning one's emotional reaction to the threat. This results in a poor recording of the check, which reduces confidence in memory, and can lead to beliefs about mental deterioration and stupidity. Low confidence in memory further reduces certainty that safety has been achieved and increases checking behaviour. Thirdly, individuals experience a paradoxical increase in responsibility for preventing harm following a compulsive check, and finally as responsibility beliefs increase the perceived probability of threat increases. Inflated responsibility and perceived threat beliefs are theorised to increase the intensity and duration of checking behaviour (Rachman, 2002). Research has provided some support for this cognitive model with reduced perceived responsibility being associated with reduced perceived misfortune (Lopatka & Rachman, 1995). There is also empirical evidence that repeated checking reduces confidence in memory and leads to further checking (Coles, Radomsky, & Horng, 2006; van Den Hout & Kindt, 2003). Rachman and colleagues also developed specific theories of other OCD symptoms, including contamination concerns (Rachman, 2004), and symmetry and ordering (Radomsky & Rachman, 2004), which are beyond the scope of this thesis.

Therefore, various cognitive-behavioural models have been developed to explain the role of intrusive thoughts, appraisals, beliefs, and maladaptive coping strategies in the aetiology of OCD. Whilst these models differ in the different belief and appraisal systems they emphasise they suggest similar underlying processes. The OCCWG, a group of international experts in the field formed in 1995, combined their efforts to develop standardised measures of the main beliefs and appraisals in OCD (OCCWG, 1997, 2001, 2003, 2005).

The OCCWG (1997) defined three different levels of OC-related cognitions. Intrusions were defined as unwanted thoughts, images or urges that intrude into consciousness and are experienced by most people. Intrusions are referred to as obsessions when they obtain clinical severity. Appraisals were defined as the interpretation or meaning attached to an intrusion. Beliefs were defined as relatively enduring assumptions that occur across situations, and may be specific to OCD or observed across multiple psychopathologies. Appraisals and beliefs are thus

conceptualised as separate types of cognitive phenomena, and appraisals may be derived in part from one's beliefs (OCCWG, 1997).

Six important belief domains were identified and defined by the OCCWG (1997):

*Inflated Responsibility* - the belief that one has pivotal power to cause or prevent aversive events. These events are seen as essential to prevent, and the consequences of not preventing them can be actual or moral.

*Overimportance of Thoughts* - the belief that the mere occurrence of a thought means it is important. The cognitive bias TAF is included in this domain.

*Excessive Concern about the Importance of Controlling one's Thoughts* - the belief that it is both possible and desirable to have complete control over one's intrusive cognitions. This includes beliefs about the importance of hypervigilance to mental events; the efficiency of control; and the moral, psychological and behavioural consequences of not controlling thoughts.

*Overestimation of Threat*- the belief that the probability and severity of harm is high.

*Intolerance of Uncertainty*- beliefs about the need to be certain, that one cannot cope with unpredictable change, and that it is difficult to function in ambiguous situations.

*Perfectionism* – beliefs about needing a perfect solution to every problem and that perfection is not only possible but also necessary, and that severe consequences result when it is not achieved. This belief is not specific to OCD.

An 87-item self-report questionnaire was developed by the OCCWG (2001, 2003) to measure these six domains of OCD-related beliefs, known as the obsessive beliefs questionnaire - 87 (OBQ-87). The six domains measured by the OBQ-87 showed high intercorrelations suggesting that the six domains are not distinct but overlapping. Factor analysis of these six domains revealed a comparable three-factor model consisting of: responsibility and threat estimation, perfectionism and intolerance of uncertainty, and importance and control of thoughts. A 44-item revision of the OBQ-87 was developed, known as the OBQ-44, which assesses these three domains (OCCWG, 2005). The OBQ-44 has shown good internal consistency and criterion related validity in both clinical and non-clinical populations, as have the other versions of the OBQ (OCCWG, 2001, 2003, 2005; Moulding et al., 2011). The OBQ has provided further support for the cognitive theory of OCD, with OC symptom severity

being correlated with OC-related beliefs in clinical and non-clinical populations (e.g., Julien, Connor, Aardema, & Todorov, 2006; OCCWG, 2001, 2003, 2005; Taylor, Abramowitz, & McKay, 2005; Tolin, Woods, & Abramowitz, 2003). Furthermore, experimental manipulation of OC-related beliefs increases OC symptom frequency (e.g., Bouchard et al., 1999; Lopatka & Rachman, 1995). However, there is mixed support for the specificity of these beliefs to OCD, as they also correlate with measures of depression, anxiety and worry (e.g., Anholt et al., 2014; Julien et al., 2006; OCCWG, 2003, 2005; Tolin, Woods, et al., 2003; Tolin, Worhunsky, & Maltby, 2006). Beliefs related to responsibility, control and importance of thoughts appear to be more specific to OCD than tolerance of uncertainty, overestimation of threat, and perfectionism related beliefs (OCCWG, 2003).

The development of cognitive models of OCD has led to advancements in treatments for OCD, namely CBT for OCD. Combining behavioural treatments already known to be effective (e.g., ERP) with cognitive interventions aimed at challenging maladaptive beliefs and appraisals led to the development of CBT for OCD. This treatment involves psycho-education on the cognitive model; identification of faulty appraisals, maladaptive beliefs, neutralisation and avoidance strategies; cognitive restructuring of faulty appraisals; alternative interpretations of intrusions; correcting dysfunctional beliefs; behavioural experimentation and ERP; and relapse prevention (Clark, 2004; Freeston et al., 1996; Rachman, 1997, 1998, 2003). Clinical guidelines have commonly recommended CBT as a first line treatment for OCD (e.g., March, Frances, Khan, & Carpenter, 1997; National Institute for Health and Care Excellence, 2006).

The efficacy of CBT has been demonstrated in the treatment of OCD in a range of treatment formats including individual therapy, group therapy, self-help and online therapy (Haug, Nordgreen, Öst, & Havik, 2012; Jonsson & Hougaard, 2009; Mahoney, Mackenzie, Williams, Smith, & Andrews, 2014; Olatunji, Davis, Powers, & Smits, 2012; Ougrin, 2011; Ponniah, Magiati, & Hollon, 2013).

Overall, contemporary cognitive models of OCD have led to improvements in understanding and treating OCD. However, there has been mixed empirical support for these theories of OCD (for review see, Taylor et al., 2012). For instance, a substantial percentage of individuals diagnosed with OCD do not show high levels of dysfunctional beliefs as measured by the OBQ (Taylor et al., 2006) this suggests that other beliefs may be important in OCD development and maintenance. Also, the beliefs measured by

the OBQ are moderately intercorrelated, suggesting common higher order cognitive-affective structures (e.g., internal working models [IWMs] of the self and others) may be underlying these belief systems (Abramowitz, McKay, & Taylor, 2005; Doron & Kyrios, 2005). Thus, the cognitive-affective structures that underlie OCD-related beliefs are unclear. Research has not consistently demonstrated that OCD-related beliefs are specific to OCD, as some studies have shown no difference between OCD and anxiety disorder populations on these beliefs. The importance and control of thought domain appears to show the most specificity to OCD (Julien, Connor, & Aardema, 2007; Shams & Milosevic, 2015; Tolin et al., 2006). Furthermore, despite the benefits of CBT, it has not been more effective than ERP alone (Abramowitz, Taylor, & McKay, 2005; Julien et al., 2007).

Although some cognitive-behavioural theories have touched on the origins of certain beliefs, it has been a general failure of these theories to account for developmental factors in OCD, such as attachment and parenting (Doron & Kyrios, 2005). To expand current models, it has been suggested that future research combine multiple theories (O'Connor, 2008; Taylor et al., 2012). Thus, the current thesis aims to expand on cognitive-behavioural theories of OCD by combining them with attachment theory, which attempts to explain the development of cognitive-affective structures of the self and others. It makes logical sense to consider attachment theory, as cognitive conceptualisations of OCD explicitly and implicitly implicate beliefs about the self and the others in OCD. For instance, reference to

origins of cognitive-affective structures related to the self, others and the world, may help to broaden our understanding of the aetiology and maintenance of OCD (Bhar & Kyrios, 2000; Doron & Kyrios, 2005; Guidano & Liotti, 1983).

## **2.5 OCD Subtypes**

Although the common features of OCD are emphasised in the DSM-5 diagnostic criteria and in some aetiological models of OCD, it is commonly recognised as a heterogeneous disorder (Calamari et al., 2012; McKay et al., 2004). OCD presentations vary significantly in terms of symptomatology, neurobiology, familial relationships, and treatment response (for review see, Lochner & Stein, 2003). This has lead researchers to split OCD presentations into smaller more homogenous units, called subtypes (Radomsky & Taylor, 2005). The rationale for subtyping is the same as the reason for defining psychiatric conditions in the first instance. That is, it allows for a greater understanding of psychopathology, as specific assessments and treatments can be

developed and researched (Radomsky & Taylor, 2005). Sookman et al. (2005) found that specialised psychological treatments may improve treatment response, as has been the case for individuals with obsessions without overt compulsions. Subtyping of OCD may also help with classification issues in the DSM, as some presentations of OCD are best defined as OCDs and others as anxiety disorders (Storch, Abramowitz, & Goodman, 2008). However, over splitting OCD could complicate diagnosis and treatment with little benefit (Clark, 2005; Radomsky & Taylor, 2005).

There has been much debate in the literature about the most useful system for subtyping OCD (for review see, Calamari et al., 2012; Clark, 2005; Leckman et al., 2010; McKay et al., 2004; Rowsell & Francis, 2015). As previously mentioned, subtypes based on level of insight and the presence of tics are commonly accepted and used in the DSM-5 (APA, 2013; Eichstedt & Arnold, 2001; Leckman et al., 2010). The ICD-10 uses subtypes based on the most prominent symptom: obsessions, compulsions, or mixed presentation (WHO, 1992). Of note, Lee and Kwon (2003) suggest two OCD subtypes of autogenous obsessions (e.g., more ego-dystonic intrusions without a clear trigger) and reactive obsessions (e.g., more realistic intrusions with an identifiable trigger). A recent review found this to be the most valid subtyping system (Rowsell & Francis, 2015). Researchers have also suggested subtypes based on age of onset (Anholt et al., 2014; Taylor, 2011), symptom severity (Hasanpour et al., 2017), and comorbidity (e.g., Fontenelle et al., 2012; Mataix-Cols, Baer, Rauch, & Jenike, 2000; Nestadt et al., 2009). However, the most commonly used approach to investigating OCD subtypes has been based on different OC symptom themes (McKay et al., 2004). One of the best supported models found four dimensions: obsessions and checking, symmetry and ordering, contamination and washing, and hoarding (Leckman et al., 1997). However, these are not discrete themes and individuals diagnosed with OCD often experience symptoms in multiple areas (Akhtar et al., 1975; Mataix-Cols, do Rosario-Campos, & Leckman, 2005; Rowsell & Francis, 2015; Sookman et al., 2005; Taylor, 2005). Therefore, developing a system that could reliably, validly and meaningfully subtype individuals based on OC symptom themes would in reality be very complicated and has not yet been done successfully (Radomsky & Taylor, 2005; Rowsell & Francis, 2015). For example, when classifying someone whose primary symptom was frequently checking the stove knobs to ensure they are symmetrical, clean, and turned off, it would be difficult to determine if they were best classified in the checking, cleaning, or symmetry subtype. Based on this, some researchers have suggested the focus be shifted

from symptom themes to underlying beliefs (e.g., responsibility) (Clark, 2005; Radomsky & Taylor, 2005). However, responsibility beliefs are also likely to be present across a number of varied OCD presentations (Radomsky & Taylor, 2005; Salkovskis, 1985, 1999).

There is also debate in the literature about whether symptom themes or beliefs should be considered categorical or dimensional. Categorical approaches suggest that one either has the subtype or does not, whilst dimensional approaches suggest that subtypes exist along a continuum of severity (McKay et al., 2004; Radomsky & Taylor, 2005). Whilst both approaches can be useful, the dimensional approach appears to better reflect the true nature of OCD as it allows consideration of multiple OC symptoms and beliefs concurrently (Clark, 2005; Taylor, 2005). A dimensional system also better reflects variation in OC phenomena, which appears continuous rather than discrete (Haslam, Williams, Kyrios, McKay, & Taylor, 2005; Olatunji, Williams, Haslam, Abramowitz, & Tolin, 2008). Also, categorical approaches have yielded inconsistent results further supporting a dimensional approach (Rowell & Francis, 2015).

In summary, while CBT approaches have gathered considerable support, a significant proportion of individuals with OCD still record poor response or relapse. This highlights the importance of integrating cognitive-behavioural models with some of the recent findings on the role of attachment and self-processes in models of OCD (Doron & Kyrios, 2005; Doron & Moulding, 2009). Furthermore, consideration of heterogeneity of OCD is important particularly as different subtypes or symptom presentations may be associated with specific vulnerability factors and treatment outcomes (Radomsky & Taylor, 2005; Sookman et al., 2005). Specifically, recent models emphasising the role of attachment processes in development of OC symptoms (e.g., Doron & Kyrios, 2005; Doron, Moulding, et al., 2012; Guidano & Liotti, 1983) may be of particular relevance to OCD presentations characterised by excessive reassurance seeking, due to the interpersonal focus of this symptom. The following sections will discuss in more detail the concept of reassurance seeking, its presentation in OCD and other psychopathologies, and its possible relationship to early attachment experiences.



## Chapter 3: Reassurance Seeking

Excessive reassurance-seeking behaviour is a common symptom of OCD (Abramowitz, Franklin, & Cahill, 2003; Freeston & Ladouceur, 1997; Morillo et al., 2007). Compared to other OC phenomena, reassurance seeking has been under-researched and under-recognised by patients and clinicians; however, interest in this area has spiked in the last two decades (Halldorsson & Salkovskis, 2017; Parrish & Radomsky, 2011; Williams et al., 2011). This chapter focuses specifically on excessive reassurance-seeking behaviour. It begins by introducing the interpersonal context of OCD and the impact of OCD on both patients and their families. Current definitions of reassurance-seeking behaviour in the literature are then discussed. This chapter then moves on to review excessive reassurance seeking in the context of other psychopathologies, especially depression, and how it differs from reassurance seeking in OCD. Finally, it reviews the literature on reassurance-seeking behaviour in the context of OCD, its aetiology and implications for treatment.

### 3.1. OCD and the Interpersonal Context

OCD is typically considered from the perspective of the individual; however, it is becoming increasingly recognised that it can directly and indirectly impact others. The interpersonal context in which OCD occurs is important for fully understanding and treating OCD (Boeding et al., 2013). One way in which the interpersonal context is involved in OCD is through accommodation, which refers to the behaviours others use to alleviate distress or impairment in the individual with OCD. The process of accommodation usually involves family members and significant others and is therefore commonly referred to as family accommodation in the literature (Boeding et al., 2013). Examples of family accommodation include, significant others completing compulsive rituals on behalf of the individual living with OCD (e.g., cleaning or washing for them, checking locks), aiding the individual to avoid triggers (e.g., keeping knives locked away), modifying routines, and providing reassurance (Boeding et al., 2013; Storch et al., 2007). Family accommodation is very common with almost 90% of families accommodating symptoms to some extent (Calvocoressi et al., 1995; Calvocoressi et al., 1999). Significant others who accommodate OC symptoms generally intend to reduce distress or time spent on rituals for the individual (Calvocoressi et al., 1999). However, research has shown that family accommodation is associated with greater symptom severity, poorer interpersonal relationships, and poorer treatment outcomes in

both adults and children living with OCD (Boeding et al., 2013; Storch et al., 2007; Strauss, Hale, & Stobie, 2015). Family accommodation also leads to greater distress and poorer quality of life in family members (Albert et al., 2010; Amir et al., 2000; Cooper, 1996). Similar to the self-perpetuating properties of neutralisation described in the section on cognitive-behavioural models of OCD (see section 2.4.4., page 20), family accommodation prevents opportunities to challenge OCD-related beliefs and is negatively reinforced by reducing short-term distress (Storch et al., 2007; Strauss et al., 2015). One of the most common forms of family accommodation is providing reassurance (Albert et al., 2010; Storch et al., 2007). It is helpful to differentiate providing reassurance, which is a form of accommodation (e.g., a mother assuring a child that their toothbrush is clean); from reassurance seeking, which is a symptom (e.g., a child asking repeatedly if their toothbrush is clean) (Parrish & Radomsky, 2006). This thesis will focus primarily on reassurance-seeking behaviour.

Another way in which the interpersonal context is involved in OCD is when OCD symptoms are focused on relationships, this is known as relationship obsessive-compulsive disorder (ROCD). ROCD may involve doubts or ruminations about one's feelings towards a relationship partner, whether the relationship is "right," and the partner's feelings towards oneself (relationship-centred) (Doron, Derby, Szepsenwol, & Talmor, 2012b). It may also involve preoccupation with perceived flaws in one's partner (partner-focused) (Doron, Derby, Szepsenwol, & Talmor, 2012a). ROCD symptoms can occur with romantic partners, parents, children, mentors and even religious figures (Doron, Derby, & Szepsenwol, 2014). ROCD is associated with interpersonal difficulties, relationship dissatisfaction, depression and anxiety. It may be particularly detrimental to interpersonal functioning, as obsessions directly involve relationships or relationship partners (Doron et al., 2014; Doron, Derby, et al., 2012b). Excessive reassurance seeking is a common compulsive symptom in ROCD, along with making comparisons and monitoring feelings (Doron et al., 2014; Doron, Derby, et al., 2012a; Doron, Derby, et al., 2012b).

Furthermore, individuals with OCD often report greater relationship distress, reduced intimacy, and lower marital satisfaction (Abbey, Clopton, & Humphreys, 2007; Emmelkamp, Dehaan, & Hoogduin, 1990; Riggs, Hiss, & Foa, 1992). OCD is also associated with higher levels of interpersonal distrust, latent aggression, and hostility towards others (Moritz, Kempke, Luyten, Randjbar, & Jelinek, 2011; Moritz, Niemeier, Hottenrott, Schilling, & Spitzer, 2013; Tellawi, Williams, & Chasson, 2016). Thus,

individuals diagnosed with OCD may be particularly vulnerable to impaired interpersonal functioning (Doron, Derby, et al., 2012b). Reassurance-seeking behaviour is a common symptom of OCD that directly involves others, and can therefore increase interpersonal distress both for the reassurance seeker and the reassurer (Halldorsson et al., 2016). Therefore, it is important to understand the factors that contribute to reassurance-seeking behaviour to assist individuals living with OCD and their family and friends who can all be affected by this debilitating disorder (Albert et al., 2010; Amir et al., 2000; Cooper, 1996; Doron et al., 2014; Halldorsson et al., 2016).

### **3.2. Defining Reassurance-Seeking Behaviour**

In order to empirically investigate a psychological phenomenon it is important to have a clear definition of this phenomenon that differentiates it from other phenomena (Smedslund, 2008). Research into excessive reassurance-seeking behaviour has been hampered by variation in definitions and a lack of clarification of key concepts of this behaviour (Halldorsson & Salkovskis, 2017). This section aims to address these issues and clarify the definition of excessive reassurance-seeking behaviour.

Within the context of depression excessive reassurance seeking has been defined as, “the relatively stable tendency to excessively and persistently seek assurances from others that one is lovable and worthy, regardless of whether such assurance has already been provided” (Joiner, Metalsky, Katz, & Beach, 1999, p. 270). This definition highlights several key aspects of excessive reassurance seeking seen across multiple psychopathologies; including its repetitive nature, its stability over time, and the lack of satisfaction obtained by previous reassurance. In the case of excessive reassurance seeking the individual almost always knows the answer prior to asking (Rachman, 2002). The main difference between this definition of excessive reassurance seeking and the ones used in the OCD literature is in the content of the reassurance sought. Within the context of clinically anxious populations (e.g., OCD, GAD and hypochondriasis) excessive reassurance seeking has been defined as, “the repeated solicitation of safety-related information from others about a threatening object, situation or interpersonal characteristic, despite having already received this information” (Parrish & Radomsky, 2010, p. 211). The definition in the depression literature focuses on a need to be reassured that one is lovable and worthy; whereas this definition focuses on a need to be reassured one is safe from threat. The definition used by Parrish and Radomsky (2010) is broader as it includes reassurance about interpersonal safety (e.g., that one is safe from abandonment or rejection), as well as

physical safety (e.g., that one is safe from harmful objects or situations such as fire, violence or disease) (Parrish & Radomsky, 2010).

There is some inconsistency in the literature about whether excessive reassurance-seeking behaviour is best described as a compulsion, neutralising behaviour, support behaviour, or safety behaviour (Halldorsson & Salkovskis, 2017; Salkovskis, 1985; Starcevic et al., 2012). Most experts would agree that it is a strategy used to cope with obsessions and associated distress. However, while some researchers define it as a compulsion that is functionally similar to compulsive checking (Rachman, 2002). Others argue that it is not a compulsion, as it does not directly influence the risk of a feared event but rather the perceived threat estimates (Starcevic et al., 2012). It also has the additional benefit of dispersing responsibility, which other compulsions do not (Kobori et al., 2012). Halldorsson et al. (2016) suggest that there is now significant evidence to support reassurance seeking as a safety-seeking behaviour, as defined by Salkovskis (1991).

Research suggests that reassurance seeking is not problematic in itself, but like most psychological constructs it exists on a continuum. Reassurance seeking at the mild end of the continuum, when used under threat and provided by a trusted individual, can be a helpful and appropriate problem solving strategy. However, it can become problematic when used excessively (Halldorsson et al., 2016; Kobori & Salkovskis, 2013; Neal & Radomsky, 2015; Salkovskis & Kobori, 2015; Shaver, Schachner, & Mikulincer, 2005). Researchers suggest that individuals in non-clinical populations can use reassurance as an effective coping mechanism in times of high uncertainty and threat. However, because of systematic biases present in clinical populations this information is not internalised and trusted, leading to further reassurance seeking and interpersonal difficulties (Kobori & Salkovskis, 2013; Parrish & Radomsky, 2010). This thesis will use the term, excessive reassurance seeking to refer to repetitive and problematic reassurance-seeking behaviour.

By definition reassurance seeking is an interpersonal process, which involves obtaining information from others. However, some researchers have noted that people can reassure themselves and have suggested that reassurance seeking can be both interpersonal and intrapersonal (Halldorsson et al., 2016; Kobori & Salkovskis, 2013; Salkovskis & Kobori, 2015; Starcevic et al., 2012). This thesis will focus on interpersonal reassurance seeking, which involves seeking reassurance externally from a

source other than the self. This includes seeking information from impersonal sources such as the Internet and books.

### **3.3. Reassurance Seeking and Psychopathology**

Reassurance-seeking behaviour is not unique to OCD. It is a common symptom in multiple emotional and psychological difficulties including anxiety disorders, depression and hypochondriasis (Cogle et al., 2012; Parrish & Radomsky, 2010; Rector, Kamkar, Cassin, Ayearst, & Laposa, 2011; Starcevic et al., 2012). Research focused on reassurance-seeking behaviour has primarily been in the depression literature (e.g., Burns, Brown, Plant, Sachs-Ericsson, & Joiner, 2006; Coyne, 1976; Davila, 2001; Evraire, Ludmer, & Dozois, 2014; Joiner & Metalsky, 2001; Joiner et al., 1999; Joiner, Alfano, & Metalsky, 1992; Shaver et al., 2005; Starr & Davila, 2008); although the function of reassurance seeking in hypochondriasis (e.g., Abramowitz, Schwartz, & Whiteside, 2002; Lucock, Morley, White, & Peake, 1997; Salkovskis & Warwick, 1986; Wearden, Perryman, & Ward, 2006), OCD (e.g., Kobori & Salkovskis, 2013; Kobori et al., 2012; Neal & Radomsky, 2015; Parrish & Radomsky, 2006; Parrish & Radomsky, 2010, 2011; Salkovskis & Kobori, 2015; Starcevic et al., 2012) and the anxiety disorders has recently been explored (e.g., Beesdo-Baum et al., 2012; Heerey & Kring, 2007; Woody & Rachman, 1994).

To date the majority of research into excessive reassurance seeking has been in the context of depression. In the depression literature Coyne (1976) was the first to theorise that excessive reassurance seeking could be central to the aetiology of depression. Coyne (1976) proposed that mild dysphoria develops into depression when the individual seeks reassurance to reduce feelings of guilt and low self-worth. Reassurance is often provided, but if the individual doubts its genuineness or attributes it to obligation or pity, then he/she may repeatedly seek reassurance. Repeated reassurance seeking can lead to frustration, alienate others and increase interpersonal rejection. This interpersonal rejection strengthens beliefs about poor self-worth and can lead to an increase in depressive symptoms, creating a vicious cycle of poor self-worth, reassurance seeking, and low mood. This relationship between depression, reassurance seeking and interpersonal rejection has been empirically supported (for review see, Starr & Davila, 2008). Research has suggested that excessive reassurance seeking in romantic relationships may lead to greater interpersonal rejection than in other forms of relationships (Starr & Davila, 2008). In individuals with depression, reassurance seeking is more common following conflict (Shaver et al., 2005).

As research investigating excessive reassurance seeking in depression is more advanced it can be helpful in informing clinicians and researchers about this behaviour in OCD. However, it is important to highlight the unique and shared aspects of excessive reassurance seeking in MDD versus OCD, as these disorders have unique cognitive and behavioural characteristics (Kobori, Sawamiya, Iyo, & Shimizu, 2014; Parrish & Radomsky, 2010). Parrish and Radomsky (2010) compared the content, triggers, function and termination of excessive reassurance seeking by interviewing 15 individuals who met criteria for OCD, 15 who met criteria for MDD, and 20 non-clinical controls. Results indicated that individuals diagnosed with OCD primarily seek reassurance about perceived general threats (e.g., “Is the stove off?” or “Am I safe?”) whilst individuals diagnosed with MDD primarily seek reassurance about perceived social threats (e.g., “Do you care about me?” or “Would you ever leave me?”). This is consistent with the definitions of excessive reassurance seeking in the depression compared to the OCD literature, which were discussed earlier in this chapter. It is also consistent with cognitive theories suggesting the importance of overestimation of threat and responsibility beliefs in OCD (OCCWG, 2005; Rachman, 1997, 1998; Salkovskis, 1985, 1999), versus the importance of abandonment, loss, failure and worthlessness beliefs in MDD (Beck, 1967, 1976; Beck, Rush, Shaw, & Emery, 1979; Coyne, 1976). Individuals with OCD also sought reassurance about perceived social threats and personal performance/competence, but to a lesser extent than perceived general threats. Parrish and Radomsky (Parrish & Radomsky, 2010) suggest that people seek reassurance for a greater variety of reasons than they compulsively check, this may be because reassurance is used when things are impractical or inconvenient to personally check or when others opinions of one’s performance are important. Both individuals with OCD and MDD seek reassurance to reduce anxiety, individuals with MDD also seek reassurance to increase self-esteem and receive affection. In both clinical groups excessive reassurance seeking stopped because of reduced anxiety, interpersonal concerns, or successfully using rational self-talk. Individuals with MDD were also able to stop reassurance seeking following a perceived reduction in social threats but this was not the case in OCD. Interestingly, non-clinical controls were the only individuals who reported stopping reassurance seeking because they believed the feedback (Parrish & Radomsky, 2010). Kobori et al. (2014) also reported differences in reassurance-seeking behaviour between OCD and MDD populations. They reported that individuals

with OCD sought reassurance more intensely, and experienced a greater urge to seek further reassurance if no reassurance was provided, compared to individuals with MDD.

There are also important differences between excessive reassurance seeking in the context of anxiety disorders, hypochondriasis, and OCD. Excessive reassurance seeking in OCD is believed to be ego-dystonic compared to reassurance seeking in hypochondriasis, which is believed to be ego-syntonic and therefore more easily understood by the reassurer (Kobori & Salkovskis, 2013). It has also been suggested that excessive reassurance seeking may be more common in disorders where the threats are delayed (e.g., OCD and hypochondriasis) as opposed to anxiety disorders in which the threat is imminent (e.g., panic disorder and social phobia) (Kobori & Salkovskis, 2013). Reassurance seeking in OCD is believed to be sought with more ceaseless and careful effort than in other disorders, by critically examining the reassurer's non-verbal communication, listening carefully, and clarifying and understanding the reassurance given (Halldorsson & Salkovskis, 2017; Kobori & Salkovskis, 2013; Kobori et al., 2012). This illustrates the importance of investigating the role of reassurance seeking specifically within the context of OCD, as there may be significant differences in the development and maintenance of this behaviour in different disorders.

#### **3.4. Reassurance Seeking in the Context of OCD**

Understanding excessive reassurance-seeking behaviour in the context of OCD is important because it is a common and problematic strategy used by individuals with OCD (Abramowitz et al., 2003; Freeston & Ladouceur, 1997; Morillo et al., 2007). Excessive reassurance seeking perpetuates emotional distress and interpersonal difficulties and maintains OC symptoms (Parrish & Radomsky, 2010; Rachman, 2002; Salkovskis, 1985). Within the context of OCD individuals may seek reassurance about whether they performed a particular obsession-related task (e.g., “Did I turn the stove off?”); whether the task was performed correctly or accurately (e.g., “Did you hear the stove ‘click’ off when I turned the knob?”); for support with rituals (e.g., “Please watch me while I lock the door and make sure I do it right.”); about the meaning of intrusive thoughts (e.g., “Does this image of me stabbing someone, mean I am really a violent person?”); and to check they are not responsible for any potential harm to the self or others (e.g., “I wasn’t the last to leave the house, was I?”) (Halldorsson et al., 2016; Kobori et al., 2012; Salkovskis & Kobori, 2015). The content of reassurance commonly involves uncertainty about decisions, attachment and security of relationships, and perceived general threat and ability to cope (Rector et al., 2011). Reassurance can be

sought directly such as asking about one's safety outright, or indirectly such as tentatively stating that things will be okay and feeling reassured if others do not disagree (Halldorsson & Salkovskis, 2017; Parrish & Radomsky, 2010). Excessive reassurance seeking in OCD is more closely associated with symptoms of checking, doubting, and intrusive thoughts (Kobori & Salkovskis, 2013; Williams et al., 2011).

Excessive reassurance seeking has been implicated as an important mechanism in the development and maintenance of OCD. Salkovskis (Salkovskis, 1985, 1999) mentioned excessive reassurance seeking in his cognitive-behavioural model of OCD. He described it as an attempt to reduce the perception of threat and avert being blamed for harm to the self or others. This last point is important, as it is unique to reassurance seeking, and suggests that reassurance seeking allows one to implicitly diffuse some of the responsibility for the feared event to the individual providing reassurance. This is achieved because the person providing reassurance indirectly takes on some of the responsibility for harm by acknowledging awareness of the threat and directly or indirectly endorsing that no further action is required (Kobori et al., 2012; Salkovskis, 1985).

Rachman (2002) described excessive reassurance seeking as a form of checking by proxy and commented on the similarities between excessive reassurance-seeking and compulsive-checking behaviour. He reported that excessive reassurance seeking is self-perpetuated through the same four mechanisms as compulsive checking; which are a lack of a natural terminus, reduced confidence in memory, inflated responsibility beliefs and inflated likelihood of threat beliefs (Rachman, 2002). Rachman's theory of compulsive checking was described in more detail in an earlier chapter of this thesis on the cognitive-behavioural model of OCD.

Similarly to compulsive checking (Rachman, 2002; Rachman et al., 1976), it is proposed that the provision of reassurance is followed by an initial reduction in anxiety and distress, which negatively reinforces this behaviour. This short-term reduction in anxiety is then followed by a long-term increase in anxiety, future reassurance-seeking behaviour and reinforced maladaptive beliefs related to inflated responsibility and the overestimation of threat (Hallam, 1974; Lucock et al., 1997; Parrish & Radomsky, 2006; Rachman, 1971, 2002; Salkovskis, 1985, 1999; Salkovskis & Kobori, 2015; Salkovskis & Warwick, 1986; Warwick & Salkovskis, 1985). Excessive reassurance seeking is also maintained by focusing attention on intrusions and stimuli related to obsessional content, preventing the disconfirmation of maladaptive beliefs about the



likelihood of the feared event occurring, and an inability to achieve certainty that a feared event will not occur (Kobori et al., 2012; Parrish & Radomsky, 2010; Salkovskis, 1999). This is similar to the processes in compulsive checking and is why some researchers suggest that excessive reassurance seeking and compulsive checking are functionally equivalent (Kobori et al., 2012; Kobori et al., 2014; Parrish & Radomsky, 2006; Parrish & Radomsky, 2010).

Salkovskis and Kobori (2015) found that individuals with OCD reported an initial reduction in anxiety after receiving reassurance, which was followed by a resurgence of anxiety after 20 minutes. This resurgence of anxiety was observed in individuals with OCD and panic disorder but not in a non-clinical control group, suggesting that excessive reassurance seeking is self-perpetuating only in clinically anxious populations. Lucock et al. (1997) observed a similar initial reduction followed by a significant resurgence of anxiety in individuals with high health anxiety, but not in individuals with low to medium levels of health anxiety.

More recently researchers have focused on the differences between excessive reassurance seeking and compulsive checking. The interpersonal aspect inherent to reassurance seeking separates it from other OC symptoms including compulsive checking (Salkovskis & Kobori, 2015). Thus, a factor unique to excessive reassurance seeking is that the responses to one's requests for reassurance can vary significantly. Others may respond to requests for reassurance with a clear response, an ambiguous answer, an indication that providing reassurance is unhelpful, or refusal to respond (Parrish & Radomsky, 2011; Salkovskis & Kobori, 2015). Individuals with OCD may want reassurance provided consistently and according to specific rules (e.g., tone of voice, facial expression, use of specific language) as is the case with other compulsions such as checking, but be less able to achieve this because of the interpersonal aspect (Halldorsson et al., 2016; Kobori et al., 2012; Salkovskis & Kobori, 2015). Research suggests that excessive reassurance seeking is associated with greater symptom severity and overall psychopathology than compulsive checking in OCD (Starcevic et al., 2012).

Excessive reassurance seeking causes distress not only for the individual seeking reassurance but also for the individual providing it. Providing reassurance is associated with greater distress and poorer quality of life in reassurers (Halldorsson et al., 2016; Kobori & Salkovskis, 2013; Salkovskis & Kobori, 2015). Halldorsson et al. (2016) interviewed ten caregivers who frequently provided reassurance to an individual diagnosed with OCD. Without exception caregiver's reported experiencing frustration

associated with excessive requests for reassurance. This frustration was associated with internal conflict between wanting to provide reassurance to alleviate the loved ones, and sometimes their own, distress; to prevent further emotional suffering (e.g., anger); to communicate love and care through assurance; and to allow both parties to move on to the next task. This is despite knowing that doing so has long-term consequences in maintaining OCD. Frustration is also associated with feelings of not knowing what else to do to help a loved one. Some caregiver's reported unsuccessful attempts to substitute reassurance with other responses (e.g., reminding the individual that reassurance is not helpful or trying to distract the individual), whilst others reported being too afraid of the consequences to attempt withholding reassurance (Halldorsson et al., 2016). In an experimental investigation of excessive reassurance-seeking behaviour, more reassurance was sought in the presence of familiar rather than unfamiliar individuals. This effect was strong when reported by reassurers, a trend when self-reported, and non-significant when objectively coded. These findings suggest that familiar others may be more sensitive and more affected by reassurance attempts than relative strangers (Neal & Radomsky, 2015).

Cognitive-behavioural treatments of OCD usually suggest withholding reassurance during ERP, in order to increase tolerance of uncertainty and to prevent neutralisation of the intrusive thought (Abramowitz et al., 2003; Salkovskis & Kobori, 2015). This is based on the theory that reassurance seeking maintains anxiety in the long-term through negative reinforcement and by preventing fear extinction and habituation (Rachman, 2002; Salkovskis, 1985, 1999). OCD sufferers may not have insight into how receiving reassurance can cause a paradoxical increase in anxiety and distress in the long term (Salkovskis & Kobori, 2015). Salkovskis (1999) recommends withholding reassurance during therapy as the provision of reassurance can amplify and reinforce obsessional fears. He suggests that the therapist should help the individual step outside their problems and maintain a more helpful perspective, and to realise that reassurance is maintaining the problem. Abramowitz et al. (2003) suggest that during ERP questions about safety should be answered only once, other requests for reassurance should be approached with compassion and a reminder of how exposures are designed to induce uncertainty. Therefore, excessive reassurance seeking is routinely targeted in exposure response prevention (Clark, 2004; Marks, 1981; Salkovskis, Warwick, & Deale, 2003). Several case studies have demonstrated that withholding reassurance has been a successful treatment approach (Francis, 1988;

Hallam, 1974; Tolin, 2001). Other researchers suggest that rather than withholding reassurance, which causes significant distress for both the patient and the individual withholding reassurance, CBT should aim to shift the individual from reassurance-seeking behaviour to support seeking behaviour. Support seeking behaviour is a non-pathological behaviour and is defined as, “interpersonal behaviour, verbal or non-verbal, that is intended to get (or give someone) encouragement, confidence or assistance to cope with feelings of distress” (Halldorsson & Salkovskis, 2017, p. 2). One psychological strategy for increasing support seeking behaviour is to use the theory A versus theory B approach, which allows therapist and patient to work together to construct, test, and compare the use of reassurance seeking versus support-seeking behaviour (Halldorsson et al., 2016; Salkovskis, 1999). As reassurance seeking occurs in an interpersonal context, it is important for therapists to understand the interpersonal context in which reassurance occurs (Halldorsson & Salkovskis, 2017). CBT programs that address interpersonal functioning in OCD have shown greater long-term effectiveness, (Abramowitz et al., 2013). Awareness and sensitivity to the difficulties faced by a caregiver in withholding reassurance from a loved one should also be used in treatment (Halldorsson et al., 2016).

This thesis endeavours to further our understanding of the developmental and maintenance factors in excessive reassurance seeking within the context of OCD. Given the interpersonal nature of reassurance seeking, one might consider attachment theory when trying to understand this behaviour. This is because attachment theory endeavours to explain how our relationships with others influence our thoughts, feelings and behaviours.

## **Chapter 4: Attachment Theory, OCD and Reassurance Seeking**

In the context of OCD, excessive reassurance seeking is theorised to be maintained by: OC related beliefs (e.g., inflated responsibility, confidence in memory, overestimation of threat), an initial reduction in anxiety following receipt of reassurance, an inability to achieve certainty that a feared event will not occur, inadequate reassurance from others, and long-term anxiety (Kobori et al., 2012; Parrish & Radomsky, 2010; Rachman, 2002; Salkovskis, 1999; Salkovskis & Kobori, 2015). Current theories of excessive reassurance-seeking behaviour in OCD have focused on the maintenance of reassurance seeking rather than developmental factors. Hence, there is a need for investigation of the aetiology of reassurance-seeking behaviour in OCD. This thesis will focus on the role of attachment in this process, as previous research has suggested that attachment processes are important in the development and maintenance of reassurance-seeking behaviour in the context of other psychopathologies (Abela et al., 2005; Evraire et al., 2014; Katz, Petracca, & Rabinowitz, 2009; Shaver et al., 2005; Wearden et al., 2006).

Research has also suggested that attachment theory may provide important insights into the aetiology of OCD (Doron & Kyrios, 2005; Doron, Moulding, et al., 2012; Guidano & Liotti, 1983) and inform additional treatment options for individuals with OCD (Doron & Moulding, 2009; Rezvan et al., 2013). Furthermore, given the interpersonal nature of reassurance-seeking behaviour and the aim of attachment theory to explain the influence of early experiences and childhood development on later interpersonal interactions (Balbernie, 2001; Siegel, 2001; Simpson et al., 2007; Sroufe et al., 1999; Tiwari & Garg, 2015); investigation of the relationship between reassurance seeking and attachment processes in the context of OCD is warranted.

The following chapter provides a brief overview of attachment theory and its relationship to OCD. The association between excessive reassurance seeking and attachment in the context of other psychopathologies is explored, before arguing that this relationship should be examined in the context of OCD.

### **4.1. Attachment Theory**

The basic tenants of attachment theory were first formulated by John Bowlby (Bowlby, 1958, 1969, 1973, 1980, 1988). Drawing on concepts from such fields as evolutionary biology, ethology, cognitive science, control systems theory and psychoanalytic thinking, he attempted to explain the nature of the infant-caregiver bond

(Bretherton, 1992). Numerous researchers have since contributed to attachment theory leading to a complex model of early experiences, interpersonal relationships, and psychopathology (e.g., Ainsworth, Blehar, Waters, & Wall, 1978; Bartholomew, 1990; Cassidy & Shaver, 2008; Colin, 1996; Doron & Kyrios, 2005; Feeney, 1996; Grossmann, Grossmann, & Waters, 2005; Guidano & Liotti, 1983; Main, Kaplan, & Cassidy, 1985; Mikulincer & Shaver, 2003, 2010; Rholes & Simpson, 2004; Schneider, 1991; West & Sheldon-Keller, 1994). However, it was Bowlby who established the foundations of attachment theory.

According to Bowlby (1969) attachment is considered an innate biologically adaptive motivational system that drives the child to seek and maintain proximity to their caregiver, whom Bowlby referred to as the attachment figure, in times of need. An attachment bond is a persistent, caregiver-specific affectional bond that the child forms to an attachment figure who is perceived as older and wiser (Cassidy, 2008). The quality of the attachment bond is determined by the quality of the child's interactions with their attachment figure. That is, the attachment figure's accessibility and responsiveness to the child's needs and signals, and how much the child has learned to rely on the attachment figure as a source of security determines the nature of the attachment bond (Bowlby, 1969).

Whilst attachment bonds are relatively stable, attachment behaviour varies with age and context (Ainsworth & Bell, 1970). Attachment behaviour is organised into an attachment behavioural system, which is goal directed and activated by a need for safety and protection (Bowlby, 1969; Cassidy, 2008). For example, when the infant is distressed, the attachment behavioural system is activated and the infant seeks proximity to the caregiver. When the infant feels safe, the attachment behavioural system is deactivated and the infant moves away from the caregiver to explore the environment knowing that he/she can return to the secure base of the caregiver when scared, tired, or distressed by activating the attachment behavioural system. Attachment behaviours aimed at seeking proximity with the caregiver include crying, smiling, clinging, cuddling, grasping, orientating and crawling toward the attachment figure. These behaviours are not specific to the attachment behavioural system and may also serve other behavioural systems (e.g., the exploration behavioural system or the food-seeking behavioural system) (Bowlby, 1969, 1973, 1980, 1988). The attachment behavioural system can be activated by external cues including the absence of the caregiver and threatening objects; and internal cues including fatigue, illness, and

hunger. The degree of proximity desired varies depending on the severity of these cues and the context (Bowlby, 1969; Cassidy, 2008; Mikulincer & Shaver, 2003).

Bowlby (1969) theorised that cognitions play a crucial role in the attachment behavioural system. Specifically, he described mental representations of the self, the attachment figures, and the environment, which he termed internal working models (IWMs). These IWMs develop during the first year of life and are based on actual experiences with attachment figures. Experiences are influenced by caregiver's behaviour (e.g., availability and responsiveness), individual factors (e.g., temperament and genetics), broader contextual factors (e.g., socio-economic status and context) and the interaction between these factors (Sherman, Rice, & Cassidy, 2015). IWMs are referred to as "working" models because they are constantly appraised and updated based on interactions with attachment figures (Bowlby, 1969). IWMs are used to perceive events, form predictions, and inform future behaviour so as to maximise efficiency in achieving attachment goals (Bowlby, 1973). For example, IWMs are used to decide which attachment behaviours, in which situation, and with which specific attachment figure, will be most effective for achieving the goal of proximity.

IWMs contain information about the responses of attachment figures (working models of others) and representations of one's own efficacy and value (working models of self). These IWMs of "self" and "others" are usually complementary and mutually confirming, which means the way the caregiver treats the child affects how the child views the self (Bowlby, 1973). For example, when the caregiver is sensitive and responsive to the child's attachment signals, secure attachments tend to form. The child develops expectations about the availability and security of the caregiver and in turn the reliability of others. Furthermore, IWMs of the self as lovable and worthy of care tend to develop. In contrast, when a caregiver is unavailable or inconsistent in their responsiveness to the child's attachment signals insecure attachments tend to form. The child loses confidence in the ability of others to provide security and may view the self as unlovable and unworthy of care from others. Thus, IWMs provide a prototype for interpersonal interactions, self worth, and emotional regulation (Bretherton & Munholland, 2008). IWMs build up over time and through repeated interactions with the caregiver. They have a propensity towards stability and new experiences must occur relatively frequently to bring about change in IWMs (Bowlby, 1969, 1973; Bretherton & Munholland, 2008; Main et al., 1985).

Children can be attached to more than one caregiver, these attachment bonds are not equal in strength and are limited in number. It has been proposed that attachment bonds have a hierarchical order with most children having a principle attachment figure, usually a parent (Bowlby, 1969, 1973; Bretherton, 1985; Cassidy, 2008; Colin, 1996; Kobak, Rosenthal, & Serwik, 2005). The hierarchy of attachment figures is influenced by the time spent with each attachment figure, the quality of care provided, the attachment figure's emotional investment in the child and social cues (Colin, 1996). Multiple attachment bonds mean multiple IWMs of caregivers and the self, which can be activated in different contexts (Mikulincer & Shaver, 2003, 2007a).

#### **4.1.1. Adulthood attachment.**

Although research has focused on attachment in infancy and childhood, the attachment behavioural system continues to be active and crucial throughout the lifespan (Ainsworth, 1989; Bowlby, 1969; Magai, 2008). However, as the individual develops so does their attachment behavioural system, and there are a number of important differences between childhood and adulthood attachment behavioural systems. Throughout development, changes occur in the stability and generalisability of IWMs, the number and types of attachment bonds, and the threshold for activating the attachment behavioural system. This thesis is primarily interested in attachment in middle childhood through to adulthood, as this is the population in which OCD most frequently occurs (APA, 2013; Ruscio et al., 2010), and the samples investigated in this thesis consisted of individuals aged 17 years and over.

A central tenant of attachment theory is that adult attachment patterns are a reflection of one's attachment history. According to attachment theorists, early experiences between a child and their attachment figure are internalised in IWMs, which have a tendency to be stable and persist into adulthood. In this way IWMs that take root in childhood are carried forward to adulthood where they continue to influence thinking, emotion, and behaviour (Bowlby, 1969, 1973; Main et al., 1985). Furthermore, IWMs that persist into adulthood can shape parenting behaviour, which shapes the infant's attachment experience, leading to the intergenerational transmission of attachment patterns (Ricks, 1985; Van Ijzendoorn & Bakermans-Kraneburg, 1997).

Early childhood IWMs are believed to be responsive to change if the quality of caregiving changes; however, as the individual experiences a relatively consistent pattern of interaction with the attachment figure IWMs becomes increasingly stable and resistant to change later in life (Ammaniti, Van Ijzendoorn, Speranza, & Tambelli,

2000; Collins & Allard, 2001; Shaver, Collins, & Clark, 1996). In adulthood, IWMs often operate unconsciously and automatically, which also contributes to their resistance to change (Bowlby, 1973; Collins & Allard, 2001). Mikulincer and Shaver (2007a) reviewed research on the stability of attachments in adulthood and found an average test-retest reliability of approximately .56 over timeframes ranging from one week to 25 years. This indicates that there is a moderate degree of stability in adult IWMs. However, it is important to note that there are some concerns in assessing the stability of a construct in this way, as some of the variation in the test-retest reliability score reflects measurement error rather than attachment (Heise, 1969; Mikulincer & Shaver, 2007a). However, there is also room for adaptive accommodation if life circumstances and relationships were to change.

As well as becoming increasingly stable, IWMs become increasingly complex and generalised throughout development. Early in life IWMs are relationship-specific but as they become more stable they also become more generalisable and eventually form part of the individual's personality (Mikulincer & Shaver, 2003, 2007a; Ross & Spinner, 2001; Shaver et al., 1996). Mikulincer and Shaver (2003, 2007a) propose that, in adulthood, individuals have a global chronically accessible IWM, which coexists with less accessible and more relationship-specific IWMs. They suggest that the most typical interaction with an attachment figure is internalised to form the most accessible relationship-specific IWM; then the most typical relationship-specific IWMs are consolidated to form the most chronically accessible IWM. The most chronically accessible IWM shapes interpersonal perception and behaviour in adulthood. Furthermore, IWMs of the self, others and the interpersonal context become increasingly complex in adulthood, as interpersonal knowledge and experience grows, so that they come to include a complex network of beliefs, attitudes, expectations, emotions, goals, views of self worth, views of others, and behavioural strategies (Collins & Allard, 2001).

Overall, whilst most attachment theorists agree that the stability and generalisability of IWMs increases throughout development, research in this area has been inconsistent and implies a more complex process. In several longitudinal studies investigating attachment throughout the lifespan, early attachment experiences have been associated with multiple outcome measures in adulthood; e.g., one's self-reliance, emotional regulation, social competence, and psychopathology. However, prediction of these outcome measures improves significantly once additional factors are also



considered; e.g., parental sensitivity, parental divorce, early environment, experiences with siblings, and current support and challenges (Grossmann, Grossmann, & Kindler, 2005; Sroufe, 2005; Sroufe, Egeland, Carlson, & Collins, 2005). Therefore, the developmental trajectory of attachment patterns from infancy to adulthood is not well understood and appears to be a non-linear, complex process, with multiple determinants (Fraley, 2002; Grossmann, Grossmann, & Kindler, 2005; Mikulincer & Shaver, 2007a; Sroufe, 2005; Sroufe et al., 2005).

Another key difference between adulthood and childhood attachment is with the number and type of attachment bonds. In infancy parents are often the only attachment figures, but, as the child develops other family members, friends, romantic partners, teachers, therapists, and even institutions can become attachment figures (Antonucci, Akiyama, & Takahashi, 2004; Mikulincer & Shaver, 2003). According to Hazan and Shaver (1987, 1990, 1994), romantic love is an attachment process, whereby the affectional bonds formed between adult romantic partners share similarities to the affectional bonds formed between infants and caregivers. The attachment pattern between romantic partners is believed to reflect their attachment history, as a result of stable IWMs. Despite similarities, romantic love differs from infant-caregiver attachment bonds because it usually works reciprocally, as each partner moves between providing and receiving care (Hazan & Shaver, 1987). Romantic love is believed to be a combination of the attachment, caregiving and mating behavioural systems (Shaver, Hazan, & Bradshaw, 1988). Hazan and Shaver (1987) research has led to the development of multiple measures of attachment in adulthood, which focus on attachment patterns in romantic or other close personal relationships (Brennan et al., 1998; Crowell, Fraley, & Shaver, 2008; Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010).

Furthermore in adulthood, the activation threshold of the attachment behavioural system is generally higher than in children. This is because most adults have developed a sense of autonomy, and have coping and problem solving strategies in place; e.g., talking about problems, seeking the meaning of stressful events, and other coping strategies. Adults may also have reasons not to activate their attachment system compared to children, e.g., social norms and other priorities (Mikulincer & Shaver, 2007a; West & Sheldon-Keller, 1994). In adulthood, threat may not lead to physical proximity seeking behaviour but instead to activation of IWMs of attachment figures who have provided protection and support in the past. These mental representations of

attachment figures provide a sense of safety and care, which helps the person to successfully deal with threat knowing that others support them. These IWMs become symbolic sources of proximity and can be activated in time of need (Dewitte, De Houwer, Buysse, & Koster, 2008; Mikulincer, Gillath, & Shaver, 2002; Mikulincer & Shaver, 2003, 2007a). Furthermore, activation of the attachment behavioural system could also lead to activation of security-based self-representations, which are IWMs of the self developed through interactions with responsive and available caregivers. Security-based self-representations provide a source of comfort and felt security and allow the individual to mobilise caregiving qualities within themselves (Mikulincer & Shaver, 2004). In adulthood, physical proximity seeking may still occur in situations of severe distress when other coping strategies are insufficient (Mikulincer & Shaver, 2007a; West & Sheldon-Keller, 1994).

#### **4.1.2. Individual differences in attachment.**

According to attachment theory the majority of infants become attached, but the quality of their attachment bonds varies depending on the quality of the interactions the infant has had with their primary caregiver (Weinfield, Sroufe, Egeland, & Carlson, 2008). Thus, individual differences in attachment styles result from variation in the accessibility and responsiveness of the attachment figure, which affects the quality of the attachment bond and associated IWMs. Attachment styles (also called attachment patterns or categories) are the patterns of attachment behaviour most commonly used by the individual and reflect their most chronically accessible IWM (Mikulincer & Shaver, 2003). Whilst there are multiple models of classifying attachment styles, most researchers agree that all attachment styles can be divided into two broad categories of secure and insecure attachment. This is based on whether or not the infant perceives the primary attachment figure as a secure base from which to explore the world (Ainsworth et al., 1978; Weinfield et al., 2008).

Ainsworth and colleagues were the first to described individual differences in attachment behaviour in infants (Ainsworth et al., 1978). They developed a research tool known as the “Strange Situation” which investigated attachment and exploratory behaviours in a series of eight episodes including separation and reunion with the attachment figure and the introduction and absence of a pleasant stranger. The Strange Situation increases stress as the child is separated from their attachment figure in an unfamiliar environment activating attachment behaviour, which is usually deactivated by the presence of the attachment figure but not the stranger (Ainsworth & Bell, 1970;

Ainsworth & Wittig, 1969; Ainsworth et al., 1978). Three styles of attachment were described: secure, insecure-avoidant and insecure-ambivalent (Ainsworth et al., 1978). These classifications reflect differences in how the individual organises and maintains attachment behaviour with respect to a particular attachment figure, and how well the attachment system tracks its goal of felt security across time and context. Infants categorised as secure were able to use the caregiver as a secure base and sought proximity to their caregivers following separation; they tended to settle and return to exploration. Infants categorized as insecure-avoidant withdrew and avoided their caregivers. Whilst infants categorized as insecure-ambivalent sought proximity but were unable to be comforted and showed anger and resistance to their caregivers. Differences in reunion responses were associated with the sensitivity and responsiveness of the caregiver to the infant's signals and communication (Ainsworth et al., 1978).

A group of infants were recognised as exhibiting an insecure style of attachment that differed from the three categories described by Ainsworth et al. (1978). They were later categorised as insecure-disorganised, and demonstrated confused reunion behaviour with the caregiver. For example, simultaneously displaying contradictory behavioural patterns (e.g., approaching with head averted), incomplete movements, and undirected facial expressions (Lyons-Ruth & Jacobvitz, 2008; Main et al., 1985; Main & Solomon, 1986).

In adulthood, a three-stage model of attachment system activation and dynamics has been proposed (Mikulincer & Shaver, 2003, 2007a). The first stage involves detecting and appraising subjective threats, which may activate the attachment behavioural system. The second stage involves monitoring the attachment figures availability and responsiveness. The third stage involves the use of secondary attachment strategies when the attachment figure is perceived as unavailable or unresponsive. The primary attachment strategy of the attachment behavioural systems is real or symbolic proximity seeking for protection and security. When the primary attachment strategy is successful the individual learns that proximity seeking is a reliable and effective emotional regulation strategy. However, when the primary attachment strategy fails, and this strategy begins to increase distress and frustration because attachment needs are not satisfied, the individual may use a secondary attachment strategy. Research has identified two main secondary attachment strategies: the hyperactivation or deactivation of the attachment behavioural system (Main, 1990; Mikulincer & Shaver, 2003, 2007a). Hyperactivation is a protest response to unmet

attachment needs, the individual intensifies their attachment seeking behaviour to increase the chances of the attachment figure providing security. On the other hand, deactivation is an escape reaction to unmet attachment needs, the individual abandons attachment behaviour and attempts to deal with threats alone. These strategies have a variety of psychological and interpersonal costs including relationship difficulties, trouble regulating emotions, poor self-esteem, and psychopathology (Mikulincer & Shaver, 2003, 2007a).

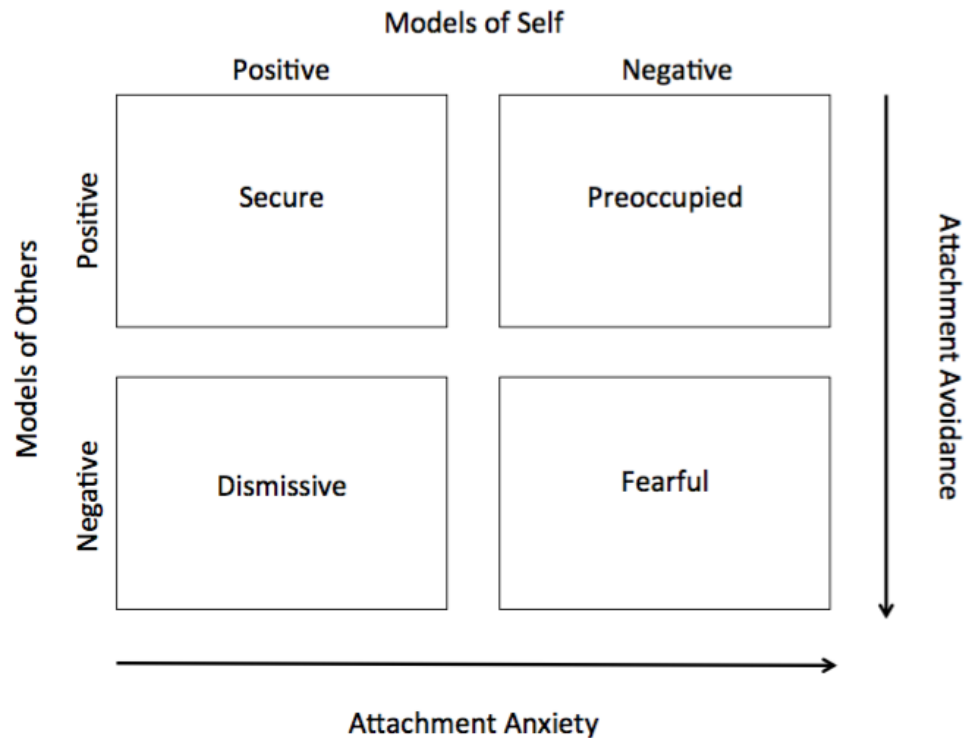
These secondary attachment strategies coincide with the two dimensions of attachment underlying most models of attachment: attachment anxiety and attachment avoidance (Brennan et al., 1998; Levy & Davis, 1988). An individual's position on the attachment anxiety dimension indicates the degree to which the individual uses hyperactivating behaviours, engages in strategies aimed at increasing intimacy, makes insistent attempts to elicit care and love from others, worries that others will not be available in times of need, and fears abandonment (Brennan et al., 1998; Mikulincer & Shaver, 2003, 2007a). An individual's position on the attachment avoidance dimension indicates the degree to which the individual uses deactivating attachment behaviours, denies attachment needs, strives for independence and emotional distance from others, suppresses attachment related thoughts and behaviours, and mistrusts others (Brennan et al., 1998; Mikulincer & Shaver, 2003, 2007a).

These two attachment dimensions, attachment anxiety and attachment avoidance, can be viewed as creating a two-dimensional space in which four categories of attachment styles are defined (Brennan et al., 1998). These four attachment styles also overlap with patterns in dichotomised IWMs of self and other (Bartholomew, 1990), as illustrated in figure one. In the top left corner is the secure style of attachment, a region of low attachment anxiety and low attachment avoidance. Securely attached individuals have a positive IWM of the self and others, and see themselves as worthy of support and love and others as trustworthy and reliable. These individuals rely on the primary attachment strategy in times of need, are comfortable with closeness and autonomy, report longer lasting relationships, and greater self-confidence (Bartholomew, 1990; Brennan et al., 1998; Cassidy & Kobak, 1988; Feeney & Noller, 1990; Mikulincer & Shaver, 2003, 2007a). In the top left corner is the preoccupied style of attachment, a region of high attachment anxiety and low attachment avoidance. Individuals with a preoccupied attachment style have negative IWMs of the self and positive IWMs of others, they view the self as unworthy of love and support whilst

idealising others. These individuals rely on hyperactivating attachment strategies in time of need, usually have low self-esteem, are preoccupied with relationships, clingy, and need reassurance. This attachment style is believed to be associated with inconsistent caregiving, when the individual is rewarded for persistent and energetic bids for proximity (Bartholomew, 1990; Brennan et al., 1998; Feeney & Noller, 1990; Mikulincer & Shaver, 2003, 2007a). The preoccupied attachment style is thought to correspond with the insecure-ambivalent style described by Ainsworth et al. (1978).

The bottom left corner is the dismissive style of attachment, and is characterised by low attachment anxiety and high attachment avoidance. Individuals who are dismissive of their attachment needs have a positive view of the self and a negative view of others; they are compulsively self-reliant viewing others as untrustworthy and dangerous. This style of attachment is characterised by deactivating attachment strategies, avoidance of relationships, and inhibiting emotional expression. The dismissive attachment style is associated with caregivers who are consistently inattentive, demand self-reliance, and punish proximity seeking behaviours (Bartholomew, 1990; Brennan et al., 1998; Cassidy & Kobak, 1988; Feeney & Noller, 1990; Mikulincer & Shaver, 2003, 2007a). The bottom right corner represents the fearful style of attachment and is characterised by high attachment anxiety and high attachment avoidance. Individuals who are fearful of attachment have a negative view of self and others, viewing the self as needy and unworthy, and others as rejecting and unreliable. These individuals show a combination of unusual fluctuations between hyperactivating and deactivating attachment strategies, paralysed inaction, and withdrawal. They are more likely to be socially avoidant, have a trauma history, and poor mental health. Fearful attachment results when the primary and secondary attachment strategies fail and the individual is unable to achieve proximity or avoidance, parental maltreatment or loss is common in this cohort (Bartholomew, 1990; Brennan et al., 1998; Cassidy & Kobak, 1988; Lyons-Ruth & Jacobvitz, 2008; Mikulincer & Shaver, 2003, 2007a). The dismissive and fearful styles of attachment are thought to correspond with the insecure-avoidant style described by Ainsworth et al. (1978). The fearful style of attachment is also conceptually similar to the insecure-disorganised attachment style described earlier in this chapter (Bartholomew, 1990; Bretherton, 1985; Main & Solomon, 1986). Preoccupied, dismissive, and fearful styles of attachment all fall under the umbrella term of insecure attachment styles. People do not fit perfectly into these categories but can shift between attachment styles in different

relationships and contexts; however, there tends to be one predominant style (Bartholomew, 1990; Bartholomew & Horowitz, 1991).



*Figure 1.* A diagram of the four attachment categories represented in the two dimensional space created by attachment anxiety and attachment avoidance (Brennan et al., 1998), and the intersection of dichotomised IWMs of the self and others (Bartholomew, 1990).

Following Hazan and Shaver's (1987) proposal that attachment styles in adult romantic relationships can be determined by self-report, multiple measures appeared in the literature creating confusion about which measure to use and under which circumstances (Brennan et al., 1998; Crowell et al., 2008). Brennan et al. (1998) conducted a review and factor analysis of many previously developed self-report items to create a standard self-report questionnaire of attachment, called the Experience of Close Relationships Questionnaire (ECR). The ECR consists of two scales measuring attachment anxiety and attachment avoidance. It can also be used to predict one's primary attachment orientation using the four categories described above (Brennan et al., 1998). A number of issues with self-report measures of attachment have been raised

(for review see, Crowell et al., 2008; Mikulincer & Shaver, 2007a; Ravitz et al., 2010). One concern is that individuals may be unable to accurately report on their own attachment processes, as they are often unconscious and automatic. Defence mechanisms such as denial and minimisation can also influence accurate reporting (Crowell et al., 2008; Mikulincer & Shaver, 2007a; Ravitz et al., 2010). However, in adulthood individuals often have significant experience in close relationships and may have received feedback from others about their behaviour in relationships. Also, unconscious and conscious processes often operate in unison and questions can be designed to measure the kind of conscious beliefs someone with an unconscious defence mechanism would have (Crowell et al., 2008; Mikulincer & Shaver, 2007a).

As previously noted, most individuals have multiple IWMs and attachment styles based on diverse experiences with different attachment figures. More specifically, most individuals have multiple relationship-specific IWMs and a global chronically accessible IWM (Mikulincer & Shaver, 2003). Thus, attachment patterns are not static but change across and within, time and relationships (Bartholomew & Horowitz, 1991; Cozzarelli, Hoekstra, & Bylsma, 2000). Whilst people most frequently revert to their global chronically accessible IWM, at any given time one's perceptions and expectations are likely to be influenced by the currently activated IWM rather than their global IWM (Baldwin, Keelan, Fehr, Enns, & Koh-Rangarajoo, 1996; Dewitte & De Houwer, 2011). The currently activated IWM is thought to prime congruent memories and associated IWMs and inhibit unrelated cognitions (Mikulincer & Shaver, 2003). Therefore, it is recommended that researchers measure both specific and global attachment styles. Global attachment style can be measured using self-report measures (e.g., ECR), and relationship-specific attachment styles can be activated using priming (Dewitte & De Houwer, 2011).

Attachment researchers have endeavoured to prime different attachment styles in experimental research for decades (Sakaluk, 2014). Attachment priming can be either subliminal (e.g., presenting attachment related words or pictures to participants outside of conscious awareness) or supraliminal (e.g., asking participants to recall attachment related experiences). Researchers have demonstrated that well-validated priming techniques that activate memories of secure attachment cause individuals to perceive others in more positive and supportive ways (Bartz & Lydon, 2004; Mikulincer & Shaver, 2001; Mikulincer, Shaver, Gillath, & Nitzberg, 2005; Saribay & Andersen, 2007). However, attachment priming assumes that multiple attachment styles are readily

available for most people and this is not always the case. In cases where the attachment style being primed is not readily available, participants are commonly excluded from the final analysis (Sakaluk, 2014).

#### **4.1.3. Attachment and psychopathology.**

Attachment insecurities (e.g., attachment anxiety and attachment avoidance) are expected to increase an individual's vulnerability to psychopathology and interpersonal difficulties (Bowlby, 1973, 1980; Davila, Ramsay, Stroud, & Steinberg, 2005; DeKlyen & Greenberg, 2008; Egeland & Carlson, 2004; Hankin, Kassel, & Abela, 2005; Mikulincer & Shaver, 2007a, 2012; Sroufe et al., 1999; Sroufe, 1997). The relationship between early attachment experiences and psychopathology is believed to be a complex one, mediated by several factors including IWMs, emotional regulation, and interpersonal functioning (Davila et al., 2005; Lee & Hankin, 2009; Malik, Wells, & Wittkowski, 2015; Mikulincer & Shaver, 2007a, 2008, 2012; Sroufe et al., 1999). As previously mentioned, early attachment experiences are internalised and stored in IWMs, which influence an individual's self-perceptions and expectations of others. Attachment insecurities are associated with negative IWMs of the self and/or others, leading to beliefs and appraisals associated with poor self-worth and views of others as unreliable and untrustworthy (Bartholomew, 1990; Bretherton & Munholland, 2008; Pietromonaco & Barrett, 2000). IWMs are believed to account for a number of dysfunctional thoughts and beliefs, which are key factors in cognitive models of psychopathology (Beck, 1976; Beck, 1987; Ellis, 1962).

The attachment behavioural system is activated following appraisals of threat and danger. Early experiences of activating the attachment behavioural system to alleviate distress are internalised in IWMs and shape the way one regulates their emotions in adulthood (Cassidy, 1994; Dewitte, De Houwer, Goubert, & Buysse, 2010; Mikulincer & Shaver, 2008, 2012). Individuals who have high attachment anxiety are more likely to use maximising strategies to regulate their emotions, amplifying and exaggerating distress. On the other hand, individuals with high attachment avoidance are more likely to use minimising strategies, suppressing and denying distress (Brown & Wright, 2003; Cole-Detke & Kobak, 1996; Mikulincer & Shaver, 2008; Sroufe et al., 1999). Maximising and minimising emotions are maladaptive forms of emotion regulation and can increase vulnerability to psychopathology (Esbjorn, Bender, Reinholdt-Dunne, Munck, & Ollendick, 2012; Mikulincer & Shaver, 2008). Attachment insecurities also interfere with the activation of other behavioural systems (e.g., the



exploratory behavioural system), which interferes with the development of interpersonal skills (Mikulincer & Shaver, 2012). Attachment anxiety is associated with an emotional and clingy interpersonal style, whilst attachment avoidance is associated with a cold and sceptical style (Mikulincer & Shaver, 2007a; Rholes, Simpson, & Stevens, 1997). Overall, while, attachment anxiety is associated with greater interpersonal difficulties (Brown & Wright, 2003), both dimensions are associated with poor social skills, loneliness, and poor relationship satisfaction, which can increase vulnerability to psychopathology (Ditommaso, Brannen-McNulty, Ross, & Burgess, 2003; Larose & Bernier, 2001; Mikulincer & Shaver, 2012; Rholes et al., 1997; Sroufe, 2005).

If attachment insecurity is considered a risk factor for psychopathology then attachment security can be considered a protective factor against it (Bowlby, 1973; Dallaire & Weinraub, 2007; DeKlyen & Greenberg, 2008; Mikulincer & Shaver, 2012). Interactions with available and supportive attachment figures are believed to create positive IWMs of the self and others, leading to increased self-esteem and trust in others (Feeney & Noller, 1990). Securely attached individuals learn that proximity seeking is a valid form of emotional regulation and are more likely to seek support, and express and explore emotions (Cassidy, 1994; Mikulincer & Shaver, 2008). Furthermore, secure individuals are more likely to process interpersonal information accurately, openly, and positively (Dykas & Cassidy, 2011). These processes are believed to be adaptive and protect individuals from developing psychopathology (DeKlyen & Greenberg, 2008; Mikulincer & Shaver, 2012).

In summary, attachment insecurities are more common in clinical populations than non-clinical populations, illustrating that insecure attachment styles are a vulnerability factor to later psychopathology (Brown & Wright, 2003). Attachment insecurities are not necessary or sufficient to cause psychopathology and only influence the likelihood of its development (Davila et al., 2005; DeKlyen & Greenberg, 2008). Research has found that attachment insecurities are associated with depression (e.g., Cantazaro & Wei, 2010; Malik et al., 2015), anxiety (e.g., Esbjorn et al., 2012), OCD (e.g., Doron, Moulding, et al., 2012) and other psychopathologies. The next chapter will look more specifically at attachment processes in the development and maintenance of OCD.

#### **4.2. Attachment and OCD**

Multiple aetiological theories of OCD have been developed, as outlined in the previous section on theories of OCD (e.g., Cassin & Rector, 2012; Clark, 2004; Clark &

Purdon, 1993; Clark & Purdon, 1995; Doron & Kyrios, 2005; Greisberg & McKay, 2003; Guidano & Liotti, 1983; Kempke & Luyten, 2007; Mowrer, 1939; Mowrer, 1960; OCCWG, 1997, 2001, 2003, 2005; Purdon & Clark, 1993; Purdon & Clark, 1994; Purdon & Clark, 1999; Rachman, 1997, 1998, 2002, 2003, 2004; Radomsky & Rachman, 2004; Salkovskis, 1985, 1989, 1999). Presently, cognitive-behavioural theories of OCD have been the most well researched and have led to the most effective treatment outcomes (Clark, 2004; Menzies & de Silva, 2003). However, there are some limitations to the cognitive-behavioural approach, including that developmental factors are rarely considered in these models. Researchers have suggested that combining multiple theories may create a fuller understanding of the development and maintenance of OCD (for review see, Taylor et al., 2012). Combining attachment theory with cognitive-behavioural theories of OCD makes sense when one considers the central role of IWMs (also called schemas or cognitive-affective structures) in both of these theories.

Attachment theory proposes that vulnerability to psychopathology develops from insecure attachment experiences. These experiences lead to the development of maladaptive or disorganised IWMs of the self and others, which shape one's interpretations and expectations of the world (Bowlby, 1973, 1980; Davila et al., 2005; Egeland & Carlson, 2004; Mikulincer & Shaver, 2007a, 2012). Maladaptive schemas and beliefs are also the core feature of cognitive models of psychopathology (Beck, 1976; Guidano & Liotti, 1983; Young, 1999). The OCCWG (1997) highlighted six maladaptive belief domains believed to be central to OCD development and maintenance, which are outlined in the previous section on theories of OCD. These six belief domains are highly correlated with each other (OCCWG, 2001, 2003), suggesting that they may be produced by a higher order IWM or other cognitive structure, common in individuals who meet criteria for OCD (Doron & Kyrios, 2005).

Furthermore, cognitive-behavioural theories of OCD have explicitly and implicitly implicated IWMs of the self and others in OCD aetiology from the beginning. For instance, Rachman's cognitive model of obsessions (1997) proposes that intrusive thoughts perceived as ego-dystonic are more likely to escalate into obsessions. This is because these intrusions are perceived as inconsistent with one's self-view and are therefore threatening to one's self-worth (Purdon & Clark, 1999; Rowa & Purdon, 2003; Rowa, Purdon, Summerfeldt, & Antony, 2005). That is, when the specific content

of the intrusive thought is inconsistent with the individuals self-view it is perceived as important and will increase in frequency (Rachman, 1997).

Moreover, Salkovskis (1985, 1989, 1999) proposed that intrusive thoughts escalate to obsessions due to an inflated sense of responsibility; this involves views of the self as being solely responsible for harm suggesting the involvement of particular IWMs of the self and the world. Sookman, Pinard, and Beauchemin (1994) suggest that inflated responsibility beliefs may result from immature cognitive structures; e.g., maintaining egocentric views.

A more elaborated model of the role of attachment in the development of OC symptoms was proposed by Guidano and Liotti (1983; Guidano, 1987, 1991), who theorised that a “double-faced” attachment could lead to the development of OC patterns. This style of attachment results from at least one prominent attachment figure whose behaviour has two opposite interpretations simultaneously. That is, behaviour that can be interpreted as showing love and care, as well as detachment and hostility. The attachment figures involvement is mostly around moral rules, and lacks physical comfort and fun. Attachment figures may appear strict, orderly, and inflexible about rules (Guidano & Liotti, 1983). For example, a parent who frequently communicates moral and social codes verbally, but does not show emotional or nonverbal support for what has been said. Another example is a parent who overindulges the child but then demands responsibility. This provides the potential for the child to view this experience as both a display of caring and indifference, which can lead to the simultaneous interpretations of “he loves me” and “he doesn’t love me.” The relationship provides evidence for both opposing views. This style of attachment may lead to two opposing IWMs of the self and the world, seeing the self as simultaneously lovable and unlovable, obedient and rebellious, or moral and immoral (Guidano & Liotti, 1983).

The individual may then strive for a unified sense of self, as being torn between two opposing aspects of self can be distressing and may lead to uncertainty about self-worth. The individual may feel they need to monitor themselves and the world around them to see which is the true representation and the correct way to behave. The individual may feel that one side of their IWM of the self and the world is right and the other wrong, rather than considering that both sides have aspects of right and wrong and that the world is mainly shades of grey. Therefore, this type of IWM may lead to a need for certainty, undeniable evidence of which of the two sides of self is the true self. It may also lead to perfectionism, the need to always act in accordance with the side of the

self-perceived to be right and reject the wrong side (Guidano & Liotti, 1983). In this theory, in the presence of self-ambivalent beliefs ego-dystonic intrusions are more likely to escalate into obsessions because they are perceived as threats to the moral self. Compulsions remain a way of resolving self-ambivalence and identifying oneself as the right or moral self. Guidano and Liotti (1983) mention that interpersonal difficulties and misunderstandings are a core feature of OCD but do not expand of this idea choosing instead to focus on cognitions. Guidano and Liotti (1983) report that this type of attachment was found in the majority but not all individuals diagnosed with OCD. Also, not all individuals with this style of attachment will develop OCD. This is only one of the ways that OCD beliefs could develop.

In support of Guidano and Liotti's (1983) theory, empirical evidence has demonstrated that beliefs about perfectionism and an intolerance of uncertainty are associated with OC phenomena (Frost & Steketee, 1997; OCCWG, 1997; Reuther et al., 2013; Tolin, Abramowitz, Brigidi, & Foa, 2003). Research has also shown that low self-esteem and low self-worth are associated with OCD (Ehnholt, Salkovskis, & Rimes, 1999; Husain, Chaudhry, Raza-Ur-Rehman, & Ahmed, 2014). Research by Bhar and Kyrios (2007) has shown that self-ambivalence is associated with OCD phenomena and OCD-related beliefs, while controlling for self-esteem, depression, and anxiety. Furthermore, participants diagnosed with OCD reported significantly more self-ambivalence than non-clinical controls, but not anxious controls, suggesting that self-ambivalence may be relevant but not specific to OCD. Self-ambivalence could be specific to OCD when combined with additional variables; e.g., moral self-worth. Ahern, Kyrios, and Moulding (2015) found that self-ambivalence moderated the relationship between moral self-worth and OC symptoms, indicating that individuals who view morality as an important part of their self-worth but feel ambivalent about being able to uphold their moral code are more likely to experience OC symptoms. Experimental research has also shown that neutralizing increases self-worth in the short-term, supporting Guidano and Liotti's (1983) proposal that neutralizing aims to provide certainty that the right side of the self is the true self (Ahern, Kyrios, & Meyer, 2015).

More recently, by combining cognitive, attachment, self-view and world-view research, Doron and Kyrios (2005) proposed a theory of underlying cognitive-affective vulnerability structures in the development and maintenance of OCD. According to this theory, particular attachment experiences can lead to the development of certain IWMs of the self and the world, which can lead to OCD-related beliefs, and increase one's

likelihood of experiencing OCD symptoms. Based on theories of the self as a multidimensional, hierarchical structure influenced by the individual's current context (Harter, 1982; Harter, 1996; Markus & Kunda, 1986). Doron and Kyrios (2005) propose that a particular self structure comprising limited domains, that are sensitive, would be more vulnerable to developing obsessions. Sensitive self-domains are areas of self (e.g., morality, job performance, social functioning, physical appearance) in which there is a discrepancy between the perceived importance of the domain and one's perceived competence in this area. Individuals with this limited sensitive self-view are thought to be more likely to interpret intrusions as endangering their self-worth, increasing anxiety and distress, and increasing the likelihood of the intrusion escalating into an obsession.

Doron and Kyrios (2005) proposed that this self-view coupled with a view of the world as threatening but controllable increase one's vulnerability to OC phenomena. Early attachment experiences relate to an individual's sense of security and support in the world (Ainsworth et al., 1978; Bowlby, 1969, 1973, 1980). Therefore, an insecure attachment style may lead to IWMs of the world as unsafe and threatening, leading to beliefs that exaggerate the likelihood of aversive events and their severity (i.e., the overestimation of threat) which are common beliefs in OCD (Doron & Kyrios, 2005; OCCWG, 1997). Drawing on research by Janoff-Bulman (1989, 1991), Doron and Kyrios (2005) propose that world-views of control, that one's actions will determine what happens to them in the world, will be more threatened by intrusions if threats are perceived as preventable. That is, individuals who use overt compulsions and fear contamination or accidents. Comparatively, those with worldviews of justice, that morality and being a good person determine what happens to them in the world, will be threatened by ego-dystonic intrusions. That is, individuals who use covert compulsions and experience intrusions related to aggressive, sexual, or immoral content. The view of the world as threatening may lead to vigilance towards perceived threats (e.g., intrusive thoughts) and a need to control these threats (Doron & Kyrios, 2005).

More generally, Doron, Moulding, Kyrios, Nedeljkovic, and Mikulincer (2009) found that attachment anxiety and avoidance predicted OCD-related beliefs and symptoms in a non-clinical population consisting of 446 students. Using structural equation modelling, this study found that the relationship between attachment insecurities and OCD symptoms was fully mediated by OCD-related beliefs, whilst depression was controlled for. Attachment anxiety was found to have a somewhat larger effect on OCD-related beliefs. Furthermore, Doron, Moulding, et al. (2012) investigated

these associations in a clinical population, investigating individuals with a primary diagnosis of OCD, individuals diagnosed with an Anxiety Disorder, and non-clinical controls. The results showed significantly higher levels of attachment anxiety, but not attachment avoidance, in the OCD group compared to the other two groups. High attachment anxiety could potentially explain the excessive motivation and need to act, observed in individuals diagnosed with OCD (Doron, Moulding, et al., 2012). For example, when an intrusive thought that is perceived as threatening to one's moral self, occurs in an individual with sensitivity in the moral domain, the threat activates that attachment system. In someone with high attachment anxiety, this leads to hyperactivation of the attachment system, which results in increased proximity seeking behaviours including reassurance seeking. OCD-related beliefs did not significantly differ between the two clinical populations, and it was only attachment anxiety that uniquely differentiated between individual diagnosed with OCD and an Anxiety Disorder (Doron, Moulding, et al., 2012). Anxiously attached people may have difficulty finding internal and external sources of support; thus, negative IWMs increase the likelihood of maladaptive beliefs about the self, others and world (Doron, Moulding, et al., 2012).

The main focus of broader developmental models of OCD (e.g., Doron & Kyrios, 2005; Guidano & Liotti, 1983) has been on the role of IWMs, shaped by early attachment experiences, in the development of OCD. However, the relationship between attachment and OCD is likely to be a complex one mediated by IWMs, emotional regulation, and interpersonal functioning (Davila et al., 2005; Lee & Hankin, 2009; Malik et al., 2015; Mikulincer & Shaver, 2007a, 2008, 2012; Sroufe et al., 1999).

Attachment relationships provide a context in which one can develop the ability to acknowledge, express, and cope with a range of emotions, this ability is known as emotional regulation (Davila et al., 2005; Mikulincer & Shaver, 2007a, 2008, 2012). Individuals with a secure style of attachment are thought to express, evaluate and modify their emotions effectively. They are more likely to use adaptive coping strategies including self-soothing, problem solving, planning, cognitive reappraisal and support from others. Individuals with high attachment avoidance tend to deny or suppress their emotions. While individuals with high attachment anxiety tend to exaggerate and prolong their emotions to increase support from others. They may lack the ability to regulate their emotions and keep them in line with personal and social interests (Davila et al., 2005; Mikulincer & Shaver, 2007a). This can result in extreme

and persistent anxiety and maladaptive support seeking strategies (e.g., reassurance seeking), as seen in OCD. Preliminary research has shown a link between maladaptive emotional regulation and OC symptoms (Fergus & Bardeen, 2014; Stern, Nota, Heimberg, Holaway, & Coles, 2014).

The attachment behavioural system can shape interpersonal behaviour (e.g., care seeking behaviour), influence one's perception about the ability of others to provide care, and guide the quality of social interactions. In this way attachment experiences influence psychopathology through their impact on interpersonal functioning. An insecure style of attachment can result in poor social skills and a lack of supportive relationships, making one vulnerable to psychopathology. It can also lead to maladaptive care seeking behaviours; e.g., excessive reassurance seeking (Davila et al., 2005; Mikulincer & Shaver, 2007a, 2012). OCD is characterised by uncertainty and ambivalence in interpersonal relationships, and trouble entrusting others with the contents of one's inner thoughts (O'Connor, 2008).

Although it has been limited, research into attachment styles and OC symptoms has had implications for treatment (Doron & Moulding, 2009; Doron, Moulding, et al., 2012; Sookman et al., 1994). These approaches suggest that identifying and reappraising relevant early attachment experiences and IWMs of the self and others is important for a more substantial and enduring treatment approach (Doron, Moulding, et al., 2012; Sookman et al., 1994). This may occur by the therapist providing a secure base for the client; thus providing a space in which to challenge previous interpersonal patterns of relating (Doron, Moulding, et al., 2012). Doron and Moulding (2009) propose that when traditional CBT approaches fail, targeting aspects of attachment anxiety (e.g., fear of abandonment, distrust, dysfunctional self-concepts) and the motivational basis of the disorder may be beneficial. Research has also shown that resolution of self-ambivalence is associated with reduced relapse in OCD patients treated with CBT (Bhar et al., 2015). However, in the literature it is currently unclear whether attachment insecurities make symptoms more severe and difficult to treat, or whether they interfere with treatment processes more generally (e.g., through the therapeutic relationship, interpersonal functioning, and emotional regulation).

Research on the role of attachment in OCD is in its infancy with little attention given to the role of attachment with respect to specific OCD subtype presentations. ROCD has received the most interest and support in terms of the role of attachment in the development and maintenance of this disorder. As previously discussed ROCD is a

subtype of OCD in which OC symptoms are focused on intimate relationships (Doron et al., 2014). Researchers have proposed that the co-occurrence of self-sensitivity in the relationship domain (high dependence on relationships for self-worth) combined with attachment anxiety (fear of abandonment) contribute to the development of ROCD, in a process referred to as the double relationship-vulnerability. These processes can lead to hypervigilance to relationship threats and impaired coping strategies increasing the individual's vulnerability to ROCD (Doron et al., 2014; Doron, Szepsenwol, Karp, & Gal, 2013). As previously mentioned, excessive reassurance seeking is common in ROCD (Doron et al., 2014; Doron, Derby, et al., 2012a; Doron, Derby, et al., 2012b). This indirectly suggests a link between attachment anxiety and excessive reassurance-seeking behaviour. Further support comes from related research on attachment and reassurance seeking observed in other psychopathologies. The following section will review this.

#### **4.3. Attachment and Reassurance Seeking**

In the depression literature, Brennan and Carnelley (1999) suggest that individuals with a preoccupied style of attachment are most likely to engage in excessive reassurance-seeking behaviour. This is because individuals with this style of attachment are likely to request feedback because of their positive view of others, but are unlikely to believe positive feedback because of their low self-worth, leading to repeated requests for reassurance. Crittenden (1997) proposes that preoccupied individuals might learn to mistrust what others say, as early caregivers provided unpredictable and inconsistent care, and what was said was not always reliable.

These theories have been supported by research evidence. Shaver et al. (2005) investigated the relationship between attachment anxiety and reassurance-seeking behaviour in the context of depression. This paper found that reassurance seeking and attachment anxiety were highly correlated in two samples ( $r = .59$  and  $r = .64$  respectively). Furthermore, they reported that attachment avoidance and reassurance seeking were not significantly correlated in either study. They reported that after controlling for attachment anxiety, reassurance seeking no longer significantly predicted variation in depression. This was interpreted as indicating that reassurance-seeking behaviour is associated with depression because it is a relational strategy generated by attachment anxiety. Shaver, et al., (2005) reported that excessive reassurance seeking should be assimilated into attachment theory, and that attachment anxiety rather than reassurance-seeking behaviour leads to depression. They further theorise that



attachment anxiety as a whole is demoralising and leads to clingy, dependent, and vulnerable personality traits which can lead to depression, suggesting that reassurance seeking is one part of the attachment anxiety presentation. This challenges previous theories developed by Coyne (1976) and Joiner et al. (1999), which suggest that excessive reassurance seeking leads to relationship dissatisfaction, which leads to depression.

Evraire et al. (2014) also found that attachment anxiety was associated with excessive reassurance-seeking behaviour, when controlling for symptoms of depression. This was interpreted as indicating that anxiously attached individuals rely on feedback from close others to determine their relationship stability and self-worth. Evraire et al. (2014) investigated the effects of priming attachment insecurities in interpersonal and achievement related contexts. They found that attachment anxiety was associated with increased reassurance-seeking behaviour following an interpersonal partner prime and an achievement related prime, but not an interpersonal friend prime. They suggest that the interpersonal friend prime was not strong enough to activate IWMs of attachment, as attachment styles are more strongly linked to romantic rather than platonic relationships.

Furthermore, in the context of hypochondriasis, Wearden et al. (2006) found that reassurance seeking was associated with a preoccupied style of attachment. This publication proposed that reassurance seeking might be a direct interpersonal characteristic of a preoccupied attachment style.

In the area of OCD, the relationship between attachment insecurities and reassurance seeking has not yet been investigated. However, Kobori and Salkovskis (2013) theorise that for individuals with a consistent and nurturing primary caregiver, one may rely on their caregiver to take responsibility for threat, to help ascertain real from imagined threat, and provide strategies to cope with threat in the early stages of life. As one grows up reassurance from parents can evolve into the ability to reassure oneself. However, one would still rely on reassurance in times of uncertainty, when the threat is considered particularly dangerous, or when their perceived ability to cope with it is low. Thus, in securely attached individuals reassurance can be a helpful mechanism for managing anxiety and threat perception. Sometimes when the threat is particularly complicated, ambiguous, or threatening, one may seek reassurance from a special expert or authority (e.g., doctor, financial advisor). In securely attached individuals the experience is internalised and used to build internal resources, to allow one to depend

less on experts and more on one's own ability to cope with concerns. In individuals with OCD, a failure to build confidence and internal resources may have occurred, and so the process of seeking reassurance from others is repeated. Furthermore, research has shown that in OCD, reassurance is commonly sought around attachment related phenomena such as a fear of abandonment and rejection (Rector et al., 2011).

In summary, attachment theory provides insight into how individuals may view the self, others, and the world around them. In some individuals attachment insecurity can lead to maladaptive coping mechanisms, dysfunctional beliefs, emotional dysregulation, and interpersonal difficulties, creating a vulnerability to psychopathology (Davila et al., 2005; Mikulincer & Shaver, 2012; Sroufe et al., 1999). Particular patterns of attachment insecurity have been implicated in OCD, including self-ambivalence, a limited and sensitive self-structure, and views of the world as threatening but controllable (Doron & Kyrios, 2005; Guidano & Liotti, 1983). While previous research has not investigated the specific relationship between reassurance seeking and attachment style in the context of OCD, it has found a link between attachment anxiety and reassurance seeking in other contexts (Evraire et al., 2014; Shaver et al., 2005). This thesis aims to draw on the theory and research outlined in this chapter to investigate and understand this specific relationship between attachment and reassurance seeking, in the context of OCD.

## Chapter 5: This Thesis

OCD is a disabling disorder associated with significant distress, functional impairment, and reduced quality of life (Rasmussen & Eisen, 1992; Schwartzman et al., 2017). Cognitive-behavioural theories of OCD are the most well-developed and well-researched models of OCD development and maintenance. However, they are not without limitations and recent research has supported extension of cognitive-behavioural theories to include attachment and related processes as possible aetiological factors contributing to OCD (Doron & Kyrios, 2005; Doron et al., 2009; Doron, Moulding, et al., 2012). Furthermore, given the heterogeneity of the disorder, different presentations of OCD may be associated with different aetiological trajectories and therefore specific factors may be of particular relevance to specific subtypes of OCD (Taylor et al., 2012). Excessive reassurance seeking is a common symptom in OCD but has been under recognised in research, and by patients and clinicians (Halldorsson & Salkovskis, 2017; Williams et al., 2011). Given that reassurance-seeking behaviour is an interpersonal symptom, and attachment theory attempts to explain the development of interpersonal functioning, attachment theory may be especially useful in understanding reassurance-seeking behaviour in OCD.

The current thesis aims to contribute to research on the heterogeneity of OCD, by examining reassurance seeking as a unique symptom with unique developmental and perpetuating factors. It aims to further extend contemporary cognitive-behavioural models of OCD by considering the role of attachment theory in the aetiology of reassurance-seeking behaviour in OCD. Excessive reassurance seeking has not been explicitly considered in research on OCD symptom subtyping and it is not clear whether it would fit best with compulsive checking (Rachman, 2002) or neutralising themes (Williams et al., 2011). As discussed earlier, there are important differences between reassurance seeking and compulsive checking, particularly relating to the interpersonal context (Salkovskis & Kobori, 2015) and dispersion of responsibility (Kobori et al., 2012). Therefore, the first study of this thesis will focus on the relationship between attachment orientations, reassurance-seeking behaviour, OCD-related beliefs and low mood. In particular, the study will compare excessive reassurance-seeking behaviour to compulsive-checking behaviour.

Further, the research on the role of attachment in OCD has been predominantly cross-sectional, making it difficult to provide empirical evidence for the theoretical

explanations on the mechanisms by which attachment experiences may impact on symptomatology (Doron et al., 2009; Doron, Moulding, et al., 2012). Therefore, the second study will further extend the investigation of the role of attachment in reassurance behaviour by using an experimental study design. That is, the second study aims to investigate the effects of priming attachment anxiety on reassurance-seeking behaviour and compulsive checking.

The following two chapters will present the aims, methods and findings of each of the two studies conducted as part of this thesis. This will be followed by a more general discussion of the theoretical and clinical implications of the overall findings, as well as suggestions for future research in the context of the limitations of the current study.

## **Chapter 6: Study One: The Relationship between Attachment Styles and Reassurance-Seeking Behaviour in the Context of OCD**

### **Introduction, Aims, and Hypotheses**

OCD is a heterogeneous disorder characterised by different themes of OC symptoms; e.g., contamination/washing, doubt/checking, symmetry/ordering, and hoarding (Leckman et al., 1997; McKay et al., 2004). Another potential symptom theme is excessive reassurance seeking, which is a common symptom of OCD. Despite the significant impact of excessive reassurance seeking on the individual experiencing OCD as well as those close to them, from whom reassurance is often sought, it has received relatively little attention in OCD theory and research (Halldorsson & Salkovskis, 2017; Parrish & Radomsky, 2011). However, the limited research on reassurance seeking in OCD has generally considered it to be a functional equivalent of compulsive checking (Kobori et al., 2012; Kobori et al., 2014; Parrish & Radomsky, 2006; Parrish & Radomsky, 2010; Rachman, 2002). Whilst this has been helpful to an extent; for example, understanding how reassurance seeking may provide initial relief followed by long-term anxiety similar to compulsive checking (Kobori et al., 2012; Parrish & Radomsky, 2010; Salkovskis et al., 1999), excessive reassurance seeking is different to compulsive checking because it allows for a dispersal of responsibility (Kobori et al., 2012; Salkovskis, 1985), and because it involves an interpersonal aspect (Salkovskis & Kobori, 2015). Whereas one can compulsively check in a ritualised and consistent manner for hours, because of the interpersonal nature of reassurance seeking one cannot rely on the consistency of assurances from others and may need to inhibit such behaviour because of interpersonal concerns (e.g., embarrassment or concern for the reassurers distress) (Kobori et al., 2012; Salkovskis & Kobori, 2015). Furthermore, specific cognitive-affective structures may underlie one's preference to seek reassurance from others, rather than check for themselves.

Given the interpersonal aspect of reassurance-seeking behaviour, it makes sense to consider attachment theory when discussing the development and maintenance of this behaviour. This is because attachment theory aims to explain the influence of early childhood experiences with caregivers in the development of views of self and others as well as future interpersonal behaviour (Balbernie, 2001; Siegel, 2001; Simpson et al., 2007; Sroufe et al., 1999; Tiwari & Garg, 2015). Insecure styles of attachment are believed to increase one's vulnerability to psychopathology, maladaptive coping

strategies, and interpersonal difficulties (Bowlby, 1973, 1980; Davila et al., 2005; DeKlyen & Greenberg, 2008; Egeland & Carlson, 2004; Hankin et al., 2005; Mikulincer & Shaver, 2007a, 2012; Sroufe et al., 1999; Sroufe, 1997). On the other hand, secure styles of attachment are believed to protect one against psychopathology, increasing self-worth, adaptive coping strategies in times of threat, and positive interpersonal relationships (DeKlyen & Greenberg, 2008; Feeney & Noller, 1990; Mikulincer & Shaver, 2012). Thus, specific IWMs of the self and others may underlie different OCD symptom themes; e.g., reassurance seeking and compulsive checking.

Combining attachment theory and cognitive-behavioural theory, Doron and Kyrios (2005) proposed that certain IWMs of the self and the world may lead to the development of OCD-related beliefs (e.g., inflated responsibility, intolerance of uncertainty, overestimation of threat, the importance and control of thoughts), which can increase one's vulnerability to developing OCD. Research by Doron et al. (2009) found that OC symptoms in general were associated with both attachment anxiety and attachment avoidance. This paper also supported the hypothesis that the relationship between attachment insecurities and OC symptoms is fully mediated by OCD-related cognitions.

Excessive reassurance-seeking behaviour is not unique to OCD and is common in other psychopathologies including depression, hypochondriasis, and anxiety disorders (Cougle et al., 2012; Parrish & Radomsky, 2010; Rector et al., 2011; Starcevic et al., 2012). In the context of depression, Shaver, et al. (2005; Evraire et al., 2014)) found that attachment anxiety was associated with reassurance-seeking behaviour. Furthermore, in the context of hypochondriasis, Wearden et al. (2006) found that reassurance seeking was associated with a preoccupied style of attachment. However, research has not yet focused on the relationship between attachment style and reassurance seeking in the context of OCD.

Therefore, the present study aimed to investigate the relationship between attachment orientations and reassurance-seeking behaviour. It aimed to examine this relationship in the context of OCD, by considering the impact of factors believed to be associated with the development and maintenance of OCD on this relationship, including OC-related beliefs and low mood (OCCWG, 1997; Ruscio et al., 2010). Furthermore, the present study aimed to differentiate excessive reassurance seeking from compulsive checking which have often been grouped together and described as

functionally equal (Kobori et al., 2012; Kobori et al., 2014; Parrish & Radomsky, 2006; Parrish & Radomsky, 2010; Rachman, 2002).

The first part of this study examined correlational relationships between attachment orientations, reassurance-seeking behaviour, and compulsive checking. It then used regression analyses to examine the relationship between attachment orientations, reassurance-seeking behaviour, depression, and OC-related beliefs. Given the high comorbidity between OCD and MDD (Brown et al., 2001; Crino & Andrews, 1996; LaSalle et al., 2004; Quarantini et al., 2011; Ruscio et al., 2010), and the association between depressive symptomatology and excessive reassurance-seeking behaviour (Joiner et al., 1999; Parrish & Radomsky, 2010; Starr & Davila, 2008), the regression analyses controlled for the confounding influence of depression. Following from this, reassurance seeking and compulsive checking were considered in relation to the IWMs of the self and others reflected in the four attachment styles (i.e., secure, preoccupied, dismissive, and fearful) described by Bartholomew (1990). Therefore, the current study examined results for both the dimensional (i.e., attachment anxiety and attachment avoidance) and the categorical approaches (i.e., secure, preoccupied, dismissive, and fearful) of classifying individual differences in attachment. Whilst these two approaches are conceptually similar and yield similar results, the examination of attachment dimensions is preferable as splitting participants into categories reduces variance (Cohen, 1983), and research suggests that adult attachment styles are continuous in nature (Fraley, Hudson, Heffernan, & Segal, 2015). However, the use of categorical attachment styles is beneficial for the interpretation of the current findings, and linking results to theoretical models of the self and others (Bartholomew, 1990).

This study used cross-sectional analyses of a large non-clinical sample. The use of non-clinical participants is common in the OCD literature, as OC phenomena in clinical and non-clinical populations share many qualitative similarities (Abramowitz et al., 2014; Burns et al., 1995; Gibbs, 1996). Furthermore, previous research on attachment anxiety, OC symptoms, and beliefs has shown similar results in clinical (Doron, Moulding, et al., 2012) and non-clinical populations (Doron et al., 2009).

Based on previous research by Shaver et al. (2005) and Evraire et al. (2014) in the depression literature, it was predicted that high levels of reassurance-seeking behaviour would correlate with high levels of attachment anxiety. In comparison, it was predicted that other OCD symptom themes (i.e., compulsive checking, washing, obsessing, hoarding, ordering, and neutralising) would be associated with both higher

levels of attachment anxiety and attachment avoidance, in line with research by Doron et al. (2009). Furthermore, it was expected that attachment anxiety would predict reassurance-seeking behaviour over-and-above depression and other OCD-related beliefs. Moreover, in line with Doron and Kyrios' (2005) suggestion that attachment experiences may underlie the development of OC-related beliefs, it was also expected that OCD-related beliefs would mediate the relationship between attachment anxiety and reassurance-seeking behaviour.

It was predicted that of the four attachment styles described by Bartholomew (1990) a preoccupied attachment style (high attachment anxiety, and low attachment avoidance) would be associated with the highest level of reassurance-seeking behaviour, in line with previous theory (Brennan & Carnelley, 1999) and research (Davila, 2001; Wearden et al., 2006) in the context of other psychopathologies. Given the interpersonal nature of reassurance seeking compared to compulsive checking, it was posited that compulsive checking would have a different style of attachment to reassurance-seeking behaviour, especially in regards to IWMs of others. Based on previous research indicating that both attachment anxiety and attachment avoidance are associated with OC symptoms and beliefs (Doron et al., 2009), it was hypothesised that compulsive checking would be associated with high levels of both attachment anxiety and attachment avoidance (i.e., a fearful attachment style).

## **Method**

### **Participants.**

Participants in this study were 171 individuals, ranging in age from 17 to 53, with a mean age of 22.55 ( $SD = 6.55$ ). The sample consisted of 127 female ( $M$  age = 22.64;  $SD = 6.80$ ) and 44 male ( $M$  age = 22.30;  $SD = 5.86$ ) participants. The sample originally consisted of 246 individuals who accessed the online questionnaire. Data from 75 of these individuals was excluded from the present study as these cases contained a large amount of missing data. Of these 75 cases, 50 respondents did not complete the online questionnaire and 25 completed the questionnaire but left greater than 5% of the questions unanswered. Therefore, the analyses were performed on the remaining 171 participants.

Participants consisted of a student sample and a community sample. The student sample was recruited via the research experience program at Swinburne University of Technology. These respondents were first year psychology students who participated in



exchange for partial course credit after hearing about the online questionnaire via an online notice board and announcements in first year undergraduate psychology lectures. The student sample consisted of 145 participants, including 105 females and 40 males, with a mean age of 21.41 ( $SD = 5.91$ ). The community sample was recruited via the social network of the researcher using snowball sampling. This sample was recruited with the aim to increase the age range of participants. The community sample contained 26 participants, consisting of 22 females and 4 males, with a mean age of 28.88 ( $SD = 6.47$ ).

The majority of participants were born in Australia (84.2%), with the remainder born in New Zealand (0.6%), Asia (8.4%), Africa (1.2%), North America (0.6%), South America (0.6%), and Europe (4.7%). Close to half of the sample were single (48.5%) and reported not being in a current committed relationship, 35.1% reported being in a committed relationship, 15.2% reported being in a marital/de-facto relationship and 1.2% did not answer this question. Of the 145 participants in the student sample 39.3% reported working on a casual basis, 7.6% worked full time, 26.9% were employed part time and 26.2% identified themselves as unemployed. Of the 26 participants in the community sample 15.4% reported employment on a casual basis, 57.7% worked full time, 7.7% were employed part time and 19.2% reported current unemployment.

### **Measures.**

The measures in this study were presented in an online questionnaire facilitated by “Opinio 6” (1998), which is an internet based program that allows users to create, publish, analyse and maintain online questionnaires through a web browser. All measures are outlined below and a copy of the questionnaire is provided in appendix A.

***Demographic questionnaire.*** Information about the demographics of each participant was collected using an eight item questionnaire requesting information about participant’s gender, age, country of birth, number of years lived in Australia, languages spoken at home, highest level of education, employment and relationship status. See appendix A.1.

***The Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995).*** The DASS-21 was used to measure distress in the present study, it consists of 21 self-descriptive items rated on a four point scale ranging from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much, or most of the time*). The DASS-21 consists of three subscales each made up of seven items. The three scales measure depression (e.g., “I

found it difficult to work up the initiative to do things”), anxiety (e.g., “I felt scared without any good reason”) and stress (e.g., “I found it hard to wind down”). The DASS-21 subscale scores were obtained by summing across items, with higher scores indicating higher levels of depression, anxiety and stress in the past week. The three scales of the DASS-21 have excellent internal consistency ( $\alpha = .87 - .94$ ) and construct validity (Antony, Bieling, Cox, Enns, & Swinson, 1998). Consistent with previous research the DASS-21 showed good reliability in the present study with Cronbach’s alpha ranging from .85 - .90. See appendix A.2.

***The Reassurance Seeking Scale (RSS; Rector et al., 2011).*** The RSS is a 30 item measure of excessive reassurance-seeking behaviour. The RSS is comprised of three factor based subscales which reflect the need to seek reassurance regarding: uncertainty about decision making (e.g., “Prior to making a decision?,” 13 items), attachment and security of relationships (e.g., “To whether you are loved or cared for?,” 8 items) and perceived general threat and anxiety (e.g., “To whether something bad is going to happen?,” 9 items). Participants were instructed to rate the frequency with which they seek reassurance in response to each of the situations on a 5 point Likert scale (1 = “*Not at all*”, 5 = “*Extremely*”). RSS scores were obtained by summing across items, where higher scores indicate a higher frequency of reassurance-seeking behaviours. The RSS was found to have good internal consistency and convergent validity with other measures of anxiety, stress and depression (Rector et al., 2011). In the present study Cronbach’s alpha was .91 for all three subscales, and was .95 for the RSS total score. See appendix A.3

***The Obsessive Beliefs Questionnaire-44 (OBQ-44; OCCWG, 2005).*** The OBQ-44 is a 44 item self-report questionnaire, which measures beliefs considered central to the development and maintenance of OCD. This questionnaire consists of three subscales measuring three main cognitive belief domains: inflated responsibility and the overestimation of threat (e.g., “Even if harm is very unlikely, I should try to prevent it at any cost,” 16 items), perfectionism and an intolerance for uncertainty (e.g., “If I’m not absolutely sure of something, I’m bound to make a mistake,” 16 items), and the over importance and need to control thoughts (e.g., “For me, having bad urges is as bad as actually carrying them out,” 12 items). Participants were asked to report how much each statement reflects their own beliefs and attitudes on a 7 point scale, ranging from 1 (*disagree very much*) to 7 (*agree very much*). OBQ-44 scores were obtained by summing across items, with higher scores suggesting greater conviction in OC beliefs.

In both OCD and non-OCD populations the OBQ-44 total and each of its subscales have demonstrated good internal consistency ( $\alpha = 0.89 - 0.95$ ) and high convergent validity (OCCWG, 2005). Consistent with previous research, in the current study the internal consistency of the OBQ-44 scale and its subscales was satisfactory ( $\alpha$ 's ranged from .91 to .95). See appendix A.4.

***The Obsessive Compulsive Inventory –Revised (OCI-R; Foa et al., 2002).*** The OCI-R is an 18 item self-report measure used to assess OC symptoms. It consists of six subscales, each with three items, based on the symptom categories commonly seen in OCD: washing (e.g., “I wash my hands more often and longer than necessary”), obsessing (e.g., “I find it difficult to control my own thoughts”), hoarding (e.g., “I have saved up so many things that they get in the way”), ordering (e.g., “I need things to be arranged in a particular order”), checking (e.g., “I repeatedly check doors, windows, drawers, etc.”) and mentally neutralizing (e.g., “I feel compelled to count while I am doing things”). Participants are asked to rate on a 5-point scale how much each experience bothered or distressed them in the past month (0 = *not at all*, 4 = *extremely*). Participant's OCI-R scores were summed across all items; higher scores indicated greater OCD symptom severity and diversity. The internal consistency of the OCI-R and the subscales was satisfactory (Chronbach's alpha ranged from .77 to .87 for subscale, and .94 for OCI-R total). The OCI-R has previously demonstrated good to excellent internal consistency, test–retest reliability, and excellent convergent validity with other measures of OCD (Foa et al., 2002). See appendix A.5.

***The Experience of Close Relationship Scale (ECR; Brennan et al., 1998).*** The ECR measures the two main dimensions of attachment (anxiety and avoidance) in the context of romantic adult relationships. Based on participant's scores on these two dimensions of attachment the ECR can categorise participants into different styles of attachment: secure, preoccupied, fearful and dismissive. The ECR asks participants to consider how they generally experience close relationships and not just their current relationships. It consists of 36 items, each item is rated on a 7 point scale (1 = *disagree strongly*, 4 = *neutral/mixed*, 7 = *agree strongly*), where 10 of the items are reverse scored. For the attachment anxiety dimension (18 items) a positively score item includes “I worry that romantic partners won't care about me as much as I care about them” and an example of a negatively scored item is “I do not often worry about being abandoned.” For attachment avoidance (18 items) an example of a positively scored item is “I prefer not to show a partner how I feel deep down.” and a negatively scored

item includes “I find it relatively easy to get close to my partner.” See Appendix B for a copy of the SPSS syntax used to score the ECR. This scale has shown excellent reliability and validity and is a widely used self-report measure of attachment (Mikulincer & Shaver, 2007a). In the present study Cronbach’s alpha for the anxiety and avoidance subscales were .92 and .95 respectively. See appendix A.6.

### **Procedure.**

The research procedures used in the present study were approved by Swinburne’s Human Research Ethics Committee (see appendix C). Data was collected via an online questionnaire facilitated by “Opinio 6” (1998). An information sheet preceded the online questionnaire and outlined the requirements, purpose and nature of the study (see appendix D). In this document respondents were informed that their participation was voluntary and that they could discontinue with the questionnaire at any point. Participants were informed that by completing the questionnaire they were indicating consent to be involved in the research project. The information sheet also explained that participant’s responses would remain confidential and they would not be able to be identified from the information they provided. Information about support services was also supplied in the event that participants experienced any distress following participation in this project. Participants were presented with a debriefing statement at the end of the questionnaire (see appendix E).

## **Results**

### **Preliminary data screening.**

Data screening and subsequent analyses were performed using the Statistical Package for the Social Sciences (SPSS), version 23.0. Preliminary data screening was performed to ensure the data was suitable for further analysis. Missing data was examined using SPSS missing values analysis (MVA), which illustrated that data was missing completely at random. As only a small percentage of missing data remained, following exclusion of cases with greater than 5% missing data, and psychological self-report measures are designed so that subscale items are highly correlated, missing data was substituted with the mean of the participant’s answered items on each subscale (Downey & King, 1998).

Frequency tables and descriptive statistics were calculated and inspected for all variables, to check for correct minimum and maximum scores, plausible means and

standard deviations, and any other anomalies. All data were within the expected range for each variable.

The assumption of normality was assessed both graphically and statistically, as many statistical procedures assume data is normally distributed (Tabachnick & Fidell, 2014). Histograms, boxplots, expected normal probability plots, and detrended expected normal probability plots were inspected for each variable, and suggested that several variables had a non-normal distribution. Skewness and kurtosis ratios were used to statistically assess normality in these variables. DASS Depression, DASS Anxiety, OCI Washing, OCI Obsessing, OCI Checking, and OCI Neutralising were significantly positively skewed (standardised skewness ratio  $> 3.29$ ,  $p < .001$ ; Tabachnick & Fidell, 2014). The alpha level of  $p < .001$ , was used to assess normality as the sample size was large,  $N = 171$ , and was therefore large enough for the central limit theorem to reduce the adverse effects of minor deviations from normality (Wilcox, 2010). These variables were transformed using a square-root transformation. OCI Washing, OCI Obsessing, and OCI Neutralising were still significantly positively skewed following this transformation and were subsequently transformed using a logarithmic transformation. Following the log transformation these variables were normally distributed. Transformed variables were used in all future analysis (see table one for transformation type for each variable).

To check for univariate outliers in the variable distributions, histograms, box plots and  $z$  scores for each of the variables were examined, particularly noting  $z$  scores above 3.29 ( $p < .001$ , two tailed; Tabachnick & Fidell, 2014). One outlier was detected in the variable OCI Washing; however, following the log transformation of this variable due to its non-normal distribution, this case was no longer classified as an outlier. Mahalanobis distance was used to examine the data for multivariate outliers, no distances were above the critical value of 16.27 ( $\chi^2 (3) > 16.27$ ,  $p < .001$ ). Inspection of scatterplots showed that assumptions of linearity were met.

The methodology of this study was designed to ensure independent observations. However, the data was sorted by the time participants started the online survey and assessed using the Durbin-Watson statistic, which further supported the assumption of independence. Chronbach's alpha was used to determine the internal consistency of each scale used. Table one displays the descriptive statistics, reliabilities and transformation type for each variable.

Table 1

*Means, Standard Deviations, Reliabilities, and Type of Transformation for each of the Variables*

Variable	<i>N</i>	<i>M</i>	<i>SD</i>	$\alpha$	Transformation
DASS Stress	171	15.28	4.91	0.86	
DASS Depression	171	13.22 (3.57)	5.30 (0.70)	0.90	SQRT
DASS Anxiety	171	12.02 (3.41)	4.60 (0.64)	0.85	SQRT
RSS Total	171	90.86	22.77	0.95	
RSS-DM	171	42.33	9.89	0.91	
RSS-SA	171	22.74	7.74	0.91	
RSS-GT	171	25.79	8.55	0.91	
OBQ-44 Total	171	141.43	40.22	0.95	
OBQ-RT	171	52.98	17.26	0.91	
OBQ-PI	171	58.87	17.02	0.91	
OBQ-IC	171	29.59	13.00	0.92	
OCI-R Total	171	37.18	14.75	0.94	
OCI-R Washing	171	5.26 (0.67)	2.68 (0.20)	0.77	LG10
OCI-R Obsessing	171	6.00 (0.72)	3.12 (0.21)	0.85	LG10
OCI-R Hoarding	171	6.47	3.12	0.79	
OCI-R Ordering	171	7.34	3.37	0.87	
OCI-R Checking	171	6.35 (2.45)	3.05 (0.59)	0.83	SQRT
OCI-R Neutralising	171	5.75 (0.71)	3.02 (0.21)	0.80	LG10
ECR Avoidance	171	2.87	1.22	0.95	
ECR Anxiety	171	3.63	1.13	0.92	

*Note.* This table contains non-transformed data, with transformed data in brackets. DASS Stress = Stress Subscale of the Depression Anxiety Stress Scales-21 item, DASS Depression = Depression Subscale of the Depression Anxiety Stress Scales-21 item, DASS Anxiety = Anxiety Subscale of the Depression Anxiety Stress Scales-21 item, RSS Total = Total Score for the Reassurance Seeking Scale, RSS-DM = Decision Making Subscale of the Reassurance Seeking Scale, RSS-SA = Social Attachment Subscale of the Reassurance Seeking Scale, RSS-GT = General Threat Subscale of the Reassurance Seeking Scale, OBQ-44 Total = Total Score for the Obsessive Beliefs Questionnaire-44 items, OBQ-RT = Responsibility and Overestimation of Threat Subscale of the Obsessive Beliefs Questionnaire-44 item, OCQ-PI = Perfectionism and Intolerance of Uncertainty Subscale of the Obsessive Beliefs Questionnaire-44 items, OBQ-IC = Importance and Control of Thought Subscale of the Obsessive Beliefs Questionnaire-44 items, OCI-R Total = Total Score for the Obsessive Compulsive Inventory-Revised, OCI-R Washing = Washing

Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Obsessing = Obsessing  
 Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Hoarding = Hoarding  
 Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Ordering = Ordering  
 Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Checking = Checking  
 Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Neutralising = Neutralising  
 Symptom Subscale of the Obsessive Compulsive Inventory-Revised, ECR Avoidance = Attachment  
 Avoidance Subscale of the Experience of Close Relationship Scale, ECR Anxiety = Attachment Anxiety  
 Subscale of the Experience of Close Relationship Scale.

### **Correlational Analysis.**

***Examination of the association between reassurance seeking and attachment dimensions.*** The hypothesis that high attachment anxiety will be associated with higher levels of reassurance-seeking behaviour was tested using Pearson product-moment correlations. The relationship between attachment anxiety (ECR Anxiety) and reassurance-seeking behaviour (RSS Total) was examined. Bias corrected and accelerated bootstrap (BCa) 95% confidence intervals (CIs) are reported in square brackets. As predicted there was a large positive relationship between these two variable,  $r(171) = .57$ , 95% BCa CI [.44, .66],  $p < .001$ , with high levels of attachment anxiety being associated with high levels of reassurance-seeking behaviour. There was no significant relationship between attachment avoidance (ECR Avoidance) and reassurance-seeking behaviour,  $r(171) = -.04$ , 95% BCa CI [-.22, .13],  $p = .62$ . This illustrates that reassurance-seeking behaviour is associated with higher levels of attachment anxiety, but has no association with attachment avoidance.

Additional correlational analyses were examined between the different types of reassurance-seeking behaviour measured by the RSS (i.e., decision making, social attachment, and general threat), attachment orientations, and measures of OCD-beliefs. However, the three subscales showed similar associations to the total RSS score; therefore the analyses in this thesis have focused on the RSS total score (see appendix F).

***Examination of the association between OCD symptom themes and attachment dimensions.*** The hypothesis that OCD symptom themes (i.e., compulsive checking, washing, obsessing, hoarding, ordering, and neutralising), other than reassurance seeking, would be associated with high levels of attachment anxiety and high levels of attachment avoidance was also tested using Pearson product-moment

correlations. The relationship concerning attachment anxiety (ECR Anxiety) and attachment avoidance (ECR Avoidance) with compulsive checking (OCI-R Checking) was examined. The results showed a small to moderate positive relationship between attachment avoidance and compulsive-checking behaviour,  $r(171) = .29$ , 95% BCa CI [.16, .42],  $p < .001$ , with higher levels of attachment avoidance associated with higher levels of compulsive-checking behaviour. There was also a small positive relationship between attachment anxiety and compulsive-checking behaviour,  $r(171) = .18$ , 95% BCa CI [.02, .33],  $p = .02$ . That is, higher levels of attachment anxiety were associated with higher levels of compulsive-checking behaviour. This illustrates that compulsive-checking behaviour is associated with attachment avoidance and attachment anxiety.

The correlational matrix in table two illustrates that all other OCD symptom themes, except ordering, were significantly associated with both attachment anxiety and attachment avoidance to different degrees. For ordering behaviours, there was a small positive correlation between ordering symptoms (OCI-R Ordering) and attachment anxiety,  $r(171) = .19$ , 95% BCa CI [.02, .35],  $p = .01$ , with high levels of attachment anxiety being associated with high levels of ordering behaviour. There was no significant relationship between attachment avoidance and ordering behaviour,  $r(171) = .12$ , 95% BCa CI [-.04, .28],  $p = .12$ . This illustrates that ordering behaviour is weakly associated with higher levels of attachment anxiety, but has no association with attachment avoidance.



Table 2

*Pearson Correlations between Measures of Attachment, Depression, OCD-Related Beliefs, Reassurance Seeking, and other OC Symptoms*

	1	2	3	4	5	6	7	8	9	10	11	12
1. ECR Anxiety	1.00											
2. ECR Avoidance	.06	1.00										
3. DASS Depression	.44**	.27**	1.00									
4. OBQ-44 Total	.34**	.33**	.41**	1.00								
5. RSS Total	.57**	-.04	.40**	.45**	1.00							
6. OCI-R Total	.30**	.35**	.40**	.66**	.38**	1.00						
7. OCI-R Checking	.18*	.29**	.33**	.58**	.31**	.86**	1.00					
8. OCI-R Washing	.22**	.29**	.29**	.54**	.23**	.83**	.66**	1.00				
9. OCI-R Obsessing	.32**	.33**	.53**	.59**	.36**	.79**	.60**	.61**	1.00			
10. OCI-R Hoarding	.35**	.29**	.35**	.50**	.41**	.76**	.66**	.56**	.53**	1.00		
11. OCI-R Ordering	.19*	.12	.18*	.53**	.26**	.76**	.59**	.55**	.50**	.42**	1.00	
12. OCI-R Neutralising	.17*	.36**	.22**	.50**	.24**	.86**	.70**	.74**	.57**	.59**	.63**	1.00

*Note.*  $N = 171$ . ECR Anxiety = Attachment Anxiety Subscale of the Experience of Close Relationship Scale, ECR Avoidance = Attachment Avoidance Subscale of the Experience of Close Relationship Scale, DASS Depression = Depression Subscale of the Depression Anxiety Stress Scales-21 item, OBQ-44 Total = Total Score for the Obsessive Beliefs Questionnaire-44 items, RSS Total = Total Score for the Reassurance Seeking Scale, OCI-R Total = Total Score for the Obsessive Compulsive Inventory-Revised, OCI-R Checking = Checking Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Washing = Washing Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Obsessing = Obsessing Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Hoarding = Hoarding Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Ordering = Ordering Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Neutralising = Neutralising Symptom Subscale of the Obsessive Compulsive Inventory-Revised.

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

### **Regression analysis.**

*Examination of the ability of attachment anxiety to predict reassurance-seeking behaviour over-and-above depression and OCD-related beliefs.* The hypothesis that attachment anxiety (ECR Anxiety) would predict reassurance-seeking behaviour (RSS total), over-and-above depression (DASS Depression) and OC-related beliefs (OBQ-44 Total) was tested using hierarchical multiple regression. Assumptions of multicollinearity were met as all variance inflation factors (VIFs) were less than 1.3, and correlations between the predictor variables were less than .45. The Breusch-Pagan test for Heteroscedasticity was significant ( $\chi^2 (3) = 9.54, p = .02$ ) illustrating mild heteroscedasticity in the regression model. Both the hierarchical regression model and heteroscedasticity-consistent regression model were calculated to determine the effects of heteroscedasticity on the model. Heteroscedasticity-consistent analyses were calculated using the model suggested by Hayes and Cai (2007). A comparison of the heteroscedasticity-consistent regression and the hierarchical regression illustrated similar results and the same patterns of significance. Tabachnick and Fidell (2014) note that heteroscedasticity in ungrouped data weakens but does not invalidate the analysis. Therefore, the hierarchical regression model was used, despite mild heteroscedasticity.

The regression model consisted of RSS Total scores as the outcome variable, with DASS Depression scores entered at stage one, OBQ-44 Total scores added at stage two, and ECR Anxiety scores added at stage three. The total variance explained by the model as a whole was 40.3%,  $F (3,167) = 37.63, p < .001$ . After controlling for depression, the addition of OC-related beliefs in the regression model explained a further 10% of the variance in reassurance-seeking behaviour. At stage three, after controlling for depression and OC-related beliefs, attachment anxiety uniquely explained an additional 14% of the variance in reassurance-seeking behaviour over-and-above the variance accounted for by depression and OCD-related beliefs. Furthermore, when attachment anxiety was added to the regression model the relationship between depression and reassurance-seeking behaviour was no longer statistically significant. A summary of the regression results are presented in table three. Additional multiple regression analyses examining the combined effect of

attachment anxiety and attachment avoidance on reassurance seeking using are discussed in appendix G.

Table 3

*Summary of Hierarchical Regression Analysis Predicting Reassurance-seeking behaviour from Depression, OCD Related Beliefs, and Attachment Anxiety*

	<i>b</i>	<i>SE b</i>	$\beta$	$\Delta R^2$	<i>F</i> -change
Step 1				.16	32.25**
DASS Depression	12.95	2.28	.40**		
Step 2				.10	22.35**
DASS Depression	8.36	2.36	.26**		
OBQ-44 Total	0.20	0.04	.35**		
Step 3				.14	40.44**
DASS Depression	3.37	2.26	.10		
OBQ-44 Total	0.15	0.04	.26**		
ECR Anxiety	8.65	1.36	.43**		

*Note.* *N* = 171. DASS Depression = Depression Subscale of the Depression Anxiety Stress Scales-21 item, OBQ-44 Total = Total Score for the Obsessive Beliefs Questionnaire-44 items, ECR Anxiety = Attachment Anxiety Subscale of the Experience of Close Relationship Scale.

\**p* < .05, \*\**p* < .01

***Examination of OC beliefs as a mediator of the relationship between attachment anxiety and reassurance-seeking behaviour.*** The hypothesis that the relationship between attachment anxiety (ECR Anxiety) and reassurance-seeking behaviour (RSS Total) is mediated by OC-related beliefs was tested using the ordinary least squares method of mediation analysis. Mediation analyses were conducted using the bootstrapping method with bias-corrected confidence estimates (Mackinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004). In the present study, the 95% CIs were obtained with 5,000 bootstrap resamples (Preacher & Hayes, 2008).

There was a significant indirect effect of attachment anxiety on reassurance-seeking behaviour through OC-related beliefs (*ab*), *b* = 1.99, BCa CI [.91, 3.59], *z* = 3.24, *p* = .001. This represents a relatively small but significant indirect effect. There was also a significant direct effect with attachment anxiety positively predicting

reassurance-seeking behaviour even with OC-related beliefs in the model (c'),  $b = 9.36$ ,  $t(171) = 7.31$ ,  $p < .001$ . This indicated that OC-related beliefs is a partial mediator. It was also found that anxious attachment was positively related to OC-related beliefs (a),  $b = 11.97$ ,  $t(171) = 4.66$ ,  $p < .001$ , with attachment anxiety explaining 11.37% of the variance in OC-related beliefs. OC-related beliefs also positively predicted reassurance seeking (b),  $b = 0.17$ ,  $t(171) = 4.61$ ,  $p < .001$ . The mediation model explained 39.54% of the variance in reassurance-seeking behaviour. When OC-related beliefs is not in the model, attachment anxiety significantly predicts reassurance-seeking behaviour (c),  $b = 11.35$ ,  $t(171) = 8.89$ ,  $p < .001$ , this model explained only 31.88% of the variance in reassurance seeking. The mediation model and standardised regression coefficients are shown in figure two.

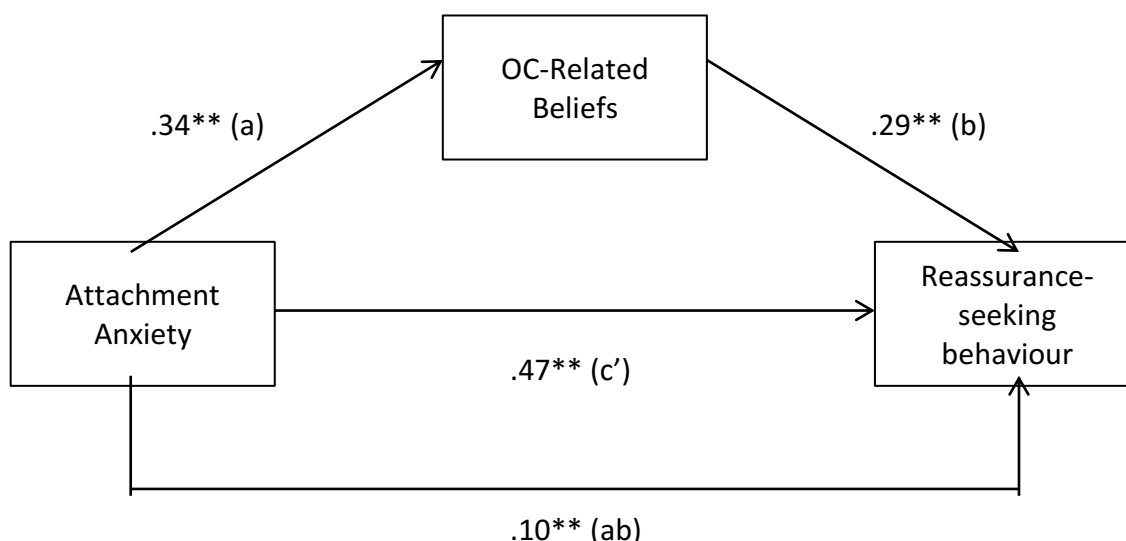


Figure 2. Standardised regression coefficients for the relationship between attachment anxiety and reassurance-seeking behaviour as mediated by OC-related beliefs.

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

### Analysis of variance (ANOVA) analysis.

**The effect of attachment styles on reassurance-seeking and compulsive-checking behaviour.** The hypothesis that individuals with a preoccupied style of attachment (high attachment anxiety and low attachment avoidance) would endorse more reassurance-seeking behaviour than any other attachment style was tested using a one-way ANOVA. Levene's test for equality of variances was not significant,

Levene  $F(3,167) = .119, p = .95$ , suggesting homogeneity of variance in the ANOVA.

The effect of attachment styles as measured by the ECR on reassurance-seeking behaviour (RSS Total) was investigated. Participants were divided into four groups based on their scores on the ECR (secure attachment  $n = 51$ , fearful attachment  $n = 44$ , preoccupied attachment  $n = 49$ ; dismissive attachment  $n = 27$ ). There was a significant effect of attachment style on reassurance-seeking behaviour,  $F(3,167) = 11.17, p < .001$ . The effect size of attachment style on reassurance seeking was large,  $\eta^2 = .17$  (Cohen, 1988). Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the preoccupied attachment group ( $M = 102.66, SD = 21.34$ ) was significantly different from the secure attachment group ( $M = 83.61, SD = 20.94$ ). The dismissive attachment group ( $M = 77.63, SD = 20.87$ ) was significantly different from the preoccupied attachment group and the fearful attachment group ( $M = 94.23, SD = 20.63$ ). There was no significant difference between the fearful attachment group and the preoccupied and secure attachment groups. There was no significant difference between the secure attachment group and the dismissive attachment group. See figure three for the mean RSS Total scores in each of the attachment groups.

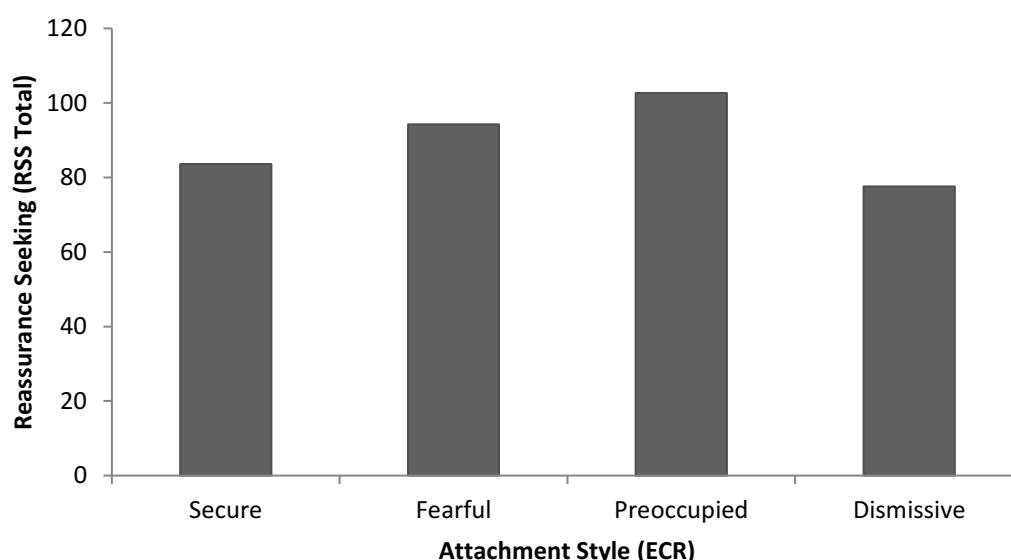


Figure 3. Mean RSS Total scores for each of the four attachment styles measured by the ECR.

The hypothesis that individuals with a fearful style of attachment (high attachment anxiety and high attachment avoidance) would report more compulsive-checking behaviours than any other attachment style was also tested using a one-way ANOVA. Levene's test for equality of variances was not significant, Levene  $F(3,167) = .977, p = .41$ , suggesting homogeneity of variance in the ANOVA.

The effect of attachment styles as measured by the ECR on compulsive checking as measured by the OCI-R was investigated. There was a significant effect of attachment style on compulsive checking,  $F(3,167) = 5.705, p = .001$ . The effect size, calculated using eta squared, was .09, indicating a medium effect size of attachment style on compulsive checking. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the fearful attachment group ( $M = 2.73, SD = 0.59$ ) was significantly different from the mean score for the secure group ( $M = 2.26, SD = 0.49$ ). The preoccupied attachment group ( $M = 2.40, SD = 0.62$ ) was also significantly different from the fearful attachment group. There was no significant difference between the dismissive attachment group ( $M = 2.44, SD = 0.56$ ) and any of the other three attachment groups. There was also no significant difference between the secure attachment group and the preoccupied attachment group. See figure four for the mean OCI-R Checking scores in each of the attachment groups.

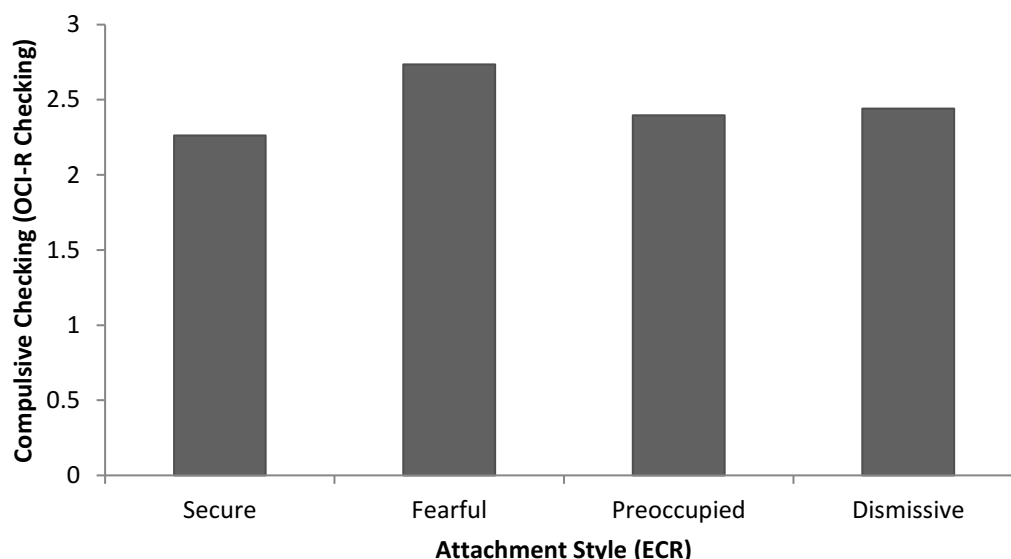


Figure 4. Mean OCI-R Checking scores for each of the four attachment styles measured by the ECR.

The relationship between attachment style, and both reassurance-seeking and compulsive-checking behaviour, were also tested using moderation analyses, these analyses were not significant, and can be viewed in appendix H.

## **Discussion**

### **Overview of aims and findings.**

The overall aim of the present study was to explore the relationship between attachment orientations and reassurance-seeking behaviour in the context of OCD. More specifically, it aimed to examine the nature of the relationship between attachment anxiety and reassurance-seeking behaviour whilst controlling for OC related phenomena, including low mood and OCD-related beliefs. It also aimed to investigate differences in attachment insecurities in those who seek reassurance compared to those who compulsively check. Indeed, it aimed to compare differences in attachment insecurities for all OCD symptom themes.

As expected, the results of the present study supported the hypothesis that excessive reassurance seeking is associated with high attachment anxiety. The relationship between attachment anxiety and reassurance seeking appears to be a strong one, which exists over-and-above related factors including OCD-related beliefs and low mood. Furthermore, the results illustrated that excessive reassurance seeking is associated with different underlying attachment orientations to compulsive checking, with compulsive checking being associated with both high attachment anxiety and high attachment avoidance. Additionally, individuals with a preoccupied style of attachment endorsed the most reassurance-seeking behaviour, whilst individuals with a fearful style of attachment endorsed the most compulsive-checking behaviour. Most OC symptom themes were associated with both higher attachment anxiety and attachment avoidance. A detailed discussion of these results and the limitations and implications of the current study are discussed below.

### **Attachment dimension and reassurance-seeking behaviour in OCD.**

The hypothesis that high levels of reassurance seeking would be correlated with high levels of attachment anxiety was supported. Furthermore, no significant association between reassurance-seeking behaviour and attachment avoidance was observed. This finding is consistent with previous research exploring the relationship between attachment anxiety and excessive reassurance seeking in the context of other psychopathologies (e.g., Evraire et al., 2014; Shaver et al., 2005). It is also consistent

with attachment theory, which proposes that attachment anxiety is associated with hyperactivation of the attachment system, which is associated with intensified and energetic bids for support, attention, and love from attachment figures. Therefore, these individuals are more likely to seek reassurance, vocalise distress, and cling to caregivers in times of need (Mikulincer & Shaver, 2003, 2007a). This finding provides further support for suggestions that attachment processes create an underlying vulnerability to future psychopathology (Bowlby, 1973, 1980; Davila et al., 2005; DeKlyen & Greenberg, 2008; Egeland & Carlson, 2004; Hankin et al., 2005; Mikulincer & Shaver, 2007a; Sroufe et al., 1999; Sroufe, 1997).

The hypothesis that attachment anxiety would predict reassurance-seeking behaviour over-and-above depression and OCD-related beliefs was also supported, with attachment anxiety the strongest predictor of reassurance-seeking behaviour. This indicates the unique contribution of attachment anxiety in the development of excessive reassurance-seeking behaviour. This finding supports suggestions that reassurance seeking is a definitive interpersonal characteristic of individuals with high attachment anxiety (Evraire et al., 2014; Shaver et al., 2005). It also suggests that attachment anxiety accounts for more of the variance in reassurance-seeking behaviour than other factors involved in the development and maintenance of OCD; i.e., depression or OCD related beliefs.

Examination of the mediational hypothesis revealed that OCD-related beliefs were a partial mediator of the relationship between attachment anxiety and reassurance-seeking behaviour. Previous research by Doron et al. (2009) suggests that the relationship between attachment dimensions (both attachment anxiety and attachment avoidance) and OCD symptoms is fully mediated by OCD-related beliefs. The reason attachment anxiety and reassurance seeking may only be partially mediated by OCD-related beliefs, could be because attachment anxiety has a direct effect on reassurance-seeking behaviour. That is, attachment anxiety leads directly to hyperactivation of the attachment behavioural system, which leads to persistent bids for safety and support such as seeking reassurance (Mikulincer & Shaver, 2003, 2007a). In the context of OCD, there is also an additional indirect pathway from attachment anxiety to reassurance-seeking behaviour, through OCD-related beliefs. That is, attachment anxiety is associated with low self-worth and reliance on others, leading to the development of OCD-related beliefs (e.g., need for certainty, overinflated sense of responsibility for negative outcomes, overestimation of threat,



and need to control thoughts), leading to repetitive and energetic bids for reassurance from others to assure their security (i.e., excessive reassurance seeking) (Doron & Kyrios, 2005; OCCWG, 1997; Parrish & Radomsky, 2010; Rachman, 2002; Salkovskis, 1985, 1999).

#### **Attachment dimensions and OC symptoms measured by the OCI-R.**

The hypothesis that other OC symptoms, besides reassurance seeking, would be associated with both attachment anxiety and attachment avoidance was partially supported. Compulsive-checking behaviour was correlated with attachment avoidance and attachment anxiety. This illustrates that despite functional similarities between reassurance seeking and compulsive checking (Kobori et al., 2012; Kobori et al., 2014; Parrish & Radomsky, 2006; Parrish & Radomsky, 2010; Rachman, 2002), there are important differences in attachment orientations and therefore cognitive-affective structures associated with reassurance-seeking behaviour compared to compulsive checking. Although both behaviours are characterised by doubt and uncertainty, the present study suggests that different underlying IWMs of the self and others lead to checking with others, as opposed to checking for oneself.

Furthermore, other OC symptom themes (i.e., washing, obsessing, hoarding, and neutralising) were associated with both attachment anxiety and attachment avoidance, similar to compulsive checking. This is consistent with previous research by Doron et al. (2009) indicating that OCD symptoms are associated with both attachment anxiety and attachment avoidance. However, ordering was the exception to this and had a small association with attachment anxiety only. This was unexpected, as ordering behaviours were thought to be associated with similar attachment orientations to other OCD symptoms. This results could indicate that attachment orientations have less of an effect on ordering behaviours, as the data trends suggested that ordering was also positively associated with attachment avoidance but this was not significant.

#### **Attachment styles, reassurance seeking, and compulsive checking.**

The hypothesis that individuals with a preoccupied style of attachment would endorse the most reassurance-seeking behaviour compared to other attachment styles, was supported by the data trends in the present study. Individuals with a preoccupied style of attachment reported seeking significantly more reassurance than individuals with a secure or dismissive style of attachment. In the present study, individuals with a preoccupied style of attachment sought the most reassurance ( $M = 102.66$ ), followed

by fearful ( $M = 94.23$ ), secure ( $M = 83.61$ ), and dismissive ( $M = 77.63$ ). These findings were consistent with research by Wearden, et al. (2006) who found that in the context of hypochondriasis, individuals with a preoccupied style of attachment sought the most reassurance on average ( $M = 14.06$ ), then fearful ( $M = 8.89$ ), secure ( $M = 7.91$ ), and dismissive styles of attachment ( $M = 6.79$ ).

According to Bartholomew (1990) a preoccupied style of attachment is associated with a positive view of others and a negative view of the self. Thus, it makes sense that this style of attachment would be associated with the highest level of reassurance-seeking behaviour, as these individuals are more likely to rely on others (who are idealised) and distrust information coming from the self (who is unreliable and untrustworthy). Furthermore, a dismissive style of attachment is associated with a negative view of others and a positive view of the self. Therefore, it is not surprising that this style of attachment is associated with the lowest level of reassurance-seeking behaviour, as these individuals are more likely to rely on information coming from the self (as they are compulsively self-reliant) and distrust information coming from others (who are dangerous and untrustworthy). Therefore, securely attached individuals may seek more reassurance than dismissively attached individuals, who may avoid seeking reassurance even in times when it is warranted. This is consistent with theories that reassurance-seeking behaviour exists on a continuum, whereby non-excessive reassurance seeking may be adaptive (Halldorsson et al., 2016; Kobori & Salkovskis, 2013; Neal & Radomsky, 2015; Salkovskis & Kobori, 2015; Shaver et al., 2005).

The hypothesis that compulsive-checking behaviour would be associated with a fearful style of attachment was supported by the trends of the data in this study. Fearfully attached individuals are more likely to distrust information coming from the self and from others leading to repetitive and frugal attempts at gathering safety related information (Mikulincer & Shaver, 2003, 2007a). The differences in attachment styles associated with compulsive checking compared to excessive reassurance seeking further illustrates important differences in the underlying IWMs associated with these behaviours. The present study suggests that individuals who seek reassurance may possess a more positive view of others, than individuals who compulsively check, leading them to seek safety from others rather than from the self.

### **Implications of findings.**

The present study has theoretical implications and suggests that reassurance seeking is significantly different from compulsive checking and other OC symptoms in terms of underlying attachment processes and IWMs. This contributes to the literature on subtyping OCD based on symptom themes. Radomsky and Taylor (2005) suggest that developmental factors should be considered when classifying different subtypes of OCD. The present findings suggest that excessive reassurance seeking develops from different attachment processes than other OC symptoms. Future treatment approaches may wish to incorporate treatments for attachment insecurity, especially attachment anxiety, when treating reassurance-seeking behaviour in the context of OCD (e.g., Doron & Moulding, 2009; Doron, Moulding, et al., 2012; Sookman et al., 1994).

### **Limitations and proposed directions for future research.**

There were a number of limitations with the present study which require acknowledgement when interpreting the current findings and designing future research. Firstly, this research was cross-sectional and therefore causal relationships between variables cannot be assumed. Future research may wish to consider experimental or longitudinal designs to examine how changes in attachment related IWMs can change reassurance-seeking behaviour. Secondly, the sample comprised of non-clinical participants many of who were university students. This may affect the generalisability of the present study to samples with different levels of relationship experience and at different developmental stages. Future research may wish to examine these variables in a population of individuals diagnosed with OCD to determine if similar patterns exist. Although there are many similarities between OC phenomena in non-clinical and clinical populations (Abramowitz, Fabricant, Taylor (Abramowitz et al., 2014; Burns et al., 1995; Gibbs, 1996), a number of important differences also exist.

Thirdly, there are some limitations to research conducted using self-report measures. Self-report measures of attachment in particular have been criticised as not all individuals have insight into their attachment experiences and processes, as they are often unconscious, automatic, and can be guarded by particular defence mechanisms (Crowell et al., 2008; Mikulincer & Shaver, 2007a; Ravitz et al., 2010). Although it has been proposed that by adulthood individuals may have had significant experiences in close relationships so as to develop insight into their attachment

processes (Mikulincer & Shaver, 2007a), the current sample were quite young ( $M$  age = 22.55) and may not have had sufficient relationship experiences. Self-report attachment measures can also be affected by social desirability bias; however, questionnaires were completed anonymously in an attempt to minimise this (Wearden et al., 2006). Future research may wish to use a lengthier interview based measure of attachment to prevent these problems with self-report measures. Future research may also wish to consider additional mediators for the relationship between attachment and OCD, including emotional regulation and interpersonal skills.

In summary, this study provides support for the robust relationship between attachment anxiety and excessive reassurance seeking. In the context of OCD, both attachment anxiety and OCD-related beliefs predicted excessive reassurance seeking over-and-above low mood. The present study also found important differences in attachment processes underlying excessive reassurance seeking compared to compulsive checking. This was the first study to investigate the relationship between attachment and excessive reassurance seeking, in the context of OCD. The following chapter addresses the second study in this thesis, which aimed to replicate these findings, and further extend upon them by examining this relationship using an experimental design.

## **Chapter 7: Study Two: The Effects of Experimentally Activating Specific Attachment Styles on Reassurance-Seeking Behaviour in the Context of OCD**

### **Introduction, Aims, and Hypotheses**

While OCD is usually considered from the perspective of the individual, symptoms often occur in the interpersonal context and their impact on others is becoming increasingly well recognised (Boeding et al., 2013). Excessive reassurance seeking is a symptom of OCD that causes greater distress and reduced quality of life in caregivers (Halldorsson et al., 2016; Kobori & Salkovskis, 2013; Salkovskis & Kobori, 2015). Given the burden of reassurance seeking on the individual and those close to them, the present study aims to draw on theories of attachment, cognition, and behaviour to examine the relationship between attachment orientations, OCD-related beliefs, and excessive reassurance-seeking behaviour.

In the context of OCD, Doron et al. (2009) found that attachment insecurities (especially attachment anxiety) predicted OCD-related beliefs and symptoms. Furthermore, the relationship between attachment insecurities and OC symptoms was fully mediated by OCD-related beliefs in this study. This finding suggests that OC symptoms develop from attachment insecurities and related beliefs. In the context of MDD, research has suggested that excessive reassurance-seeking behaviour is associated with high attachment anxiety (Evraire et al., 2014; Shaver et al., 2005). The relationship between attachment avoidance and excessive reassurance seeking has been less clear with some studies reporting no association (Shaver et al., 2005) and others reporting an inverse association (Evraire et al., 2014). The first study of this thesis aimed to combine these investigations and examined the relationship between attachment orientations, reassurance-seeking behaviour, and OC phenomena. In a sample of 171 non-clinical participants, results suggested that attachment anxiety predicted reassurance-seeking behaviour over-and-above OCD-related beliefs and low mood. This study found that reassurance seeking and compulsive checking were associated with different underlying attachment orientations, highlighting the importance of tailoring treatment to specific presentations of symptoms.

A major limitation of both research in the field of attachment and OCD (Doron et al., 2009; Doron, Moulding, et al., 2012), as well as attachment and reassurance-seeking behaviour, is that the majority of research has been cross-sectional. This means that inferences about causal relationships between these factors are limited. In

the depression literature, one study examined the effects of priming low mood in three different contexts (with a romantic partner, with friends, and academically) on excessive reassurance-seeking behaviour in 303 undergraduates. Results indicated that following the interpersonal partner prime, but not the interpersonal friend prime, attachment anxiety was associated with increased reassurance-seeking behaviour and attachment avoidance was associated with reduced reassurance-seeking behaviour. The researchers suggest that attachment relationships are more frequently romantic, and that the friendship prime may not have been sufficient to activate IWMs of attachment anxiety (Evraire et al., 2014). This paper also found that following the academic prime attachment anxiety was associated with increased reassurance-seeking behaviour, which they suggest may be due to participants focusing on the social aspect of achievement-related events (Evraire et al., 2014). While this experimental study has important implications for excessive reassurance-seeking behaviour in different contexts, it did not look at how activation of secure and insecure attachment styles can influence reassurance-seeking behaviour.

Most individuals have multiple IWMs of the self, others, and the world. Adults are posited to have multiple relationship-specific attachment representations, developed through specific relationships with different attachment figures. Therefore, one's thoughts, predictions, and behaviours can vary between relationships (Baldwin et al., 1996; Herzog, Hughes, & Jordan, 2010; Mikulincer & Shaver, 2003, 2007a). In this thesis, the term "specific" attachment style is used to describe a temporarily activated IWM that is specific to a relationship. Adults are also posited to have a global chronically accessible attachment representation that informs the majority of their thoughts, predictions, and behaviours. This is the attachment style most easily accessible and most stable over time (Baldwin et al., 1996; Herzog et al., 2010; Mikulincer & Shaver, 2003, 2007a). In this thesis, the term "global" attachment style will be used to describe one's chronically activated attachment representation. Thus, attachment has both a relationship-specific and a global chronically accessible level, and attachment-based research is encouraged to include measures of both global and specific states of attachment.

While individuals are most likely to use their global IWMs the majority of the time, at any given time point one's cognition is likely to be influenced by the currently activated specific IWM (Dewitte & De Houwer, 2011; Rowe & Carnelley, 2003). Dewitte and De Houwer (2011) measured the effects of both specific and

global attachment styles on the perception of attachment figures. They found that specific, but not global, attachment styles influenced perception. That is, when secure attachment was primed, participants showed a better inhibition of negative traits in attachment figures, compared to when an insecure style was primed. As, Dewitte and De Houwer (2011) found no significant difference between the three insecure styles of attachment, they suggested that future research focus on the difference between secure and insecure attachment styles, rather than differences among insecure styles of attachment. This is especially in regards to implicit rather than explicit processing. They suggest that implicit processing may attenuate many of the differences that appear when individuals are able to explicitly report on their experience. In order to look at the effects of both global and specific attachment-related IWMs, the present study aimed to measure global attachment with the ECR, and to prime specific attachment experiences with a supraliminal attachment related writing task, as recommended by Dewitte and De Houwer (2011).

The present study aimed to replicate the findings from study one. That is, the present study aimed to investigate the relationship between attachment insecurities and excessive reassurance seeking. It aimed to examine this relationship in the context of OCD, by exploring the effect of OCD-related cognitions and low mood in this relationship. It also aimed to examine differences between excessive reassurance-seeking behaviour and compulsive checking, which have often been theorised to serve a similar function (Kobori et al., 2012; Kobori et al., 2014; Parrish & Radomsky, 2006; Parrish & Radomsky, 2010; Rachman, 2002).

Extending the findings from study one, this second study also aimed to examine the impact of attachment insecurities on reassurance-seeking behaviour. The current study aimed to prime specific secure and insecure attachment-related states. It aimed to investigate if activation of specific IWMs would increase reassurance-seeking and compulsive-checking behaviours on a stove checking task. It also aimed to examine how global IWMs, as measured at baseline, would influence reassurance-seeking and compulsive-checking behaviour.

Based on previous research by Shaver et al. (2005), in the depression literature, and the findings of study one, it was hypothesised that at baseline high levels of self-reported reassurance-seeking behaviour would be associated with high levels of attachment anxiety. In comparison, based on research by Doron et al. (2009) it was predicted that at baseline high levels of self-reported compulsive checking

would be associated with both high levels of attachment anxiety and high levels of attachment avoidance. As with study one, it was also hypothesised that attachment anxiety would predict reassurance-seeking behaviour over-and-above depression and other OCD-related beliefs. It was also predicated that OCD-related beliefs would mediate the relationship between attachment anxiety and reassurance-seeking behaviour.

Furthermore, it was predicted that following an attachment priming task, attachment anxiety would increase in individuals allocated the insecure attachment priming task, decrease in individuals allocated the secure attachment priming task, and not change in individual allocated the neutral attachment priming task. It was also predicted that higher global attachment anxiety would be associated with a stronger urge to seek reassurance and observed reassurance-seeking behaviour. In comparison, it was predicted that higher global attachment anxiety and attachment avoidance would be associated with a greater urge to check and observed checking behaviour. Moreover, it was expected that individuals in the insecure attachment priming condition would seek more reassurance and experience a greater urge to seek reassurance, following an experimental stove checking task, than individuals in the secure group. Similarly, it was expected that individuals in the insecure attachment priming condition would spend longer checking the stove, perform a higher number of checks, and experience a greater urge to check the stove, following an experimental stove checking task, than individuals in the secure group.

## **Method**

### **Participants.**

In this study participants were 80 individuals, between 18 and 42 years of age, with a mean age of 24.51 ( $SD = 5.09$ ). The sample contained 53 females ( $M$  age = 23.96,  $SD = 5.23$ ) and 27 males ( $M$  age = 25.59,  $SD = 4.70$ ) participants. Nine of the 80 participants in this study were excluded from statistical analysis involving the experimental stove task, but included in all other analyses. This was due to four instances of lost video footage, one instance of a participant requesting not to be recorded, one instance of the researcher not correctly administering the experimental stove task, and three instances of participants not demonstrating full understanding of the experimental stove task.



Participants comprised of students and community members, and recruitment methods were the same as those used in study one. Student participants were recruited through research experience program at Swinburne University of Technology, and received partial course credit for their participation. The study was advertised to first year psychology students via an online notice board and announcements in first year psychology lectures. Community participants were recruited through the researchers social networks, using snowball sampling. These participants did not receive an incentive for their involvement.

Most participants were born in Australia (83.8%), with the remaining participants being from Africa (1.3%), Asia (8.8%), Europe (3.8%), New Zealand (1.3%), and South America (1.3%). The majority of participants identified as single (51.2%), the remaining 35% identified as being in a committed relationship and 13.8% identified as being married or in a defacto relationship. Highest level of education completed included year 12 or equivalent (28.7%), diploma (11.3%), undergraduate degree (47.5%), and postgraduate degree (12.5%). Participants reported employment on a full-time (40%), part-time (22.5%), and casual (21.3%) basis, with 16.3% reporting unemployment at the time of participation.

### **Measures.**

This study used the same questionnaires as study one, that is, the demographics questionnaire (see p. 71), DASS-21 (see p. 71), RSS (see p. 71), OBQ-44 (see p. 72), OCI-R (see p. 72), and ECR (see p. 73). Each participant completed the ECR twice, once with the initial self-report questionnaire package to establish one's global attachment orientation, and once after the attachment priming task to establish whether specific attachment styles had been evoked by the prime. A copy of these questionnaires can be viewed in appendix A. Reliability scores for the present sample are shown in table four, and are discussed in the results section of study two.

### **Procedure.**

The between subjects experimental procedure used in this study was approved by Swinburne's Human Research Ethics Committee (see appendix I), as with study one. Prior to commencing the study, participants were given a consent information statement that outlined their right to withdraw their participation at any time point, and the confidentiality and data destruction procedures used in this study (see

appendix J). In this document they were told that participation would involve a writing task about experiences in relationships, a video recorded stove-checking task, and questionnaires about OC phenomena, mood, and behaviour. In order to simulate real life experiences, reduce bias, and maintain the integrity of the study, some details about the nature of the study were not disclosed until after completion of the study. That is, participants were not informed of the true nature of the writing task as an attachment prime, this aimed to replicate real life experiences in which IWMs are often activated automatically and unconsciously (Bowlby, 1973; Collins & Allard, 2001). Furthermore, the experimental stove task was described as a “memory and attention task” and participants were not told that the researchers were measuring their checking and reassurance-seeking behaviours. Knowledge of the behaviours being measured could have biased the participant’s behaviour; for example, if they tried to meet the researcher’s expectations. Also, participants were told that the stove was operational when it was not. The stove was a real, fully functional kitchen stove but it was switched off to ensure participant safety and to reduce feedback to participants via heat emanating from the burner. They were also told that the experimental room was a staff kitchenette. Tea, coffee, sugar, and cups were set up to make it look like a functional kitchenette and to evoke authentic behavioural responses from participants. This aimed to replicate real life, when individuals feel compelled to seek reassurance and check repeatedly (APA, 2013). After reading the consent information statement participants were given the opportunity to sign a consent form. Only participants who provided their explicit consent continued in the study.

This study had three main components: the self-report questionnaires, the attachment priming task, and the experimental stove task. After the consent process participants were randomly allocated to one of three conditions via an online computer program. These conditions corresponded to the attachment priming task they would be given later in the study. Next, participants completed the self-report questionnaires to establish their baseline scores.

The researcher then demonstrated the experimental stove task to the participant. The stove had four burners corresponding to four controls, which had a plastic stove-knob that could be turned to control the temperature. The stove-knobs were removed and participants were provided with one stove-knob to control all four burners; therefore, the stove-knob had to be removed from one control to the next. The original temperature markings on the kitchen stove were covered and replaced

with a “H” for high, to increase uncertainty beliefs which are common in OCD (OCCWG, 1997). To further increase uncertainty beliefs participants were told the stove was fiddly and difficult to turn off, to wiggle the stove-knob when turning it off, and to check the stove was turned off properly. Participants were also instructed not to touch the stove for safety reasons; however, this was to reduce the likelihood of participants realising the stove was not operational and achieving certainty that the stove was off. Participants were instructed to check the stove as many times as they needed until they were satisfied it was off.

The researcher read from a script, to ensure instructions were standardised across all participants (see appendix K). Participants were instructed, “Now I’m going to show you how to carry out a stove checking task. This is a memory and attention task. To complete the stove task you need to first turn on the stove, secondly turn off the stove, and then the last step is to check that it is off. It is important that you check that the stove is off as it can be a bit fiddly and is sometimes difficult to turn off. Throughout this task you also need to be careful that you don’t burn yourself on the stove, as it is fully operational so please make sure to keep some distance.” The researcher then demonstrated a safe distance and proceeded to show participants how to perform the task. Participants were instructed further, “To turn on the stove, replace the knob on the burner, turn it to high, and then remove the knob. Do this for each of the burners.” The researcher then demonstrated how to replace the stove-knob, turn it to high, and then remove it from each burner. The researcher also noted that the stove-knob did not need to be pushed all the way on. The researcher then said, “Next you will need to turn off the burner. To do this replace the knob on the burner, turn it to off, wiggle the knob to make sure it is off, and then remove the knob.” The researcher then demonstrated how to replace the stove-knob, turn it to off, wiggle it, and then remove it from each burner. Participants were then told, “At the end you need to do the last step of checking the stove is turned off properly. Make sure to do this by replacing the knob, turning it to high, then off again. And then just give it a good wriggle at the end.” The researcher then demonstrated how to do replace the stove-knob, turn it to high, then back to off, wiggle it, and remove it, from each burner. The researcher then checked the participants understanding by saying, “Once that’s done and you’re satisfied, pull it out and bring it back to me. Do you understand?”

After participants understood the experimental stove task, they were instructed to complete the attachment priming task (see appendix L). Participants had already

been randomly allocated to one of the three conditions: secure, insecure and control. Participants in the secure condition were instructed to write about a romantic or close relationship where they felt reciprocal love, trust and dependency. The secure prime aimed to elicit a specific attachment style of confidence, responsiveness and safety. Participants in the insecure condition were asked to write about a romantic or close relationship where they felt fearful of abandonment, and their love and care were not reciprocated. This insecure prime aimed to elicit a specific anxious attachment style of abandonment, unpredictability, and fear. The control group were instructed to write about going to the supermarket and the people around them. The control prime aimed to be neutral and not elicit a specific attachment style. Participants were given five minutes to complete the write, this was timed by the researcher. Afterwards, participants were asked to rate the quality of the memory they reflected upon. The three attachment priming conditions were adapted from research by Gillath, Giesbrecht, and Shaver (2009). After this, participants were asked to complete the ECR questionnaire again, to measure the effectiveness of the attachment priming task in activating specific IWMs. An anxious attachment style was primed as attachment anxiety has previously been associated with OC phenomena (e.g., Doron, Moulding, et al., 2012).

Participants were then asked to complete the experimental stove task, while the researcher left the room to do some work. The participant was instructed to let the researcher know once they had finished the stove task by knocking on the researcher's door. After they completed the experimental stove task once, they were instructed to complete it again, repetition was used to increase data reliability and increase OC phenomena that are theorised to be self-perpetuating (Freeston et al., 1991; Rachman, 2002; Salkovskis et al., 1997). The researcher was not present during the experimental stove task to simulate real life, increase responsibility, and reduce implicit reassurance seeking from the researcher. However, a camera was placed on the side of the stove to ensure accurate recording of the duration of the task and the number of checks. The duration of the entire stove task was recorded and believed to measure both overt and covert checks.

Observed checks were recorded as a separate measure of checking and included overt checks performed in addition to the checks asked of the participant. Observed checks were classified into three categories: stove-knob checks, heat checks, and miscellaneous checks. A stove-knob check was any additional check to

see if the stove was off that involved the stove-knob; for example, any additional placement or checks completed with the stove-knob. A heat check was any check to see if the stove was off that involved checking the burners for heat; for example, holding a hand over a burner. Miscellaneous checks were any additional checks to see if the stove was off; for example, visual inspection of the stove or opening the oven door to check it was off. Each check was counted, for each burner, and each category. For example, carrying out a stove-knob check on all four controls counted as four checks, and carrying out a heat and stove-knob check on one burner counted as two checks. Furthermore, following completion of the experimental stove task the researcher noted any instance of genuine reassurance seeking from the participant. These included instances of direct (e.g., “Did I do that right?”) and indirect statements (e.g., “I think the stove is off”). Not all participants completed the stove task correctly (i.e., turning each burner on, turning each burner off, and then checking each burner was off), which appeared to be due to difficulties recalling the exact instructions. The main aim of the study was to measure OC phenomena rather than memory; therefore, participants who appeared to attempt to replicate the instructions, even if they showed minor variations, were included in the analysis. As previously mentioned, three participants were excluded for not demonstrating a proper understanding of the stove task.

After completing the stove task participants were asked to complete the post-experimental stove task questionnaire designed by the researchers (see appendix M). This asked about the participant’s sense of responsibility for ensuring the stove was off, their confidence the stove was off, their urge to check, their urge to seek reassurance, and whether they believed the stove was operational. The urge to seek reassurance was used as a measure of reassurance-seeking behaviour, as a non-clinical population was used and actual reassurance-seeking behaviour may not occur frequently enough, thus impacting on the possible range of scores. Upon completion of this questionnaire participants were given the debriefing statement (see appendix N), explaining the true nature of the experiment. Participants were invited to discuss any questions or concerns with the researcher.

Data was transcribed manually from pen and paper questionnaires to an SPSS data file. Checking behaviour was video recorded and later transcribed into the SPSS data file. Data was entered by one researcher and checked by another, any queries

were discussed with a supervising researcher and categorised according to agreement between at least two of the researchers.

## **Results**

### **Preliminary data screening.**

Data screening and analyses were performed using the SPSS, version 23.0. Preliminary data screening was performed to ensure the data met the relevant assumptions and was appropriate for further analysis. Examination of the missing data from the self-report questionnaires was conducted using the MVA program on SPSS. This indicated that data was missing completely at random and all items were comprised of less than 2% missing data. Missing values were substituted with the mean of the participant's answered items for each subscale, this approach was taken as only a small percentage of the data was missing and psychological measures are highly correlated (Downey & King, 1998). As previously mentioned, nine participants were excluded from analysis involving the experimental stove task but included in all other analysis.

As data was entered manually, frequency tables and descriptive statistics were examined for each item to ensure all data points were within a plausible range. No data entry errors were observed and all scores were within the expected range. Next, frequency and descriptive statistics were used to inspect the data at the variable level, to ensure correct minimum and maximum scores, plausible means and standard deviations, and to inspect for any other anomalies. The scales were all within the expected range for each variable.

Parametric statistical procedures assume data is normally distributed (Tabachnick & Fidell, 2014). The assumption of normality was investigated both graphically and statistically. Histograms, boxplots, expected normal probability plots, and detrended expected normality plots were inspected and revealed several variables were positively skewed; this is common for some psychological measures (e.g., the OCI-R) where most people do not experience these symptoms. Skewness and kurtosis ratios were inspected for standardised skewness ratios  $> 3.29$ , ( $p < .001$ ; Tabachnick & Fidell, 2014) and revealed that DASS Depression, DASS Anxiety, OBQ Importance/Control Thought, OCI Washing, OCI Obsessing, OCI Neutralising, urge to seek reassurance, urge to check, and task duration were significantly positively skewed. These variables were transformed using a square root transformation,

following the transformation skewness and kurtosis ratios were no longer significant at the  $p < .001$  level. Transformed variables were used in all forthcoming analyses, unless otherwise specified, see table four. Examination of the total observed checks and observed reassurance-seeking behaviour variables revealed that they had a discrete, non-normal distribution, which did not approach normality despite transformations. Following investigation these variables were deemed inappropriate for further analysis. For example, the observed reassurance seeking variable included only two instances of observed reassurance and did not meet parametric assumptions or have enough variance for further analysis.

Data was examined for univariate outliers at the variable level. Histograms, box plots, 5% trimmed means, and z scores were examined for each variable, particular attention was paid to z scores above 3.29 ( $p < .001$ , two tailed; Tabachnick & Fidell, 2014). An outlier was detected in DASS Anxiety, OCI Obsessing, and the urge to seek reassurance prior to transformation. However, following the square-root transformation these outliers were no longer significant at the .001 level and were believed to be part of reflect the target population. No multivariate outliers were detected above the  $p < .001$  level, using Mahalanobis' Distance.

This study was designed to ensure independent scores. However, the data was sorted by the order in which participants completed the experiment and the Durbin-Watson statistic was assessed, this statistic supported the assumption of independence. Inspection of scatterplots of the standardised residuals against the predicted values did not reveal any violations to the assumption of linearity or homoscedacity. Levene's test was used to assess homoscedacity between the three attachment priming groups, which were all non-significant at the alpha level of  $p < .05$ , suggesting this assumption has not been violated. All Pearson-product moment correlations were less than .9 indicating no multicollinearity concerns (Tabachnick & Fidell, 2014), see table five. Furthermore, inspection of VIF, tolerance and eigenvalues revealed no violation to this assumption. Test-specific assumptions will be discussed below, where relevant.

The reliability of each self-report questionnaire was assessed using Cronbach's alpha and reported in table four. All reliability scores were equal to or above the cut off of  $\alpha = .7$  (Kline, 2013) with the exception of the OCI Washing and OCI Neutralising subscales. Given that these subscales consist of only three items and the OCI-R is considered a robust and well-established scale these variable were retained in the analysis without excluding items (Foa, et al., 2002). Table four describes the

total number of participants, means, standard deviations, reliabilities and transformation applied for each variable.

Table 4

*Means, Standard Deviations, Reliabilities, and Type of Transformation for each of the Variables*

Variable	<i>N</i>	<i>M</i>	<i>SD</i>	$\alpha$	Transformation
DASS Stress	80	14.27	9.43	.86	
DASS Depression	80	9.45 (2.66)	8.97 (1.55)	.89	SQRT
DASS Anxiety	80	6.80 (2.10)	7.57 (1.56)	.81	SQRT
RSS Total	80	85.13	20.20	.94	
RSS-DM	80	41.50	9.19	.89	
RSS-SA	80	21.16	6.48	.88	
RSS-GT	80	22.46	8.05	.90	
OBQ-44 Total	80	141.79	33.82	.93	
OBQ-RT	80	54.71	14.88	.88	
OBQ-PI	80	59.90	14.02	.85	
OBQ-IC	80	27.17 (5.13)	10.56 (0.95)	.88	SQRT
OCI-R Total	80	18.06	10.88	.86	
OCI-R Washing	80	1.56 (0.84)	2.05 (0.93)	.58	SQRT
OCI-R Obsessing	80	2.69 (1.39)	2.47 (0.88)	.74	SQRT
OCI-R Hoarding	80	3.78	2.89	.77	
OCI-R Ordering	80	4.90	3.61	.88	
OCI-R Checking	80	2.98	3.05	.70	
OCI-R Neutralising	80	2.17 (1.11)	3.02 (0.98)	.60	SQRT
ECR Avoidance T1	80	2.73	1.07	.94	
ECR Anxiety T1	80	3.44	0.97	.89	
ECR Avoidance T2	80	2.72	1.05	.95	
ECR Anxiety T2	80	3.34	1.10	.93	
Task Duration	71	166.30 (12.75)	52.03 (1.93)		SQRT
Urge to RS	71	0.96 (0.69)	1.14 (.70)		SQRT
Urge to Check	71	0.85 (.64)	1.02 (.67)		SQRT
Stove working	71	1.92	1.29		



*Note.* This table contains non-transformed data, with transformed data in brackets. DASS Stress = Stress Subscale of the Depression Anxiety Stress Scales-21 item, DASS Depression = Depression Subscale of the Depression Anxiety Stress Scales-21 item, DASS Anxiety = Anxiety Subscale of the Depression Anxiety Stress Scales-21 item, RSS Total = Total Score for the Reassurance Seeking Scale, RSS-DM = Decision Making Subscale of the Reassurance Seeking Scale, RSS-SA = Social Attachment Subscale of the Reassurance Seeking Scale, RSS-GT = General Threat Subscale of the Reassurance Seeking Scale, OBQ-44 Total = Total Score for the Obsessive Beliefs Questionnaire-44 items, OBQ-RT = Responsibility and Overestimation of Threat Subscale of the Obsessive Beliefs Questionnaire-44 item, OCQ-PI = Perfectionism and Intolerance of Uncertainty Subscale of the Obsessive Beliefs Questionnaire-44 items, OBQ-IC = Importance and Control of Thought Subscale of the Obsessive Beliefs Questionnaire-44 items, OCI-R Total = Total Score for the Obsessive Compulsive Inventory-Revised, OCI-R Washing = Washing Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Obsessing = Obsessing Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Hoarding = Hoarding Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Ordering = Ordering Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Checking = Checking Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OCI-R Neutralising = Neutralising Symptom Subscale of the Obsessive Compulsive Inventory-Revised, ECR Avoidance T1 = Attachment Avoidance Subscale of the Experience of Close Relationship Scale prior to the attachment priming task, ECR Anxiety T1 = Attachment Anxiety Subscale of the Experience of Close Relationship Scale prior to the attachment priming task, ECR Avoidance T2 = Attachment Avoidance Subscale of the Experience of Close Relationship Scale after the attachment priming task, ECR Anxiety T2 = Attachment Anxiety Subscale of the Experience of Close Relationship Scale after the attachment priming task, Task Duration = Total time taken to complete the stove checking task, Urge to RS = Single 5 point Likert scale item asking “How strongly do you want to check with the experimenter that the stove is off?”, Urge to Check = Single 5 point Likert scale item asking “How strongly do you want to go back and check the stove is off?”, Stove working = Single 5 point Likert scale item asking “Did you think the stove elements were actually being switched on and off by the knob you were given?”.

### **Cross-Sectional data analyses.**

***Correlational examination of the association between reassurance seeking, compulsive checking, and attachment dimensions.*** Firstly, cross-sectional analysis of the self-report questionnaires was conducted to explore the relationship between reassurance-seeking behaviour, attachment orientations, and OC phenomena at baseline. The hypothesis that higher attachment anxiety (ECR Anxiety T1) would be associated with higher levels of reassurance-seeking behaviour (RSS Total) at baseline, was examined using Pearson product-moment correlations. BCa 95% CIs are reported in square brackets. As expected there was a moderate positive

relationship between these two variables,  $r(80) = .45$ , 95% BCa CI [.220, .64],  $p < .001$ , with high levels of attachment anxiety correlating with high levels of reassurance-seeking behaviour. The relationship between attachment avoidance (ECR Avoidance T1) and reassurance-seeking behaviour (RSS Total) was not significant,  $r(80) = -.05$ , 95% BCa CI [-.28, .18],  $p = .67$ . As with study one, this illustrates that reassurance-seeking behaviour is associated with higher levels of attachment anxiety, but, is not associated with attachment avoidance.

The hypothesis that higher attachment avoidance (ECR Avoidance T1) and higher attachment anxiety (ECR Anxiety T1) will be associated with higher levels of compulsive-checking behaviour (OCI-R Checking) was also examined using Pearson product-moment correlations. There was a non-significant positive relationship between attachment avoidance and compulsive checking,  $r(80) = .16$ , 95% BCa CI [-.02, .33],  $p = .16$ . There was a small positive correlation between attachment anxiety and compulsive-checking behaviour,  $r(80) = .25$ , 95% BCa CI [.02, .45],  $p = .03$ , that is higher levels of attachment anxiety were associated with higher levels of compulsive-checking behaviour. This indicates that compulsive-checking behaviour is associated with attachment anxiety but not significantly associated with attachment avoidance.

Table 5

*Pearson Correlations between Measures of Depression, Reassurance Seeking, Attachment Anxiety and Avoidance, and OC Symptoms and Beliefs*

	1	2	3	4	5	6	7
1.DASS Depression	1.00						
2.RSS Total	.11	1.00					
3.OBQ-44 Total	.18	.46**	1.00				
4.OCI-R Total	.32**	.39**	.55**	1.00			
5.OCI-R Checking	.31**	.25*	.46**	.85**	1.00		
6.ECR Avoidance T1	.10	-.05	.25*	.22*	.16	1.00	
7.ECR Anxiety T1	.31**	.45**	.37**	.28*	.25*	.21	1.00

*Note.*  $N = 80$ . DASS Depression = Depression Subscale of the Depression Anxiety Stress Scales-21 item, RSS Total = Total Score for the Reassurance Seeking Scale, OBQ-44 Total = Total Score for the Obsessive Beliefs Questionnaire-44 items, OCI-R Total = Total Score for the Obsessive Compulsive Inventory-Revised, OCI-R Checking = Checking Symptom Subscale of the Obsessive Compulsive

Inventory-Revised, ECR Avoidance T1= Attachment Avoidance Subscale of the Experience of Close Relationship Scale prior to the attachment priming task, ECR Anxiety T1= Attachment Anxiety Subscale of the Experience of Close Relationship Scale prior to the attachment priming task.

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

***Examination of the ability of attachment anxiety to predict reassurance-seeking behaviour over-and-above depression and OCD-related beliefs.*** Hierarchical multiple regression was used to examine the hypothesis that attachment anxiety (ECR Anxiety T1) would predict reassurance-seeking behaviour (RSS Total) over-and-above depression (DASS Depression) and OC-related beliefs (OCQ-44 Total). Multicollinearity assumptions were met as all VIFs were less than 1.3, and correlations between the predictor variables were less than .50. As with study one, the model consisted of reassurance-seeking behaviour (RSS Total) as the outcome variable. DASS Depression scores were entered at stage one, OBQ-44 Total added at stage two, and ECR Anxiety T1 was entered at stage three. The total variance explained by the model as a whole was 30.5%,  $F(3,76) = 11.14$ ,  $p < .001$ . At stage two, the addition of OC-related beliefs explained a further 20% of the variance in reassurance-seeking behaviour, after controlling for depression. At stage three, attachment anxiety explained an additional 9% of the variance in reassurance-seeking behaviour over-and-above the variance accounted for by depression and OC-related beliefs. In the final model, only OCD-related beliefs and attachment anxiety were statistically significant predictors of reassurance-seeking behaviour. A summary of this regression analysis is presented in table six.

Table 6

*Summary of Hierarchical Regression Analysis Predicting Reassurance-seeking behaviour from Depression, OCD Related Beliefs, and Attachment Anxiety*

	<i>b</i>	<i>SE b</i>	$\beta$	$\Delta R^2$	<i>F</i> -change
Step 1				.01	0.91
DASS Depression	1.40	1.47	.11		
Step 2				.20	19.94**
DASS Depression	0.36	1.34	.03		
OBQ-44 Total	0.27	0.06	.46**		
Step 3				.09	9.91**
DASS Depression	-0.76	1.31	-.06		
OBQ-44 Total	0.21	0.06	.35**		
ECR Anxiety T1	7.03	2.23	.34**		

*Note.* *N* = 80. DASS Depression = Depression Subscale of the Depression Anxiety Stress Scales-21 item, OBQ-44 Total = Total Score for the Obsessive Beliefs Questionnaire-44 items, ECR Anxiety T1 = Attachment Anxiety Subscale of the Experience of Close Relationship Scale prior to the attachment priming task.

\**p* < .05, \*\**p* < .01

***Examination of OC-related beliefs as a mediator of the relationship between attachment anxiety and reassurance-seeking behaviour.*** The hypothesis that attachment anxiety (ECR Anxiety T1) would predict reassurance-seeking behaviour (RSS Total) through OC-related beliefs (OBQ-44 Total) was tested using multiple regression analysis with a mediator. Again the mediation analysis was conducted using 95% BCa CIs obtained using 5,000 resamples.

There was a significant indirect effect of attachment anxiety on reassurance-seeking behaviour through OC-related beliefs (*ab*), *b* = 2.66, BCa CI [0.82, 5.61], *z* = 2.38, *p* = .02. There was also a significant direct effect with attachment anxiety predicting reassurance-seeking behaviour even with OC-related beliefs in the model (*c'*), *b* = 6.68, *t* (80) = 3.12, *p* = .003. This indicated that OC-related beliefs are a partial mediator of the relationship between attachment anxiety and reassurance-seeking behaviour. Anxious attachment also positively predicted OC-related beliefs (*a*), *b* = 12.89, *t* (80) = 3.50, *p* < .001, attachment anxiety explained 13.55% of the variance in OC-related beliefs. Furthermore, OC-related beliefs positively predicted

reassurance-seeking behaviour (b),  $b = 0.21$ ,  $t(80) = 3.37$ ,  $p = .001$ . The mediation model explained 30.23% of the variance in reassurance-seeking behaviour. When OC-related beliefs was removed from the model, attachment anxiety significantly predicted reassurance-seeking behaviour (c),  $b = 9.33$ ,  $t(80) = 4.41$ ,  $p < .001$ . This model described only 19.93% of the variance in reassurance seeking. The mediation model is shown in figure five.

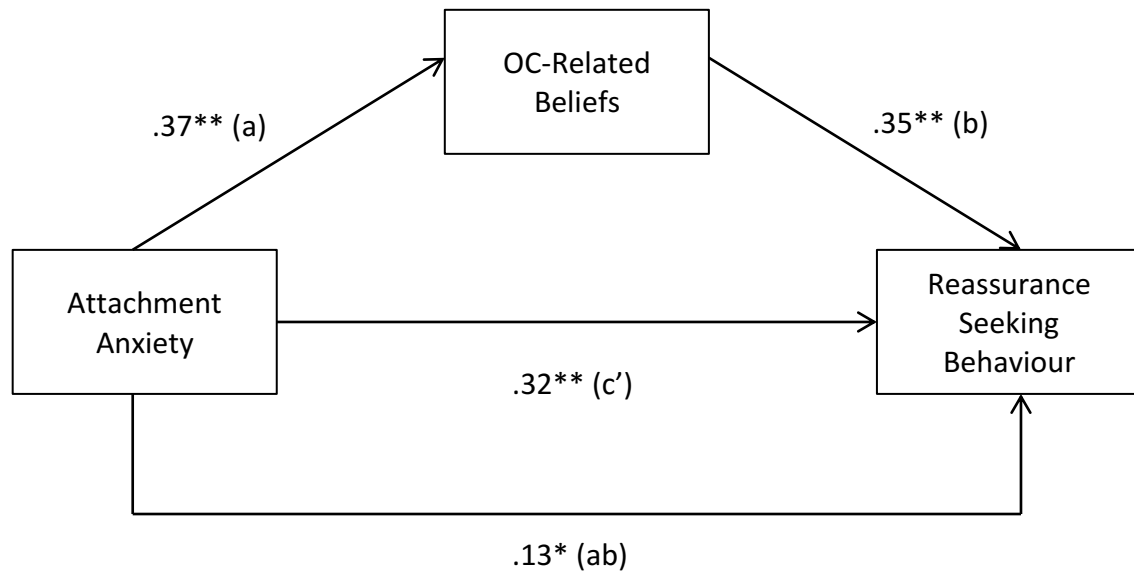


Figure 5. Standardised regression coefficients for the relationship between attachment anxiety and reassurance-seeking behaviour as mediated by OC-related beliefs.

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

### Experimental Data Analyses.

**Examination of baseline differences between the three attachment priming condition groups.** Prior to analysis of the experimental stove task, baseline scores of each of the three groups were investigated for any pre-existing variation as a result of randomisation. The descriptive statistics of the main variables split by the attachment priming condition are shown in table seven. One-way between groups ANOVAs were used to investigate for pre-existing differences between the three groups, with each of the main baseline scales as the dependent variable and the attachment priming condition as the independent variable. It was expected that there should be no significant differences between the groups, as a result of using randomisation to allocate participants to one of the conditions. No violations to the assumption of

homogeneity of variance were observed, as Levene's test was not significant in all analyses.

There was a significant difference between baseline attachment avoidance scores (ECR Avoidance T1) due to the attachment priming groups,  $F(2,77) = 3.49$ ,  $p = .04$ . Post-hoc comparisons using the Tukey HSD test indicted that at baseline attachment avoidance scores were higher in the insecure group compared to the control group,  $Mean Difference = 0.74$ ,  $p = .03$ . There were no other significant differences between groups on the other main variables. However, examination of mean plots illustrated a visual trend of higher baseline attachment avoidance and attachment anxiety in the insecure group compared to the secure group. These findings suggest some pre-existing differences in attachment orientation at baseline. This difference will be accounted for in analyses, where possible.

Table 7

*Means and Standard Deviations of the Three Attachment Priming Groups at Baseline*

	Secure			Insecure			Control		
	N	M	SD	N	M	SD	N	M	SD
ECR Avoidance T1	26	2.79	1.08	27	3.07*	1.00	27	2.33*	1.02
ECR Anxiety T1	26	3.23	0.85	27	3.51	0.85	27	3.56	1.17
RSS Total	26	82.62	20.59	27	85.33	19.26	27	87.33	21.21
OCI-R Checking	26	2.50	2.52	27	3.11	2.62	27	3.30	2.81
OBQ-44 Total	26	138.50	36.17	27	149.03	38.63	27	137.70	25.34
DASS Depression	26	2.25	1.36	27	2.48	1.39	27	3.24	1.74

*Note.* ECR Avoidance T1= Attachment Avoidance Subscale of the Experience of Close Relationship Scale prior to the attachment priming task, ECR Anxiety T1= Attachment Anxiety Subscale of the Experience of Close Relationship Scale prior to the attachment priming task, RSS Total = Total Score for the Reassurance Seeking Scale, OCI-R Checking = Checking Symptom Subscale of the Obsessive Compulsive Inventory-Revised, OBQ-44 Total = Total Score for the Obsessive Beliefs Questionnaire-44 items, DASS Depression = Depression Subscale of the Depression Anxiety Stress Scales-21 item after the square-root transformation.

\* signifies significant difference between means at the  $p < .05$  level.

***Examination of the effectiveness of the attachment priming task on attachment orientation.*** The effectiveness of the attachment priming task at priming specific attachment IWMs was assessed using a mixed design ANOVA. That is,

differences in attachment orientation, as measured by the ECR, were examined before (Time 1) and after (Time 2) the attachment priming task. It was hypothesised that attachment anxiety scores at Time 2 (ECR Anxiety T2) would increase in the insecure group, decrease in the secure group, and not change in the control group, in comparison to Time 1 scores (ECR Anxiety T1). Assumptions of homogeneity of variance and normality were met as Levene's test of equality of error variances and Box's test of equality of covariance matrices were not significant.

For attachment anxiety, there was no significant interaction between the three conditions and time,  $F(2, 77) = 0.62, p = .54, \eta^2_p = .02$ . There was a small to moderate main effect of time,  $F(1, 77) = 4.31, p = .04, \eta^2_p = .05$ , with all groups showing a reduction in attachment anxiety at Time 2 compared to Time 1. There was no main effect of condition,  $F(2, 77) = 1.08, p = .35, \eta^2_p = .03$ , suggesting no difference in attachment anxiety associated with the different attachment priming conditions. Figure six illustrates the means for this model. For attachment avoidance there was no significant interaction,  $F(2, 77) = 0.42, p = .66, \eta^2_p = .01$ , and no significant main effect of time,  $F(1, 77) = 0.03, p = .86, \eta^2_p < .001$ . There was a moderate main effect of condition,  $F(2, 77) = 3.42, p = .04, \eta^2_p = .08$ , suggesting overall differences between the three conditions. This is consistent with the previous baseline analyses indicating significantly higher attachment avoidance in the insecure group compared to the control group (see appendix O).

The non-significant interaction between condition and time could be due to the attachment priming task not successfully priming specific attachment styles, or the effects of the prime not being reflected in ECR scores. Regardless, the effects of the attachment priming task are likely to be small. In order to maximise the power of the analysis and reduce error only the extreme conditions, secure and insecure, were retained in future analyses involving the attachment priming task. However, the same analyses with all three attachment priming conditions is reported in appendix P.

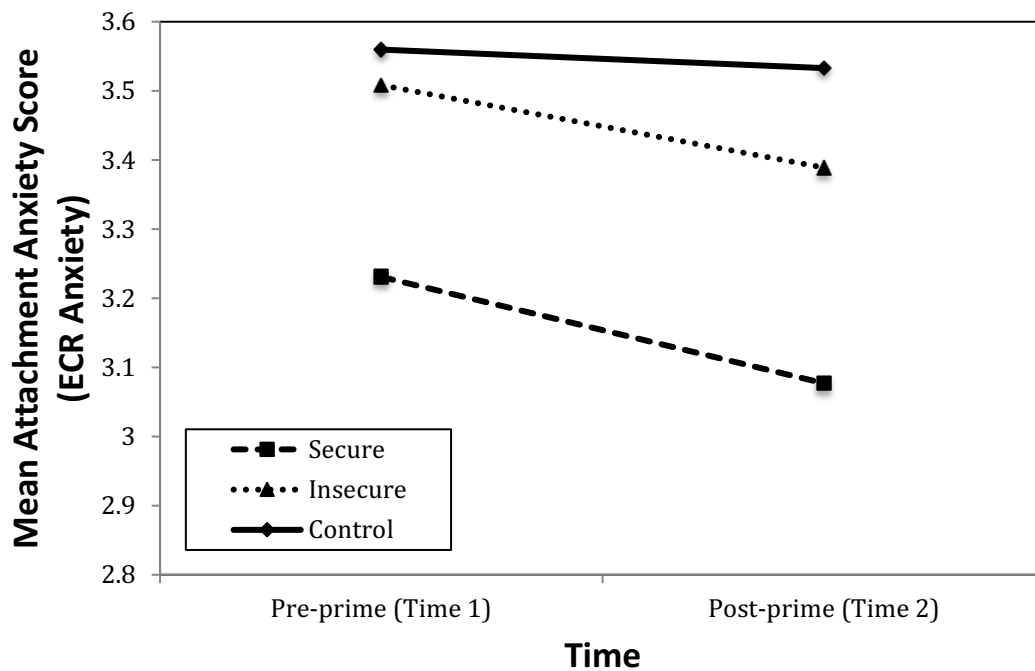


Figure 6. Average attachment anxiety scores before and after the attachment priming task.

***Examination of the association between reassurance seeking, compulsive checking, and attachment dimensions after the experimental stove task.*** The hypothesis that higher global attachment anxiety, as measured at baseline, would be associated with a stronger urge to seek reassurance was tested using Pearson product-moment correlations. BCa 95% CIs are reported in square brackets. The relationship between the urge to seek reassurance (urge to RS) and attachment anxiety (ECR Anxiety T1) was not significant,  $r(71) = .02$ , 95% BCa CI [-.22, .27],  $p = .88$ . However, there was a medium positive relationship between the urge to seek reassurance and attachment avoidance (ECR Avoidance T1),  $r(71) = .36$ , 95% BCa CI [.14, .54],  $p = .002$ .

The hypothesis that higher global attachment anxiety and attachment avoidance, as measured at baseline, would be associated with a stronger urge to check and longer task duration was also tested using Pearson product-moment correlations. BCa 95% CIs are reported in square brackets. The relationship between the urge to check (urge to check) and attachment anxiety was not significant,  $r(71) = .17$ , 95% BCa CI [-.09, .40],  $p = .16$ . However, there was a medium positive relationship between the urge to check and attachment avoidance,  $r(71) = .38$ , 95%



BCa CI [.15, .57],  $p = .001$ . Furthermore, the relationship between the total duration of the stove checking task (Task Duration) and attachment anxiety was not significant,  $r(71) = .19$ , 95% BCa CI [-.05, .43],  $p = .11$ . However, there was a medium positive association between the total duration of the stove checking task and attachment avoidance,  $r(71) = .37$ , 95% BCa CI [.15, .58],  $p = .002$ . This indicates that attachment avoidance but not attachment anxiety is associated with a stronger urge to seek reassurance, a stronger urge to check, and more time spent checking.

Of note, there was no significant relationship between the baseline self-report reassurance seeking questionnaire (RSS Total) and the urge to seek reassurance,  $r(71) = .10$ , 95% BCa CI [-.12, .32],  $p = .39$ . However, the baseline self-report compulsive checking questionnaire (OCI-R Checking) positively correlated with the urge to seek reassurance,  $r(71) = .29$ , 95% BCa CI [.03, .53],  $p = .02$ , the urge to check,  $r(71) = .27$ , 95% BCa CI [.05, .47],  $p = .02$ , and total stove checking task duration,  $r(71) = .37$ , 95% BCa CI [.18, .54],  $p = .001$ . Table eight illustrates these correlations.

Table 8

*Pearson Correlations of Measures of Reassurance Seeking and Compulsive Checking Associated with the Experimental Stove Task.*

	1	2	3	4	5	6	7
1. ECR Avoidance T1	1.00						
2. ECR Anxiety T1	.21	1.00					
3. RSS Total	-.05	.45**	1.00				
4. OCI-R Checking	.16	.25*	.25*	1.00			
5. Task Duration	.37**	.19	.08	.37**	1.00		
6. Urge to RS	.36**	.02	.10	.29*	.25*	1.00	
7. Urge to Check	.38**	.17	.13	.27*	.32**	.80**	1.00

*Note.*  $N = 80$ . ECR Avoidance T1= Attachment Avoidance Subscale of the Experience of Close Relationship Scale prior to the Attachment Priming Task, ECR Anxiety T1= Attachment Anxiety Subscale of the as Close Relationship Scale Prior to the Attachment Priming Task, RSS Total = Total Score for the Reassurance Seeking Scale, OCI-R Checking = Checking Symptom Subscale of the Obsessive Compulsive Inventory-Revised, Task Duration = Total time taken to complete the stove checking task, Urge to RS = Single 5 point Likert scale item asking “How strongly do you want to check with the experimenter that the stove is off?”, Urge to Check = Single 5 point Likert scale item asking “How strongly do you want to go back and check the stove is off?”,

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

***Examination of the effects of the attachment priming task on the urge to seek reassurance and the urge to compulsively check following a stove task.*** A one-way between groups analysis of covariance (ANCOVA) was used to examine the hypothesis that the urge to seek reassurance would be higher in individuals allotted the insecure attachment priming task, compared to individuals allotted the secure attachment priming task. The independent variable was the attachment priming condition the participant was assigned to (i.e., secure and insecure), and the dependent variable was the single item asking about participants urge to seek reassurance from the experimenter (Urge to RS). Participants' baseline scores on the ECR (ECR Anxiety T1 and ECR Attachment T1) were used as covariates to control for baseline differences between the two groups.

There were no violations to assumptions of normality, linearity, reliable measurement of covariates (see reliability scores in table four), correlations between covariates, homogeneity of variances, or homogeneity of regression slopes. After adjusting for baseline variation in attachment orientation, there was no significant difference between the two groups,  $F(1, 49) < .01$ ,  $p = .96$ ,  $\eta^2_p < .01$ . The covariate, baseline attachment avoidance (ECR Avoidance T1), was strongly related to the urge to seek reassurance,  $F(1, 49) = 18.71$ ,  $p < .001$ ,  $\eta^2_p = .28$ . There was no significant relationship between the covariate, baseline attachment anxiety (ECR Anxiety T1), and the urge to seek reassurance,  $F(1, 49) = 1.13$ ,  $p = .29$ ,  $\eta^2_p = .02$ .

A one-way between groups ANCOVA was conducted to test the hypothesis that the urge to check the stove would be higher for individuals who completed the insecure attachment priming task compared to the secure attachment priming task, whilst controlling for baseline attachment orientation. The independent variable was the attachment priming condition the participant was randomly assigned to (i.e., secure and insecure) and the dependent variable was the single item asking about the participants urge to check the stove again (Urge to Check). Baseline attachment orientation scores (ECR Anxiety T1 and ECR Avoidance T2) were entered into the model as covariates, to control for pre-existing differences between the two groups.

Normality checks, reliability checks, inspection of independence of covariate and dependent variable, Levene's test of equality of error variances, and inspection of homogeneity of regression slopes indicated that ANCOVA assumptions were met.

After controlling for baseline attachment orientation, there was no significant difference between the secure and insecure group in terms of urge to compulsively check,  $F(1, 49) = 0.57, p = .45, \eta^2_p = .01$ . The covariate, baseline attachment avoidance (ECR Avoidance T1) was strongly associated with the urge to check,  $F(1, 49) = 13.23, p = .001, \eta^2_p = .21$ . There was no significant relationship between the covariate of baseline attachment anxiety (ECR Anxiety T1) and the urge to check,  $F(1, 49) < .01, p = .98, \eta^2_p < .01$ .

***Examination of the effects of the attachment priming task on reassurance-seeking behaviour and compulsive-checking behaviour following the stove task.***

The hypothesis that participants in the insecure attachment priming condition would seek reassurance more frequently than individuals in the secure attachment priming condition could not be tested, as only two of the 80 participants sought reassurance and this variable did not contain enough variability for analysis. This may be due to the sample containing non-clinical participants or participants may not have sought reassurance because the design of the study allowed them to check the stove as many times as they liked without interruption, which may have reduced their reassurance-seeking behaviour.

The hypothesis that individuals in the insecure attachment priming condition would spend longer checking the stove after the stove checking task, compared to individuals in the secure condition was analysed using a one-way between groups ANCOVA. Total duration of the stove-checking task (Task Duration) was the independent variable and attachment priming condition was the independent variable (i.e., secure and insecure). Covariates were baseline attachment orientation (ECR Anxiety T1 and ECR Avoidance T1).

Results evaluating the assumptions of normality of sampling distributions, linearity, homogeneity of variance, homogeneity of regression slopes, were satisfactory. After adjusting for baseline attachment orientations, there was no significant relationship between the attachment priming condition and total task duration,  $F(1, 49) = .01, p = .91, \eta^2_p < .01$ . The covariate, baseline attachment anxiety, was significantly associated with task duration,  $F(1, 49) = 9.90, p = .003, \eta^2_p = .18$ . The covariate, baseline attachment avoidance, was also significantly associated

with task duration,  $F(1, 49) = 10.51, p = .002, \eta^2_p = .19$ . This indicates that baseline attachment anxiety and attachment avoidance were associated with task duration.

## **Discussion**

### **Overview of aims and findings.**

The main aim of the present study was to investigate the relationship between attachment orientations and reassurance-seeking behaviour in the context of OCD. In line with this, it first aimed to examine the relationship between attachment insecurities, reassurance-seeking behaviour, OCD-related beliefs, and low mood at baseline. The second aim was to build on previous cross-sectional analyses, by examining the effects of activating specific attachment states on OC behaviours including reassurance seeking and compulsive checking. Differences in attachment processes underlying reassurance seeking compared to compulsive-checking behaviour were also explored.

As expected, reassurance-seeking behaviour was associated with higher levels of attachment anxiety. In the context of OCD, the relationship between attachment anxiety and reassurance-seeking behaviour appears to be partially mediated by OCD-related beliefs. In the present study, compulsive checking was also associated with attachment anxiety, but contrary to study one it was not associated with attachment avoidance. Unfortunately, the attachment priming task did not appear to activate the specific IWMs targeted, and the hypotheses related to experimental priming were not supported. The results indicated that global attachment insecurities, mainly attachment avoidance, were associated with increased time spent checking, the urge to check, and the urge to seek reassurance. A detailed account of the results, as well as suggestions for future research and clinical implications are discussed below.

### **Relationship between attachment, reassurance-seeking behaviour, and OCD**

Consistent with findings in Study 1 of this thesis, the hypotheses that reassurance-seeking behaviour would be associated with higher levels of attachment anxiety, was supported. This was consistent with previous research into this relationship in the context of depression (e.g., Evraire et al., 2014; Shaver et al., 2005). It is also consistent with attachment theory, which posits that attachment anxiety is associated with hyperactivation of the attachment behavioural system,

which leads to fears of abandonment, continued bids to seek proximity, and excessive reassurance seeking (Mikulincer & Shaver, 2003, 2007a). There was no significant relationship between reassurance-seeking behaviour and attachment anxiety, consistent with previous research by Shaver, et al. (2005).

The relationship between attachment anxiety and reassurance-seeking behaviour appears robust, as attachment anxiety predicted reassurance-seeking behaviour over-and-above OCD-related beliefs and low mood. Both OCD-related beliefs and attachment anxiety appear to play a significant role in the development and maintenance of reassurance-seeking behaviour, as both were significant predictors of reassurance-seeking behaviour in the final stage of the hierarchical regression model, while low mood was not.

The mediational analysis revealed that the relationship between attachment anxiety and reassurance-seeking behaviour was partially mediated by OCD-related beliefs. This indicates that attachment anxiety leads to reassurance-seeking behaviour directly and indirectly through increased OCD-related beliefs. Previous research by Doron et al., (2009) found that the relationship between attachment dimensions (both attachment anxiety and attachment avoidance) and OC symptoms was fully mediated by OCD-related beliefs. The findings of the current study suggest a slightly different pathway for reassurance-seeking behaviour in which attachment anxiety leads to reassurance-seeking behaviour directly (Evraire et al., 2014; Shaver et al., 2005), as well as indirectly through OCD-related beliefs. In this pathway attachment anxiety leads to beliefs of poor self-worth and idealised others; leading to OCD-related beliefs of perfectionism, the need for certainty, and inflated responsibility; increasing engagement in repetitive and maladaptive coping strategies; i.e., excessive reassurance seeking (Clark, 2004; Kobori et al., 2012; OCCWG, 1997; Parrish & Radomsky, 2010; Salkovskis, 1985, 1999).

The hypothesis that attachment insecurities (both attachment avoidance and attachment anxiety) would be associated with compulsive checking was partially supported. Attachment anxiety was associated with higher levels of compulsive checking. However, the relationship between attachment avoidance and compulsive checking was not significant. Examination of the trends revealed that there was a positive non-significant relationship between these two variables. Considering the correlation between attachment avoidance and compulsive checking from study one ( $r = .29$ ) and study two ( $r = .16$ ) together, this suggests that there may be a small

relationship between attachment avoidance and compulsive checking that was not significant in the present study, due to the smaller sample size.

**Experimental investigation of the relationship between attachment, reassurance-seeking behaviour, and OCD.**

The present study did not support the hypothesis that following an attachment priming task individuals assigned the insecure priming task would report increased attachment anxiety, individuals in the secure priming task would report decreased attachment anxiety, and individuals in the control group would report no change in attachment anxiety. That is, there was no significant difference in attachment anxiety between the three groups. There was a main effect of time, with all groups reporting lower mean attachment anxiety at Time 2, compared to Time 1. This could indicate that individuals felt more comfortable or relaxed when completing the ECR a second time, having become more familiar with the experimenter, questionnaires, and testing situation. Their attachment behaviour system may have become deactivated as they relaxed, resulting in a reduction in self-reported attachment anxiety (Bowlby, 1969; Cassidy & Shaver, 2008).

Therefore, the nature of the attachment priming task did not appear to have an effect on self-reported attachment insecurities. This could indicate that the attachment priming task did not activate the intended attachment style. Theoretically, the failure of the task to prime the intended insecure attachment style may in part be explained by the impact of the baseline attachment style, or more specifically the baseline level of security. That is, considering that most individuals are securely attached (Ainsworth et al., 1978); a non-clinical sample was used and the presence of underlying attachment insecurities are associated with psychopathology (Bowlby, 1973, 1980; Davila et al., 2005; Mikulincer & Shaver, 2007a, 2012); and baseline levels of attachment insecurity were low in this sample. This result could indicate that most participants had enough attachment security to protect against the threat brought on by the attachment priming task. This is in line with research suggesting that attachment security protects against threat, increases positive affect, and prevents pathological processes (Mikulincer & Shaver, 2001; Mikulincer et al., 2005; Rowe & Carnelley, 2003; Saribay & Andersen, 2007). However, other studies have suggested that the problem could be with the self-report measure itself (i.e., the ECR), which may not be sensitive enough to detect changes in attachment related cognitions, especially if the individual is not consciously aware of these changes (Crowell et al.,

2008; Mikulincer & Shaver, 2007b). Therefore, analysis of the effects of the attachment priming task continued.

However, there was no significant effect of the attachment priming condition on total time spent checking, the urge to seek reassurance, or the urge to check, further indicating that the attachment writing task did not appear to prime the specific attachment states it was intended to. The covariate of baseline attachment avoidance, but not attachment anxiety, was significantly related to the urge to seek reassurance and the urge to check the stove. This is inconsistent with previous research suggesting that reassurance seeking is associated with attachment anxiety (Evraire et al., 2014; Shaver et al., 2005) and compulsive checking is associated with both attachment anxiety and attachment avoidance (Doron et al., 2009). This finding supports the association between attachment avoidance and compulsive checking. However, it is unclear why attachment anxiety was not associated with the urge to seek reassurance or compulsively check. Furthermore, the covariates of baseline attachment anxiety and attachment avoidance were significantly related to total time spent checking during the stove task. This is consistent with previous research by Doron et al. (2009) which suggest that both attachment anxiety and attachment avoidance are associated with OC symptoms such as compulsive checking.

The present findings partially support the hypotheses that global attachment insecurities constitute a vulnerability to the development of reassurance-seeking and compulsive-checking behaviours. Baseline attachment avoidance, but not attachment anxiety, was related to a greater urge to seek reassurance, a greater urge to check, and more time spent checking. This finding was inconsistent with research on reassurance seeking, which suggests that attachment anxiety is strongly associated with reassurance-seeking behaviour (e.g., Evraire et al., 2014; Shaver et al., 2005). Further investigation revealed that the urge to seek reassurance was not associated with baseline reassurance-seeking behaviour, as measured by the RSS, but was associated with baseline compulsive checking, and the urge to check, and the total time spent checking the stove. This suggests that the item asking about the urge to seek reassurance appears to be more closely associated with compulsive checking than general reassurance-seeking behaviour. It may be that individuals with high attachment avoidance experience an urge to seek reassurance to alleviate distress and disperse responsibility (Kobori et al., 2012); however, because of feelings of distrust in others and a preference to rely on the self these individuals may deactivate their

attachment system, resist the urge to seek reassurance, and instead choose to check themselves (Mikulincer & Shaver, 2003, 2007a).

### **Implications of findings.**

The present study has important theoretical implications for broader developmental models of OCD (e.g., Doron & Kyrios, 2005; Guidano & Liotti, 1983). It supports the theory that underlying attachment insecurities constitute a vulnerability to the development and maintenance of OC phenomena (e.g., reassurance seeking, compulsive checking, and OCD-related beliefs). The current research also has important implications for future experimental investigations of attachment, as it demonstrates potential problems with supraliminal attachment primes. That is, baseline attachment security could potentially shield participants from the effects of the insecure attachment prime, inhibiting it from activating intended temporary attachment states. On the other hand, if targeted insecure IWMs are not present, then the prime may be unable to elicit the specific attachment state it intended to. These factors require consideration in future research using attachment priming tasks.

The present study also has important treatment implications. The mediational analysis highlights the importance of targeting both attachment insecurities and OCD-related beliefs when treating reassurance-seeking and compulsive-checking behaviour in the context of OCD. This suggests that augmenting cognitive therapies with attachment-based therapies may be effective in treating OCD (Doron et al., 2009).

### **Limitations and proposed directions for future research.**

The present study had a number of limitations that require consideration when interpreting the present findings and contemplating future research. Firstly, the statistical power of the experimental analysis was low, due to the small sample size and inconsistencies in baseline attachment orientations. Two variables, observed reassurance seeking and observed number of checks, were excluded from the analysis because they had a discrete non-normal distribution and were not suitable for further analysis. Furthermore, some of the trends in the data and investigation of effect sizes indicated small relationships in the data that did not have sufficient statistical power to reach significance; e.g., the correlation between attachment avoidance and compulsive checking. A larger sample size may have been more robust against these problems in the data (VanVoorhis & Morgan, 2007). It is therefore recommended that future research use the current study as a pilot and extend this research with a larger sample and more robust measures of observed reassurance seeking and number of checks.



A second limitation of the present study was the exclusion of observed reassurance-seeking behaviour as a dependent variable; this variable is recommended in future experimental research. Observed reassurance-seeking behaviour was excluded because only two individuals sought reassurance from the experimenter, and this was insufficient for further analysis. The reason an insufficient number of individuals sought reassurance may be due to the use of a non-clinical population in this study. Although research suggests qualitative similarities between OC phenomena in clinical compared to non-clinical populations, quantitative differences exist (Abramowitz et al., 2014; Burns et al., 1995; Gibbs, 1996). Therefore, the use of a non-clinical sample may mean that the need to seek reassurance was not strong enough to lead to observable objective reassurance-seeking behaviour. Future research investigating reassurance-seeking behaviour in a clinical population is likely to report more instances of observable reassurance-seeking behaviour. Reassurance-seeking behaviour could also be increased in non-clinical populations by changing the methodology and instructions to more strongly encourage this behaviour. Participants may have chosen not to seek reassurance from the experimenter because they were given the opportunity to check the stove unobstructed before retrieving the experimenter. Therefore, individuals who may have sought reassurance in other circumstances may have obtained a short-term reduction in anxiety, or neutralised any intrusions by checking the stove was off, before retrieving the experimenter. Future research may be more successful if participants are prevented from checking, therefore, increasing their desire to seek reassurance in order to neutralise intrusions and associated distress. Furthermore, participants may not have felt the need to disperse responsibility by seeking reassurance from the experimenter, as the experimenter was in the backroom and returned to the kitchenette as soon as the participant indicated they had finished. Research suggests that the presence and accessibility of an experimenter can reduce one's perceived sense of responsibility and subsequent checking behaviour (Rachman, 1993b). Future research may wish to increase responsibility beliefs by having participant's sign an agreement that they will ensure the stove is off, or having the experimenter meet them further away from the kitchenette. It is also worth noting that some attempts to seek reassurance are very subtle and can be missed by experimenters, although care was taken to be vigilant to reassurance seeking attempts these can sometimes be missed especially if they are

subtle and include non-verbal forms of communication; e.g., looking at the stove to encourage the researcher to look there as well.

Another limitation of the present study was the inconclusive effects of the attachment priming task on specific attachment styles. Although attachment priming tasks have been reported to effectively activate specific attachment styles, over-and-above the chronically accessible style (Mikulincer & Shaver, 2007b), this was not the case in the present study. A potential limitation of the present study may have been that targeted relationship-specific attachment styles were not available to all participants (Baldwin et al., 1996). Therefore, assessment of pre-existing attachment styles is important before priming attachment and recommended in future research (Sakaluk, 2014). Furthermore, the attachment priming task required participants to recall a romantic/close relationship in which specific experiences and emotions were felt. It is recommended that future research consider a broader range of attachment relationships (e.g., parents, siblings, and friends) when priming attachment to increase the likelihood of activating the primed attachment style (Sakaluk, 2014).

Furthermore, the present study used a non-clinical sample. As most individuals are securely attached (Ainsworth et al., 1978) and attachment insecurities are associated with psychopathology (Bowlby, 1973, 1980; Davila et al., 2005; DeKlyen & Greenberg, 2008; Egeland & Carlson, 2004; Hankin et al., 2005; Mikulincer & Shaver, 2007a, 2012; Sroufe et al., 1999; Sroufe, 1997), it is likely that this sample had low levels of attachment insecurities (both attachment avoidance and attachment anxiety). Therefore, the attachment priming task may have failed to prime attachment insecurities because they were not present in a non-clinical sample.

Another explanation may be due to the ECR dampening down the effects of the attachment prime, because it asks about one's global experience of relationships rather than their current specific relationship. To prevent the effect of the ECR activating the global attachment representation on the same day as the attachment-priming task, it is recommended that future research complete the pre-prime ECR on a different day to the attachment-priming task, Rowe and Carnelley (2003) completed their experimental task one week after measuring global attachment style. Furthermore, it could be that although the attachment-priming task activated specific IWMs, when individuals were asked to complete the ECR after the priming task, this then activated their global chronically assessable IWM essentially undoing the effects of the prime. Future studies may benefit from using a different measure to assess

whether their attachment prime has been effective. Perhaps one that asks about an individual's current attachment-related state; for example the Felt Security Scale (Luke, Sedikides, & Carnelley, 2012) or the State Adult Attachment Measure (SAAM; Gillath, Hart, Nofhle, & Stockdale, 2009). Furthermore, use of the ECR to check the effectiveness of the prime, may be invalid, as one prime is unlikely to affect one's global attachment representation, and therefore ECR scores are unlikely to change as a result of activation of specific attachment representations.

In summary, this study provides further support for the role of attachment anxiety in excessive reassurance-seeking behaviour. The present study can be considered a pilot study for experimental investigation into this relationship in the context of OCD, and it make recommendations for future research in this field. The next chapter provides a detailed discussion of both studies, their findings, and their implications.

## Chapter 8: General Discussion

The present thesis aimed to examine the relationship between attachment orientations and reassurance-seeking behaviour within the context of OCD, through two studies. Firstly, an online self-report questionnaire was conducted with a non-clinical sample as a pilot investigation of the relationship between attachment orientations, reassurance-seeking behaviour, and OCD phenomena. The second study aimed to replicate the findings of study one in an independent non-clinical sample. In addition, it aimed to examine the effect of experimentally activating specific attachment styles on reassurance-seeking and compulsive-checking behaviour. This discussion includes an overview of the main findings of these studies, followed by a discussion of the theoretical and clinical implications of these findings. The limitations of these studies are then described followed by suggestions for future research.

### 8.1. Overview of Project Findings

#### 8.1.1. Attachment and reassurance-seeking behaviour.

The present thesis supports a medium to large correlation between attachment anxiety and excessive reassurance-seeking behaviour. This finding was replicated across two independent non-clinical samples ( $r = .57$  and  $r = .45$  respectively) and is consistent with previous research (Evraire et al., 2014; Shaver et al., 2005). Both studies found that attachment anxiety predicted variation in reassurance seeking over-and-above low mood and OCD-related beliefs. When all three independent variables (i.e., attachment anxiety, OCD-related beliefs, and low mood) were entered into the model, only attachment anxiety and OCD-related beliefs significantly predicted reassurance-seeking behaviour. In study one, attachment anxiety predicted a larger amount of variance in reassurance-seeking behaviour compared to OCD-related beliefs. However, in study two, they were relatively equal predictors. In both studies, OCD-related beliefs were a partial mediator of the relationship between attachment anxiety and reassurance-seeking behaviour.

Thus, the present research supports a robust relationship between attachment anxiety and reassurance-seeking behaviour. The hierarchical analyses and mediational analyses in both studies, suggest a direct relationship between attachment anxiety and reassurance-seeking behaviour. This supports the idea that excessive reassurance seeking is a direct function of activated attachment anxiety, rather than low mood or

OCD-related beliefs *per se* (Evraire et al., 2014; Shaver et al., 2005). Attachment anxiety is thought to develop from early experiences of inconsistent caregiving, where the individual learns to distrust cognitive information coming from attachment figures, as what is said frequently differs from actions, and if-then rules cannot be relied on (e.g., if I cry, my mother will comfort me). This is coupled with a view of the self as unreliable and incompetent, whilst others are idealised and viewed as more reliable. This leads anxiously attached individuals to seek feedback from others about their self-worth and safety, but also means they are unlikely to trust this information especially if it is inconstant with their negative self-view, this causes requests for assurances to be repeated (Brennan & Carnelley, 1999; Crittenden, 1997; Mikulincer & Shaver, 2003, 2007a).

The mediational analyses also suggested an indirect pathway, whereby attachment anxiety leads to reassurance-seeking behaviour, through OCD-related beliefs. This supports theories that attachment anxiety constitutes a vulnerability factor to developing OCD-related cognitions (Doron & Kyrios, 2005). OCD-related beliefs (e.g., increased perception of threat, inflated sense of responsibility for harm, the need for certainty) then increase the individual's reassurance-seeking behaviour as they attempt to disperse responsibility and reduce perceived estimates of threat. This pathway is consistent with cognitive-behavioural models of OCD (Doron & Kyrios, 2005; OCCWG, 1997; Parrish & Radomsky, 2010; Rachman, 2002; Salkovskis, 1985, 1999). Thus, the present thesis suggests that combining contemporary cognitive-behavioural models of OCD with attachment theory may facilitate a more comprehensive understanding of reassurance-seeking behaviour in the context of OCD.

The findings of the present thesis are consistent with theories that attachment anxiety inhibits an individual's ability to develop autonomy and self-regulation strategies, leading the individual to rely on others to regulate their emotions and meet their needs. As securely attached children grow into adulthood, reassurance seeking from attachment figures evolves into the ability to reassure oneself. Attachment figures are internalised into mental representations that can be called on in times of need (Dewitte et al., 2008; Mikulincer et al., 2002; Mikulincer & Shaver, 2003, 2007a). In adulthood, physical proximity seeking (e.g., reassurance seeking) tends to occur only in times of great uncertainty when the threat is particularly high and other coping strategies have failed (Kobori & Salkovskis, 2013; Mikulincer & Shaver,

2007a; West & Sheldon-Keller, 1994). In individuals with high attachment anxiety, these internal representations are activated much more easily, even in non-threatening situations. Therefore, individuals with high attachment anxiety may have a lower threshold for physical proximity seeking behaviour (Dewitte et al., 2008; Mikulincer et al., 2002). Attachment anxiety also inhibits security-based self-representations, meaning that individuals are less likely to have secure internal representations that provide a sense of comfort and relief in times of need, and instead rely on others to regulate their emotions (Mikulincer & Shaver, 2004).

If attachment anxiety is considered a vulnerability factor to excessive reassurance seeking then secure attachment can be considered a protective factor against it. Securely attached individuals are more likely to process interpersonal information accurately and openly (Dykas & Cassidy, 2011). They are more likely to be able to self-regulate and trust their internal processes (Mikulincer & Shaver, 2004). Individuals with a secure style of attachment are believed to use reassurance seeking as an adaptive coping strategy with good results (Shaver et al., 2005)

Attachment avoidance and reassurance-seeking behaviour were not significantly related in both studies, in fact both studies showed a similar non-significant, very small, negative relationship ( $r = -.04$  and  $r = -.05$  respectively). This is consistent with previous research by Shaver, et al., (2005) who found a non-significant, very weak, negative relationship between attachment avoidance and reassurance seeking in both their studies ( $r = -.07$  and  $r = -.05$  respectively). Research into the relationship between attachment avoidance and reassurance seeking has been inconsistent in previous research, with some studies suggesting no relationship (Shaver et al., 2005) and others an inverse relationship (Evraire et al., 2014). The relationship between attachment avoidance and reassurance-seeking behaviour is likely to be a complex, non-linear one, influenced by multiple factors and transactions between past experiences and the current environment (Sroufe et al., 1999).

The first study in this thesis also looked at which of the four attachment styles described by Bartholomew (1990 (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Brennan et al., 1998) were associated with the highest levels of reassurance-seeking behaviour. Individuals with a preoccupied style of attachment reported the highest levels of reassurance-seeking behaviour; this is consistent with previous research and theory (Brennan & Carnelley, 1999; Crittenden, 1997; Davila, 2001; Wearden et al., 2006). The order of attachment styles associated with the highest to

lowest level of reassurance-seeking behaviour was: preoccupied, fearful, secure, and dismissive. This is consistent with previous research by Wearden et al., (2006). It is also consistent with Bartholomew's (1990) proposal that preoccupied attachment is associated with negative views of the self, coupled with positive views of others. This finding suggests that individuals who view the self as incompetent and untrustworthy, but see others as competent and worthy, may engage in high levels of reassurance-seeking behaviour. These individuals might view information coming from the self as unreliable whilst information coming from others may be viewed as superior and reliable. This is also consistent with Liberman and Dar's (2009) conceptualisation of OCD as doubt about internal states and reduced capacity to assess these states, therefore being more reliant of external feedback (Lazarov, Dar, Liberman, & Oded, 2012; Lazarov, Dar, Oded, & Liberman, 2010).

It is interesting to note that individuals with a dismissive style of attachment reported the lowest level of reassurance-seeking behaviour, seeking less reassurance than securely attached individuals. A dismissive style of attachment is associated with negative views of others and positive views of the self, therefore, these individuals may choose to rely on information coming from the self, who is viewed as more reliable than others. These individuals may refuse to seek reassurance even when it is warranted, because of their compulsive self-reliance. This is consistent with suggestions that reassurance-seeking behaviour exists on a continuum, that in times of high threat and uncertainty non-anxious reassurance seeking can be an adaptive coping strategy (Halldorsson et al., 2016; Kobori & Salkovskis, 2013; Neal & Radomsky, 2015; Salkovskis & Kobori, 2015; Shaver et al., 2005).

### **8.1.2. Attachment and OC symptoms.**

Previous research has compared reassurance seeking to compulsive checking (Parrish & Radomsky, 2010; Rachman, 2002). The present studies aimed to expand on this research by illustrating important differences between these behaviours. In study one, attachment anxiety and attachment avoidance were associated with compulsive-checking behaviour. However, in study two only attachment anxiety was significantly associated with compulsive checking. The correlation between attachment avoidance and compulsive checking in study two indicated a small positive relationship ( $r = .16$ ), but was not significant. This is most likely due to the smaller sample size of study two, compared to study one. This finding is consistent with research by (Doron et al., 2009; Doron, Moulding, et al., 2012) indicating that

the relationship between attachment anxiety and OC symptoms is stronger than the relationship between attachment avoidance and OC symptoms.

In study one, individuals with a fearful style of attachment reported the highest level of compulsive-checking behaviour, this was followed by the dismissive, preoccupied, and then the secure attachment style. Individuals with a fearful style of attachment are high on both attachment anxiety and attachment avoidance, and are proposed to hold negative views of the self, coupled with negative views of others. Individuals with this style of attachment are likely to show disorganised behaviour and lack assertiveness. These individuals may engage in repetitive and fruitless bids for safety, not trusting information coming from either the self or from others (Bartholomew & Horowitz, 1991). Therefore, the present thesis suggests differences in attachment styles associated with compulsive checking compared to reassurance seeking, indicating different underlying IWMs associated with these behaviours.

In both studies, attachment anxiety and attachment avoidance were associated with OC symptoms, as measured by the OCI-R total. This is consistent with broader developmental theories of OCD (Doron & Kyrios, 2005; Guidano & Liotti, 1983), and previous research (Doron et al., 2009; Myhr, Sookman, & Pinard, 2004). Therefore, the present thesis supports a growing body of evidence suggesting that attachment insecurities provide an underlying vulnerability to developing OCD. Through investigation of mediational models, the present study suggests that attachment insecurities also increase and activate OCD-related beliefs. These beliefs may then make one more susceptible to interpreting intrusions as a threatening to the self, and underestimating one's ability to cope with them.

Furthermore, similar to compulsive checking, other OC symptoms (i.e., washing, obsessing, hoarding, and neutralising) were associated with both attachment anxiety and attachment avoidance in study one. The only exception to this was ordering, which was associated with attachment anxiety only. The association between ordering behaviours and attachment avoidance was not significant but had a positive trend. It is not clear why this was the only OCD symptom subtype, other than reassurance seeking, to be associated with only attachment anxiety.

### **8.1.3. Impact of attachment insecurity on reassurance seeking, and compulsive checking.**

The current thesis aimed to build on current cross-sectional research, by investigating the effects of activating specific temporary attachment states on actual in



vivo reassurance seeking and checking behaviour, and the perceived urge to seek reassurance and check. Unfortunately, the attachment priming task did not appear to activate the intended temporary attachment styles. There was no effect of attachment prime condition on any of the outcome measures, limiting the conclusions that can be made regarding the impact of attachment styles on reassurance seeking or other OCD behaviours. As noted previously, the failure to observe the priming effect may have been due to ineffectiveness of the task to activate the attachment system, low levels of baseline attachment anxiety associated with the non-clinical sample or insufficient sensitivity of the measure (i.e., ECR) to detect state changes in attachment anxiety. The findings did however highlight the difficulties in conducting experimental research in this area and the need for further refinements of the methodology.

Nevertheless, several important findings did emerge from the experimental study. Specifically, baseline attachment avoidance was positively associated with the urge to seek reassurance, the urge to check, and the total time spent checking a stove. This finding supports the role of attachment avoidance in compulsive checking (Doron et al., 2009), suggesting that individuals who deactivate their attachment system in times of need, may choose self-reliant strategies for achieving a sense of safety (Mikulincer & Shaver, 2003, 2007a).

The finding that the urge to seek reassurance was associated with baseline attachment avoidance was inconsistent with previous research (Evraire et al., 2014; Shaver et al., 2005), and the findings from study one and two of this thesis, indicating that reassurance seeking is associated with attachment anxiety. However, upon further investigation of the urge to seek reassurance variable, it appears to have been measuring concepts related to compulsive checking rather than reassurance seeking. It was associated with baseline compulsive checking, total time spent checking, and the urge to check, but was not associated with baseline reassurance-seeking behaviour. This suggests that individuals who compulsively check may experience an urge to seek reassurance, but be unlikely to actually follow through with this behaviour because of associated attachment avoidance. Attachment avoidance is associated with negative views of others, deactivation of the attachment system, and attempts to deal with dangers alone (Mikulincer & Shaver, 2003, 2007a).

## **8.2. Theoretical and Clinical Implications**

The present thesis has implications for the current understanding of the developmental and cognitive factors that may impact the development and

maintenance of different OCD presentations. Given the heterogeneity of OCD, many researchers recommend subtyping specific presentations of OCD. However, there is great debate in the literature on how to sub-divide OCD presentations (Calamari et al., 2012; Clark, 2005; Leckman et al., 2010; McKay et al., 2004; Rowsell & Francis, 2015). Excessive reassurance seeking is not commonly recognised in the OCD subtyping literature, and when recognised it is often categorised with compulsive checking, because of their functional similarities (Rachman, 2002). However, the present findings suggest important differences between these symptoms in terms of underlying attachment vulnerabilities and views of others. While research on compulsive checking can help facilitate understanding and treatment of reassurance seeking in OCD to an extent; e.g., understanding the role of initial reductions in distress following receipt of satisfactory assurances, while in the long-term anxiety and OCD-related beliefs are likely to increase, maintaining the disorder, there is also a point at which differences between the disorders require consideration; e.g., individuals who idealise others are more likely to use excessive reassurance seeking to manage distress, compared to individuals who view others as unreliable and untrustworthy being more likely to compulsively check to manage distress.

In addition to the relationship with the specific OCD symptoms, the current thesis also demonstrated that attachment factors can be integrated in current CBT models of OCD. Specifically, it was shown that attachment insecurities are not only related to OC-relevant beliefs, but also explain additional variability in OCD symptoms and contributing to the symptoms via these beliefs. This may indicate a potential role as a vulnerability to developing the OC related beliefs and symptoms, although the current attempt to provide support for this hypothesis did not seem to be effective.

The present thesis has implications for the treatment of OCD, especially in individuals whose predominant symptom is excessive reassurance seeking. Different attachment styles are associated with different therapeutic outcomes, therapeutic alliance quality, and help-seeking behaviour (Daniel, 2006; Dozier & Tyrrell, 1998; Mikulincer & Shaver, 2007a). Therefore, there may be significant differences in one's approach to treatment as a result of different attachment styles in individuals who present with excessive reassurance seeking compared to compulsive-checking behaviour or other OCD behaviours. The present thesis suggests that attachment anxiety and OCD-related beliefs are associated with excessive reassurance-seeking

behaviour. Therefore, CBT, enhanced with by interventions targeting attachment anxiety and maladaptive self beliefs may be recommended (Doron & Moulding, 2009). The present thesis also suggests that reassurance seeking may be associated with difficulty trusting internal states, Lazarov et al., (2010; Lazarov et al., 2012) make suggestions for discussing in therapy how reliance on external sources of information further reduces one's confidence in internal states.

### **8.3. Limitations and Future Directions**

The present thesis has a number of limitations, which require consideration when interpreting these results, and when considering further research in this area. The first study of this thesis relied solely on self-report measures, which can lack sensitivity to unconscious process (e.g., attachment) and be influence by currently activated attachment schemas (Brennan et al., 1998; Crowell et al., 2008; Mikulincer & Shaver, 2007a). Future researchers are encouraged to carefully consider their measures of attachment and reassurance-seeking behaviour. Additional measures of reassurance seeking have been developed since the data collection phase of this thesis, including the Reassurance Seeking Questionnaire (ReSQ; Kobori & Salkovskis, 2013). This scale would have been included as an additional measure of reassurance-seeking behaviour had it been available at the time of data collection, and is worth considering for future research.

The present study was unable to investigate the causal relationship between attachment anxiety and reassurance-seeking behaviour. Many theorists propose that attachment styles develop prior to psychopathology, because attachment theory has its roots in infancy and early childhood (Ainsworth et al., 1978). However, further investigation is required to determine if attachment anxiety precedes reassurance-seeking behaviour or vice versa. It is plausible that repetitive reassurance seeking may increase attachment anxiety, by creating distress in one's relationships, preventing secure relationships, and increasing experiences of abandonment and inconsistent caregiving. Although research suggests that attachment styles become increasingly stable over time, they can also be affected by one's environment and circumstances (Bowlby, 1973; Mikulincer & Shaver, 2007a). Further research using longitudinal and experimental designs may shed light on the causal direction of this relationship. The present study has implications for the conceptualisation and treatment of OCD. However, for these results to be truly generalisable to individual's diagnosed with OCD, they would need to be replicated in a clinical population.

Furthermore, based on previous research (e.g., Evraire et al., 2014; Shaver et al., 2005), implicating attachment anxiety but not attachment avoidance in the development of reassurance-seeking behaviour. The current thesis focused primarily on the role of attachment anxiety in reassurance seeking, rather than the interaction between attachment anxiety and attachment avoidance. Future research may wish to focus on the interaction between the two attachment dimensions, for example by developing more specific attachment primes that target different ends of the attachment dimensions (e.g., high attachment anxiety and low attachment avoidance).

#### **8.4. Conclusions**

The present thesis contributes to the growing body of research into attachment processes, excessive reassurance seeking, and OC phenomena. The current findings support a robust relationship between excessive reassurance-seeking behaviour and attachment anxiety. Although the use of research into compulsive checking has been helpful in conceptualising reassurance-seeking behaviour up to a point, it is also important to acknowledge differences between these symptoms. The current thesis, suggests important developmental differences in underlying attachment vulnerabilities, especially in regards to views of others. Individuals who seek reassurance appear more likely to hold positive views of others compared to those who compulsively check. This thesis has important implications for future experimental methods, especially the use of attachment priming tasks and stove-checking tasks. It is recommended that future research focus on experimental and longitudinal methods, to establish a causal link between attachment anxiety and reassurance seeking.

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## Appendices

### Appendix A: Self-Report Measures

#### Appendix A.1: Demographic questionnaire.

## Anonymous Demographic Sheet

***Please answer the following questions.  
Do not write your name on this form***

1. Gender	<div>Male/Female</div>			
2. Age	<div></div>			
3. Country of birth	<div></div>			
4. How many years have you lived in Australia	<div></div>			
5. Language(s) spoken at home	<div></div>			
6. Highest Level of formal education (e.g., year 10)	<div></div>			
7. Employment	<div>Full Time</div>	<div>Part Time</div>	<div>Casu al</div>	<div>Not employe</div>
8. Marital status	<div>Married/ De-Facato</div>	<div>Committe d</div>	<div>Single</div>	
9. Are you completing this as part of first year psychology at Swinburne University of Technology?	<div>Yes</div>		<div>No</div>	

**Appendix A.2: The Depression, Anxiety, and Stress Scale (DASS-21;  
Lovibond & Lovibond, 1995).**

<b>DASS21</b> <i>Date: .....</i>				
Please read each statement and circle a number, 0, 1, 2 or 3 which indicates how much the statement applied to you <i>over the past week</i> . There are no right or wrong answers. Do not spend too much time on any statement.				
<i>The rating scale is as follows:</i>				
0	Did not apply to me at all			
1	Applied to me to some degree, or some of the time			
2	Applied to me a considerable degree, or a good part of time			
3	Applied to me very much, or most of the time			
1	I found it hard to wind down	0	1	2   3
2	I was aware of dryness of my mouth	0	1	2   3
3	I could not seem to experience any positive feeling at all	0	1	2   3
4	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2   3
5	I found it difficult to work up the initiative to do things	0	1	2   3
6	I tended to over-react to situations	0	1	2   3
7	I experienced trembling (e.g. in the hands)	0	1	2   3
8	I felt that I was using a lot of nervous energy	0	1	2   3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2   3
10	I felt that I had nothing to look forward to	0	1	2   3
11	I found myself getting agitated	0	1	2   3
12	I found it difficult to relax	0	1	2   3
13	I felt down-hearted and blue	0	1	2   3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2   3
15	I felt I was close to panic	0	1	2   3
16	I was unable to become enthusiastic about anything	0	1	2   3
17	I felt I was not worth much as a person	0	1	2   3
18	I felt that I was rather touchy	0	1	2   3
19	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2   3
20	I felt scared without any good reason	0	1	2   3
21	I felt that life was meaningless	0	1	2   3



**Appendix A.3: The Reassurance Seeking Scale (Recor, Kamkar, Cassin, Ayearst & Laposa, 2011).**

For each question, please circle a number to indicate the degree to which you will be seeking reassurance from others in these situations:

	Not at all				Extremely
1. Prior to making a decision?	1	2	3	4	5
2. When you have to choose among alternative options?	1	2	3	4	5
3. When you doubt your decision?	1	2	3	4	5
4. To whether you have considered all the possible details prior to making a decision?	1	2	3	4	5
5. When you have to do something on your own?	1	2	3	4	5
6. Before initiating or doing things?	1	2	3	4	5
7. When you think you have made the wrong decision?	1	2	3	4	5
8. To gain more certainty about a situation or something that is uncertain?	1	2	3	4	5
9. Prior to making a change in some areas of your life (e.g., career, academic, relationships)?	1	2	3	4	5
10. When you have a lot of responsibility about something?	1	2	3	4	5
11. Before exploring something new?	1	2	3	4	5
12. To avoid feeling responsible for the outcome of decisions in major areas of your life?	1	2	3	4	5
13. To decrease your sense of personal responsibility?	1	2	3	4	5
14. To whether you are loved or cared for?	1	2	3	4	5
15. When you are not getting “enough attention”?	1	2	3	4	5
16. To whether you are a lovable/caring person?	1	2	3	4	5
17. To get support from others?	1	2	3	4	5
18. To get approval from others?	1	2	3	4	5
19. To feel close to others?	1	2	3	4	5
20. To whether you have received a negative evaluation?	1	2	3	4	5

		Not at all			Extremely	
		1	2	3	4	5
21.	To whether others are upset with you?	1	2	3	4	5
22.	To whether something bad is going to happen to you?	1	2	3	4	5
23.	To make sure you are okay?	1	2	3	4	5
24.	To prevent the occurrence of a catastrophic event?	1	2	3	4	5
25.	When you think a negative event is likely to occur?	1	2	3	4	5
26.	To whether you are safe?	1	2	3	4	5
27.	To feel more relaxed?	1	2	3	4	5
28.	To feel better inside?	1	2	3	4	5
29.	To turn off your anxiety feelings?	1	2	3	4	5
30.	To gain more peace and serenity within yourself?	1	2	3	4	5

**Appendix A.4: The Obsessive Beliefs Questionnaire-44 (OBQ-44; OCCWG; 2005).**

This inventory lists different attitudes or beliefs that people sometimes hold. Read each statement carefully and decide how much you agree or disagree with it. For each statement, choose the number matching the answer that best describes how you think. Because people are different, there are no right or wrong answers. To decide whether a given statement is typical of your way of looking at things, simply keep in mind what you are like most of the time. Use the following scale.

Rate your replies as follows:

1	2	3	4	5	6	7
Disagree Very Much	Disagree Moderately	Disagree a little	Neither agree nor disagree	Agree a little	Agree moderately	Agree very much
6. I think things around me are unsafe.					1 2 3 4 5 6 7	
10. If I'm not absolutely sure, I'm bound to make a mistake.					1 2 3 4 5 6 7	
13. Things should be perfect according to my own standards.					1 2 3 4 5 6 7	
19. To be a worthwhile person, I must be perfect at everything I do.					1 2 3 4 5 6 7	
20. When I see the opportunity to do so, I must prevent bad things from happening.					1 2 3 4 5 6 7	
23. Even if harm is very unlikely, I should try to prevent it at any cost.					1 2 3 4 5 6 7	
24. For me, having bad urges is as bad as actually carrying them out.					1 2 3 4 5 6 7	
27. If I don't act when I foresee danger, then I am to blame for consequences.					1 2 3 4 5 6 7	
28. If I can't do something perfectly, I shouldn't do it at all					1 2 3 4 5 6 7	
31. I must work to my full potential at all times.					1 2 3 4 5 6 7	
32. It's essential for me to consider all possible outcomes of a situation.					1 2 3 4 5 6 7	
33. Even minor mistakes mean a job is not complete.					1 2 3 4 5 6 7	
34. If I have aggressive thoughts or impulses about my loved ones, this means I may secretly want to hurt them.					1 2 3 4 5 6 7	
35. I must be certain of my decisions.					1 2 3 4 5 6 7	
38. In all kinds of daily situations, failing to prevent harm is just as bad as deliberately causing it.					1 2 3 4 5 6 7	

1	2	3	4	5	6	7	
Disagree Very Much	Disagree Moderately	Disagree a little	Neither agree nor disagree	Agree a little	Agree moderately	Agree very much	
39. Avoiding serious problems (for example, illness or accidents) requires constant effort on my part.	1	2	3	4	5	6	7
41. For me, not preventing harm is as bad as causing harm.	1	2	3	4	5	6	7
42. I should be upset if I make a mistake.	1	2	3	4	5	6	7
43. I should make sure others are protected from negative consequences of my decisions or actions.	1	2	3	4	5	6	7
45. For me, things are not right if they are not perfect.	1	2	3	4	5	6	7
46 Having nasty thoughts means I'm a terrible person.	1	2	3	4	5	6	7
50. If I do not take extra precautions, I am more likely than others to have or cause a serious disaster.	1	2	3	4	5	6	7
53. In order to feel safe, I have to be prepared as possible for anything that could go wrong.	1	2	3	4	5	6	7
55. I should not have bizarre or disgusting thoughts.	1	2	3	4	5	6	7
56. For me, making a mistake is as bad as failing completely.	1	2	3	4	5	6	7
57. It is essential for everything to be clear cut, even minor matters.	1	2	3	4	5	6	7
58. Having a blasphemous thought is as sinful as committing a sacrilegious act.	1	2	3	4	5	6	7
59. I should be able to rid my mind of unwanted thoughts.	1	2	3	4	5	6	7
61. I am more likely than other people to accidentally cause harm to myself or to others.	1	2	3	4	5	6	7
64. Having bad thoughts means I am weird or abnormal.	1	2	3	4	5	6	7
65. I must be the best at things that are important to me.	1	2	3	4	5	6	7
66. Having an unwanted sexual thought or image means I really want to do it.	1	2	3	4	5	6	7
67. If my actions could have even a small effect on a potential misfortune, I am responsible for the outcome.	1	2	3	4	5	6	7

1	2	3	4	5	6	7
Disagree Very Much	Disagree Moderately	Disagree a little	Neither agree nor disagree	Agree a little	Agree moderately	Agree very much
68. Even when I am careful, I often think bad things will happen	1	2	3	4	5	6 7
69. Having intrusive thoughts means I'm out of control.	1	2	3	4	5	6 7
72. Harmful events will happen unless I'm careful.	1	2	3	4	5	6 7
74. I must keep working until it's done exactly right.	1	2	3	4	5	6 7
76. Having violent thoughts means I will lose control and become violent.	1	2	3	4	5	6 7
77. To me, failing to prevent disaster is as bad as causing it.	1	2	3	4	5	6 7
78. If I don't do a job perfectly, people won't respect me.	1	2	3	4	5	6 7
79. Even ordinary experiences in my life are full of risk.	1	2	3	4	5	6 7
83. Having a bad thought is morally no different than doing a bad deed.	1	2	3	4	5	6 7
84. No matter what I do, it won't be good enough.	1	2	3	4	5	6 7
86. If I don't control my thoughts, I'll be punished.	1	2	3	4	5	6 7

**Appendix A.5: The Obsessive Compulsive Inventory-Revised (OCI-R; Foa et al., 2002).**

The following statements refer to experiences that many people have in their everyday lives. Circle the number that best describes HOW MUCH that experience has DISTRESSED or BOTHERED you during the PAST MONTH. The numbers refer to the following verbal labels:

		Not at all				Extremely
		0	1	2	3	4
1.	I have saved up so many things that they get in the way.	0	1	2	3	4
2.	I check things more often than necessary.	0	1	2	3	4
3.	I get upset if objects are not arranged properly.	0	1	2	3	4
4.	I feel compelled to count while I am doing things.	0	1	2	3	4
5.	I find it difficult to touch an object while I am doing things.	0	1	2	3	4
6.	I find it difficult to control my own thoughts.	0	1	2	3	4
7.	I collect things I don't need.	0	1	2	3	4
8.	I repeatedly check doors, windows, drawers, etc.	0	1	2	3	4
9.	I get upset if others change the way I have arranged things	0	1	2	3	4
10.	I feel I have to repeat certain numbers.	0	1	2	3	4
11.	I sometimes have to wash or clean myself simply because I feel contaminated.	0	1	2	3	4
12.	I am upset by unpleasant thoughts that come into my mind against my will.	0	1	2	3	4
13.	I avoid throwing things away because I am afraid I might need them later.	0	1	2	3	4
14.	I repeatedly check gas and water taps and light switches after turning them off.	0	1	2	3	4
15.	I need things to be arranged in a particular order.	0	1	2	3	4
16.	I feel that there are good and bad numbers.	0	1	2	3	4
17.	I wash my hands more often and longer than necessary	0	1	2	3	4
18.	I frequently get nasty thoughts and have difficulty in getting rid of them	0	1	2	3	4

**Appendix A.6: The Experience of Close Relationship Scale (ECR;  
Brennan, Clark, & Shaver, 1998)**

Instructions: the following statements concern how you feel in romantic relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Respond to each statement by indicating how much you agree or disagree with it. Write the number in the space provided using the following scale:

1	2	3	4	5	6	7
Disagree strongly			Neutral/ mixed			Agree strongly

- \_\_\_ 1 I prefer not to show a partner how I feel deep down.
- \_\_\_ 2 I worry about being abandoned.
- \_\_\_ 3 I am very comfortable being close to romantic partners.
- \_\_\_ 4 I worry a lot about my relationships.
- \_\_\_ 5 Just when my partner starts to get close to me I find myself pulling away.
- \_\_\_ 6 I worry that romantic partners won't care about me as much as I care about them.
- \_\_\_ 7 I get uncomfortable when a romantic partner wants to be very close.
- \_\_\_ 8 I worry a fair amount about losing my partner.
- \_\_\_ 9 I don't feel comfortable opening up to romantic partners.
- \_\_\_ 10 I often wish that my partner's feelings for me were as strong as my feeling for him/her.
- \_\_\_ 11 I want to get close to my partner, but I keep pulling back.
- \_\_\_ 12 I often want to merge completely with romantic partners, and this sometimes scares them away.
- \_\_\_ 13 I am nervous when partners get too close to me.
- \_\_\_ 14 I worry about being alone.
- \_\_\_ 15 I feel comfortable sharing my private thoughts and feelings with my partner.
- \_\_\_ 16 My desire to be very close sometimes scares people away.
- \_\_\_ 17 I try to avoid getting too close to my partner.
- \_\_\_ 18 I need a lot of reassurance that I am loved by my partner.
- \_\_\_ 19 I find it relatively easy to get close to my partner.
- \_\_\_ 20 Sometimes I feel that I force my partners to show more feeling, more commitment.
- \_\_\_ 21 I find it difficult to allow myself to depend on romantic partners.
- \_\_\_ 22 I do not often worry about being abandoned.
- \_\_\_ 23 I prefer not to be too close to romantic partners.
- \_\_\_ 24 If I can't get my partner to show interest in me, I get upset or angry.
- \_\_\_ 25 I tell my partner just about everything.
- \_\_\_ 26 I find that my partners don't want to get as close as I would like.
- \_\_\_ 27 I usually discuss my problems and concerns with my partner.

1	2	3	4	5	6	7
Disagree strongly			Neutral/ mixed			Agree strongly

- \_\_\_ 28 When I'm not involved in a relationship, I feel somewhat anxious and insecure.
- \_\_\_ 29 I feel comfortable depending on romantic partners.
- \_\_\_ 30 I get frustrated when my partner is not around as much as I would like.
- \_\_\_ 31 I don't mind asking romantic partners for comfort, advice , or help.
- \_\_\_ 32 I get frustrated if romantic partners are not available when I need them.
- \_\_\_ 33 It helps to turn to my romantic partner in time of need.
- \_\_\_ 34 When romantic partners disapprove of me, I feel really bad about myself.
- \_\_\_ 35 I turn to my partner for many things, including comfort and reassurance.
- \_\_\_ 36 I resent it when my partner spends time away from me.



## Appendix B: SPSS Syntax for the ECR adapted from Brennan et al., (1998).

\*\*\*\*\*Calculating ECR scores.\*\*\*\*

\*STEP 1: Recode the reversed items.

```
COMPUTE tmpECR3=ECR3.
COMPUTE tmpECR15=ECR15.
COMPUTE tmpECR19=ECR19.
COMPUTE tmpECR25=ECR25.
COMPUTE tmpECR27=ECR27.
COMPUTE tmpECR29=ECR29.
COMPUTE tmpECR31=ECR31.
COMPUTE tmpECR33=ECR33.
COMPUTE tmpECR35=ECR35.
COMPUTE tmpECR22=ECR22.
EXECUTE.
```

```
Recode tmpECR3 tmpECR15 tmpECR19 tmpECR25 tmpECR27 tmpECR29
tmpECR31 tmpECR33 tmpECR35 tmpECR22 (1=7) (2=6) (3=5) (5=3) (6=2)
(7=1).
```

\*Step 2: Compute scored for the two dimensions of avoidance and anxiety.

```
COMPUTE AVOIDANCE = mean.14(ECR1, tmpECR3, ECR5, ECR7, ECR9, ECR11,
ECR13, tmpECR15, ECR17, tmpECR19, ECR21, ECR23, tmpECR25, tmpECR27,
tmpECR29, tmpECR31, tmpECR33, tmpECR35).
VARIABLE LABELS AVOIDANCE 'Experience of Close Rel Mean Avoidance Scale'.
```

```
COMPUTE ANXIETY = mean.14(ECR2, ECR4, ECR6, ECR8, ECR10, ECR12, ECR14,
ECR16, ECR18, ECR20, tmpECR22, ECR24, ECR26, ECR28, ECR30, ECR32, ECR34,
ECR36).
VARIABLE LABELS ANXIETY 'Experience of Close Rel Mean Anxiety Scale' .
EXECUTE.
```

\*Step 3: Compute attachment style catagories

```
COMPUTE SEC1 = avoidance*3.2893296 + anxiety*5.4725318 - 11.5307833.
COMPUTE FEAR1 = avoidance*7.2371075 + anxiety*8.1776446 - 32.3553266.
COMPUTE PRE1 = avoidance*3.9246754 + anxiety*9.7102446 - 28.4573220.
COMPUTE DIS1 = avoidance*7.3654621+ anxiety*4.9392039 - 22.2281088.
```

VARIABLE LABELS

```
sec1 "coeff secure dimension"
fear1 "coeff fearful dimension"
pre1 "coeff preoccupied dimension"
dis1 "coeff dismissing dimension".
EXECUTE.
```

NUMERIC ATT1 (F1).

```
IF (sec1 > max (fear1,pre1,dis1)) ATT1 =1.
```

```
IF (fear1 > max (sec1, pre1,dis1)) ATT1 = 2.  
IF (pre1 >max (sec1, fear1,dis1)) ATT1 = 3.  
IF (dis1 > max (sec1, fear1, pre1)) ATT1 = 4.  
EXECUTE.
```

```
VARIABLE LABELS
```

```
ATT1 "coefficent-based attachement category".
```

```
VALUE LABELS
```

```
ATT1 1 "secure" 2 "fearful" 3 "preocc" 4 "dismiss".
```

```
EXECUTE.
```

## Appendix C: Ethics Approval for Study One

### SUHREC Project 2011/234 Ethics Clearance

From: Kaye Goldenberg  
 To: Dr Maja Nedeljkovic, FLSS/Ms Kate FitzGerald  
 [BC: Ms Kate FitzGerald]  
 CC: Ms Robyn Watson, Research Admin. Co-ordinator, FLSS

Dear Dr Nedeljkovic,

### **SUHREC Project 2011/234 The Role of Reassurance Seeking in Obsessive-Compulsive Disorder**

Dr Maja Nedeljkovic, FLSS/Ms Kate FitzGerald  
 Approved Duration: 31/10/2011 To 31/01/2014 [Adjusted]

Ethical review of the above project protocol was undertaken on behalf of Swinburne's Human Research Ethics Committee (SUHREC) by a SUHREC Subcommittee (SHESC1) at a meeting held on 23 September 2011. Your response to the review as e-mailed on 21 October was reviewed by a SHESC1 delegate.

I am pleased to advise that, as submitted to date, the project has approval to proceed in line with standard on-going ethics clearance conditions here outlined.

- All human research activity undertaken under Swinburne auspices must conform to Swinburne and external regulatory standards, including the National Statement on Ethical Conduct in Human Research and with respect to secure data use, retention and disposal.
- The named Swinburne Chief Investigator/Supervisor remains responsible for any personnel appointed to or associated with the project being made aware of ethics clearance conditions, including research and consent procedures or instruments approved. Any change in chief investigator/supervisor requires timely notification and SUHREC endorsement.
- The above project has been approved as submitted for ethical review by or on behalf of SUHREC. Amendments to approved procedures or instruments ordinarily require prior ethical appraisal/ clearance. SUHREC must be notified immediately or as soon as possible thereafter of (a) any serious or unexpected adverse effects on participants and any redress measures; (b) proposed changes in protocols; and (c) unforeseen events which might affect continued ethical acceptability of the project.
- At a minimum, an annual report on the progress of the project is required as well as at the conclusion (or abandonment) of the project.
- A duly authorised external or internal audit of the project may be undertaken at any time.

Please contact me if you have any queries about on-going ethics clearance. The new SUHREC project number should be quoted in communication.

Best wishes for the project.

Yours sincerely

Kaye Goldenberg  
 Secretary, SHESC1

\*\*\*\*\*

Kaye Goldenberg  
Administrative Officer (Research Ethics)  
Swinburne Research (H68)  
Swinburne University of Technology  
P O Box 218  
HAWTHORN VIC 3122  
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## Appendix D: Consent Information Statement for Study One

### Consent Information Statement

#### Project Title: The Role of Reassurance Seeking in Obsessive-Compulsive Disorder

#### Investigators:

<b>Dr Maja Nedeljkovic,</b>	Lecturer, Faculty of Life and Social Sciences, Swinburne University of Technology
<b>Miss Kate FitzGerald</b>	Student Investigator, Faculty of Life and Social Sciences, Swinburne University of Technology
<b>Dr Richard Moulding</b>	Lecturer, Faculty of Life and Social Sciences, Swinburne University of Technology

#### Introduction to Project and Invitation to Participate

Once you have read this information and agree to take part in the project, you will be directed to fill out a number of questionnaires. By completing these questionnaires you indicate that you understand this information and give your consent to be involved in this research project. You are free to withdraw from the project at anytime. Please note we are seeking people without a diagnosis of Obsessive-compulsive disorder (OCD) to do this research. If you have OCD you are free to continue although you may find some questions to be confronting.

#### What this project is about and why it is being undertaken

OCD is an anxiety disorder that consists of intrusive thoughts and recurrent images or obsessions as well as repetitive behaviours or compulsions. A common compulsive symptom of OCD is reassurance seeking or the need to repeatedly ask for safety-related information from other people. Reassurance seeking is a major problem as it can create relationship difficulties and increase the severity and frequency of other OCD symptoms. The current study aims to further develop our understanding about the development of reassurance seeking.

In this study you will be asked to fill in a number of online questionnaires that will measure your beliefs about everyday experiences related to OCD, reassurance seeking, repetitive behaviours, close relationships, fears in social situations, anxiety and general mood. The questionnaires will take about 60 minutes to complete. Please note that some questions in this study are intrusive and will ask about sensitive topics (e.g., sadness, anxiety, close personal relationships). If you are uncomfortable with this you may wish not to participate.

#### Student services and support facilities

Although it is not anticipated, if you do feel any distress from filling in these questionnaires, you may wish to contact the following support services:

For Swinburne University students, counselling is available for free at the Student Development and Counselling Service at the Hawthorn campus George Swinburne (GS) Building, 34 Wakefield Street, Level 4, 9am-5pm weekdays. Phone: (03) 9214 8025.

Appointments for counselling are also available at the Swinburne Psychology Clinic for a low cost at the Hawthorn campus George Swinburne (GS) Building, 34 Wakefield Street, Level 4. Phone: (03) 9214 8653. Online counselling is also available via: [www.anxietyonline.org.au](http://www.anxietyonline.org.au)

If you are experiencing a crisis, cannot contact a counsellor and need help urgently phone Lifeline on 131 114, [www.lifeline.org.au](http://www.lifeline.org.au) or Suicide Help Line on 1300 651 251.

### **Research output**

The results from this project will be summarised in the doctoral thesis of the student investigator. It is hoped that the present study will be published in a journal and presented at national/international conferences. Confidentiality of the data and participant identity will be maintained at all times. Any information that may be published will contain group data only. Data will be destroyed according to department rules, which is after the minimum time of seven years after the project is complete. (See also Swinburne's Privacy Policy <http://policies.swinburne.edu.au/ppdonline/>)

If you have any questions or concerns about your participation in the project please do not hesitate to contact any of the researchers listed above.

This project has been approved by or on behalf of SUHREC Human Research Ethics Sub-Committee (SHESC) in line with the *National Statement on Ethical Conduct in Human Research*. If you have any concerns or complaints about the conduct of this project, you can contact:

Research Ethics Officer, Swinburne Research (H68),  
Swinburne University of Technology, P O Box 218, HAWTHORN VIC 3122.  
Tel (03) 9214 5218 or +61 3 9214 5218 or [resethics@swin.edu.au](mailto:resethics@swin.edu.au)

## **Appendix E: Debriefing Statement for Study One**

### **The Role of Reassurance Seeking in Obsessive-Compulsive Disorder**

Thank you for your participation. This sheet contains more detailed information about the purpose of the study and what we hope to achieve.

We are looking at the relationship between our experiences in relationships and reassurance-seeking behaviours. Excessive reassurance seeking is a common symptom among clinical populations and can cause a number of problems in interpersonal relationships as well as an exacerbation of Obsessive-Compulsive Disorder (OCD) symptoms. It is believed that the nature of our initial relationships during childhood can lead to different styles of relating to others, which we go on to use in our adult relationships. Individuals who are anxious in their close relationships and fearful of abandonment may be more likely to develop dysfunctional styles of thinking that can contribute to the development and maintenance of OCD symptoms such as reassurance seeking.

The information gathered from this study will help us develop a better understanding of the link between the way we relate to others and our need to seek reassurance from others. If we understand the mechanisms involved in the development and maintenance of reassurance seeking and other OCD symptoms then we can develop better treatment techniques in the future.

I would like to thank you again for your participation in this study. If you have any questions or concerns about the study, or feel distressed either now or later as a result of the study, please don't hesitate to contact any one of the investigators or counselling services listed below. If you are interested in hearing the results of the study, feel free to contact us.

### **Student services and support facilities**

For Swinburne University students, counselling is available for free at the Student Development and Counselling Service at the Hawthorn campus George Swinburne (GS) Building, 34 Wakefield Street, Level 4, 9am-5pm weekdays. Phone: (03) 9214 8025.

Appointments for counselling are also available at the Swinburne Psychology Clinic for a low cost at the Hawthorn campus George Swinburne (GS) Building, 34 Wakefield Street, Level 4. Phone: (03) 9214 8653. Online counselling is also available via: [www.anxietyonline.org.au](http://www.anxietyonline.org.au)

If you are experiencing a crisis, cannot contact a counsellor and need help urgently phone Lifeline on 131 114, [www.lifeline.org.au](http://www.lifeline.org.au) or Suicide Help Line on 1300 651 251.

Thank you for your time.

## **Appendix F: Examination of the Association between the Subscales of the Reassurance Seeking Measure, Attachment, and OCD-Related Beliefs**

The three subscales that comprise the RSS (i.e., decision making, social attachment, and general threat) were examined individually in a correlation matrix, to determine if any unique differences existed between the subscales, see table F.1. No significant differences between the RSS total and its subscales were observed, although the general threat subscale did have marginally higher correlations with the OBQ subscales than decision making and social attachment. Furthermore, the RSS total had good internal consistency ( $\alpha = .95$ ).



Table F.1

*Pearson Correlations between Measures of Reassurance Seeking, OCD-Related Beliefs, and Attachment.*

	1	2	3	4	5	6	7	8	9
1. RSS Total	1.00								
2. RSS-DM	.86**	1.00							
3. RSS-SA	.86**	.58**	1.00						
4. RSS-GT	.89**	.61**	.72**	1					
5. OBQ-RT	.38**	.29**	.26**	.44**	1				
6. OBQ-PI	.40**	.32**	.31**	.42**	.62**	1			
7. OBQ-IC	.37**	.21**	.36**	.42**	.68**	.43**	1		
8. ECR Avoidance	-.04	-.03	-.11	.02	.34**	.15	.36**	1	
9. ECR Anxiety	.57**	.43**	.59**	.48**	.29**	.25**	.33**	.06	1

*Note.*  $N = 171$ . RSS Total = Total Score for the Reassurance Seeking Scale, RSS-DM = Decision Making Subscale of the Reassurance Seeking Scale, RSS-SA = Social Attachment Subscale of the Reassurance Seeking Scale, RSS-GT = General Threat Subscale of the Reassurance Seeking Scale, OBQ-RT = Responsibility and Overestimation of Threat Subscale of the Obsessive Beliefs Questionnaire-44 item, OBQ-PI = Perfectionism and Intolerance of Uncertainty Subscale of the Obsessive Beliefs Questionnaire-44 items, OBQ-IC = Importance and Control of Thought Subscale of the Obsessive Beliefs Questionnaire-44 items, ECR Avoidance = Attachment Avoidance Subscale of the Experience of Close Relationship Scale, ECR Anxiety = Attachment Anxiety Subscale of the Experience of Close Relationship Scale.

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

## Appendix G: Further Regression Analyses of the Relationship between Attachment and Reassurance-Seeking Behaviour

***Examination of the ability of attachment orientations to predict reassurance-seeking behaviour.*** A multiple regression was carried out to investigate whether attachment anxiety (ECR Anxiety) and attachment avoidance (ECR Avoidance), would predict reassurance-seeking behaviour (RSS total). Preliminary analyses were conducted to ensure no violations to the assumptions of multicollinearity (VIFs less than 1.1) and homoscedasticity ( $\chi^2 (2) = 2.00, p = .37$ ). The total variance explained by the model was 32.4%, indicating that attachment is a significant predictor of reassurance seeking,  $F (2,168) = 40.31, p < .001$ . While attachment anxiety was a significant predictor of reassurance-seeking behaviour ( $\beta = .57, p < .001$ ), attachment avoidance was not ( $\beta = -.07, p = .25$ ), see table G.1.

Table G.1

*Summary of Multiple Regression Analysis Predicting Reassurance-seeking behaviour from Attachment Orientation*

	<i>b</i>	<i>SE b</i>	$\beta$
ECR Anxiety	11.44	1.28	.57**
ECR Avoidance	-1.38	1.19	-.07

*Note.*  $N = 171$ . ECR Avoidance = Attachment Avoidance Subscale of the Experience of Close Relationship Scale, ECR Anxiety = Attachment Anxiety Subscale of the Experience of Close Relationship Scale.

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

***Examination of the ability of attachment orientations to predict reassurance-seeking behaviour over-and-above depression and OCD-related beliefs.*** It was expected that attachment anxiety (ECR Anxiety) and attachment avoidance (ECR Avoidance), would predict reassurance-seeking behaviour (RSS total), over-and-above depression (DASS Depression) and OC-related beliefs (OBQ-44 Total). This was tested using hierarchical multiple regression. Assumptions of multicollinearity were met as all VIFs were less than 1.5, and correlations between the predictor variables were less than .45. The Breusch-Pagan test for Heteroscedasticity was significant ( $\chi^2 (4) = 12.50, p = .01$ ) illustrating moderate heteroscedasticity in the regression model. Tabachnick and

Fidell (2014) note that heteroscedasticity in ungrouped data weakens but does not invalidate the analysis. Therefore, the hierarchical regression model was used, despite concerns about heteroscedasticity.

The regression model consisted of RSS Total scores as the outcome variable, with DASS Depression scores entered at stage one, OBQ-44 Total scores added at stage two, and ECR Anxiety and ECR Avoidance scores added at stage three. The total variance explained by the model as a whole was 44.1%,  $F(4,166) = 32.72, p < .001$ . After controlling for depression, the addition of OC-related beliefs in the regression model explained a further 10% of the variance in reassurance-seeking behaviour. At stage three, after controlling for depression and OC-related beliefs, attachment orientation uniquely explained an additional 18% of the variance in reassurance-seeking behaviour over-and-above the variance accounted for by depression and OCD-related beliefs. A summary of the regression results are presented in table G.2.

The regression analysis indicates that when all four variables were entered at step three, each significantly predicated the variance in reassurance-seeking behaviour, with attachment anxiety being the strongest predictor. It is worth noting that attachment avoidance negatively predicted reassurance seeking, whilst attachment anxiety positively predicted reassurance seeking. This is consistent with the previous ANOVA analysis of the four attachment categories, indicating that individuals with a preoccupied attachment style (i.e. high attachment anxiety, and low attachment avoidance) are more likely to seek reassurance than the other three attachment styles.

Table G.2

*Summary of Hierarchical Regression Analysis Predicting Reassurance-seeking behaviour from Depression, OCD Related Beliefs, and Attachment Orientation*

	<i>b</i>	<i>SE b</i>	$\beta$	$\Delta R^2$	<i>F</i> -change
Step 1				.16	32.25**
DASS Depression	12.95	2.28	.40**		
Step 2				.10	22.35**
DASS Depression	8.36	2.36	.26**		
OBQ-44 Total	0.20	0.04	.35**		
Step 3				.18	27.02**
DASS Depression	4.80	2.24	.15*		
OBQ-44 Total	0.18	0.04	.32**		
ECR Avoidance	-3.91	1.17	-.21**		
ECR Anxiety	8.13	1.33	.40**		

*Note.*  $N = 171$ . DASS Depression = Depression Subscale of the Depression Anxiety Stress Scales-21 item, OBQ-44 Total = Total Score for the Obsessive Beliefs Questionnaire-44 items, ECR Avoidance = Attachment Avoidance Subscale of the Experience of Close Relationship Scale, ECR Anxiety = Attachment Anxiety Subscale of the Experience of Close Relationship Scale.

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

## Appendix H: The Effect of Attachment Styles on Reassurance-Seeking and Compulsive-Checking Behaviour using Mediation Analysis

The hypothesis that individuals with a combination of high attachment anxiety and low attachment avoidance would endorse more reassurance-seeking behaviour than any other attachment style was also tested using hierarchical multiple regression analysis. In the first step, attachment anxiety and attachment avoidance were included. These variables accounted for a significant amount of variance in reassurance-seeking behaviour,  $R^2 = .34$ ,  $F(2, 168) = 40.31$ ,  $p < .001$ . To avoid potential problems of multicollinearity with the interaction term, the variables were centred, and an interaction term between attachment anxiety and attachment avoidance was created (Aiken & West, 1991). Next the interaction term between attachment anxiety and attachment avoidance was added to the regression model, which did not account for a significant proportion of variance in reassurance-seeking behaviour,  $\Delta R^2 = .01$ ,  $\Delta F(1, 167) = 1.69$ ,  $p = .20$ ,  $b = 1.26$ ,  $t(167) = 1.38$ ,  $p = .17$ . Examination of the simple slopes analysis showed a main effect of attachment anxiety, with higher attachment anxiety being associated with higher levels of reassurance-seeking behaviour regardless of attachment avoidance levels, see figure H.1.

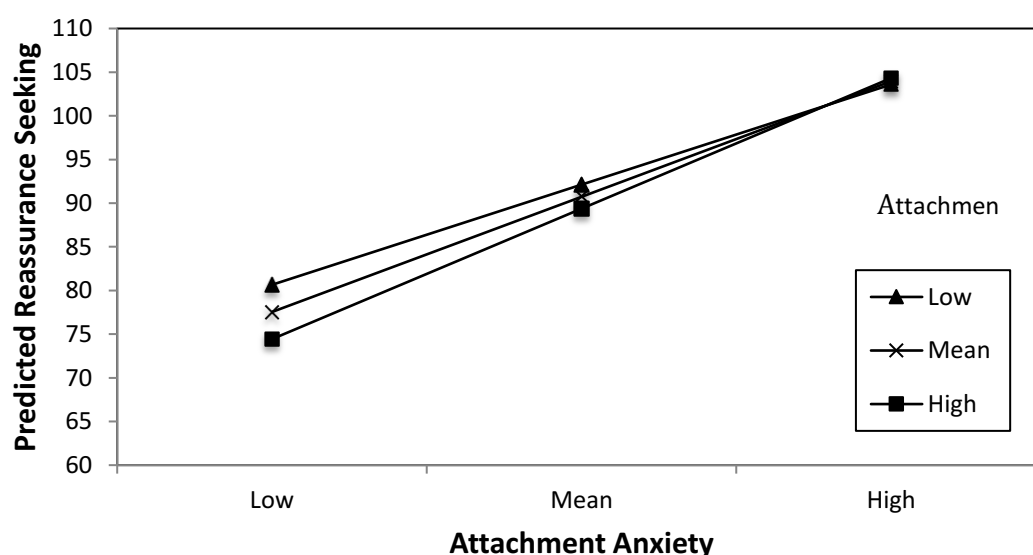


Figure H.1. Simple slopes equations of the regression of reassurance seeking on attachment anxiety at three levels of attachment avoidance.

The hypothesis that individuals with a combination of high attachment anxiety and high attachment avoidance would endorse more compulsive-checking behaviour than any other attachment style was also tested using hierarchical multiple regression analysis. Attachment anxiety and attachment avoidance were included in the first step. These variables accounted for a significant amount of variance in compulsive-checking behaviour,  $R^2 = .11$ ,  $F(2, 168) = 10.67$ ,  $p < .001$ . An interaction term between attachment anxiety and attachment avoidance was created, to avoid potential problems of multicollinearity between the interaction term and original variables, the original variables were centred (Aiken & West, 1991). Next the interaction term between attachment anxiety and attachment avoidance was added to the regression model. The interaction between attachment anxiety and attachment avoidance fell short of statistical significance in the model,  $\Delta R^2 = .01$ ,  $\Delta F(1, 167) = 0.96$ ,  $p = .33$ ,  $b = 0.03$ ,  $t(167) = 1.01$ ,  $p = .31$ . Examination of the simple slopes analysis showed a main effect of attachment anxiety and attachment avoidance, with higher attachment anxiety and attachment avoidance being associated with higher levels of compulsive-checking behaviour, see figure H.2.

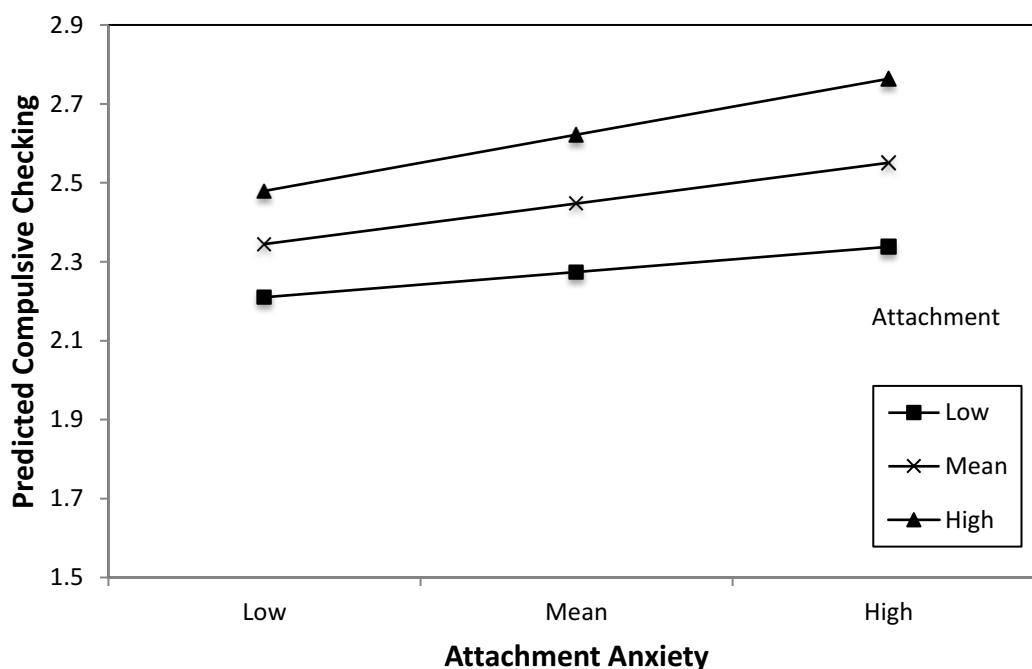


Figure H.2. Simple slopes equations of the regression of compulsive checking on attachment anxiety at three levels of attachment avoidance.

## Appendix I: Ethics Approval for Study Two

### SUHREC Project 2012/088 Ethics Clearance

From: Sheila Hamilton-Brown  
 To: Dr Maja Nedeljkovic, Dr Richard Moulding  
 [BC: Ms Kate FitzGerald, Ms Catherine Andreou, Ms Helen Barnes]  
 CC: Resethics, Research Admin. Co-ordinator, FLSS

Dear Maja

### **SUHREC Project 2012/088 The Effects of Attachment Styles, Mindfulness and Inflated Responsibility on Obsessive Compulsive Phenomena**

Dr Maja Nedeljkovic, FLSS; Ms Kate FitzGerald, Ms Catherine Andreou, Ms Helen Barnes, Dr Richard Moulding  
 Approved Duration: 11/05/2012 To 30/12/2013

I refer to the ethical review of the above project protocol by Swinburne's Human Research Ethics Committee (SUHREC). Your responses to the review, as emailed on 9 May 2012 with attachments, were put to the SUHREC delegate for consideration.

I am pleased to advise that, as submitted to date, the project may proceed in line with standard on-going ethics clearance conditions here outlined.

- All human research activity undertaken under Swinburne auspices must conform to Swinburne and external regulatory standards, including the National Statement on Ethical Conduct in Human Research and with respect to secure data use, retention and disposal.

- The named Swinburne Chief Investigator/Supervisor remains responsible for any personnel appointed to or associated with the project being made aware of ethics clearance conditions, including research and consent procedures or instruments approved. Any change in chief investigator/supervisor requires timely notification and SUHREC endorsement.

- The above project has been approved as submitted for ethical review by or on behalf of SUHREC. Amendments to approved procedures or instruments ordinarily require prior ethical appraisal/clearance. SUHREC must be notified immediately or as soon as possible thereafter of (a) any serious or unexpected adverse effects on participants and any redress measures; (b) proposed changes in protocols; and (c) unforeseen events which might affect continued ethical acceptability of the project.

- At a minimum, an annual report on the progress of the project is required as well as at the conclusion (or abandonment) of the project.

- A duly authorised external or internal audit of the project may be undertaken at any time.

Please contact the Research Ethics Office if you have any queries about on-going ethics clearance, citing the SUHREC project number. Please retain a copy of this email as part of project record-keeping.

Best wishes for the project.

Yours sincerely

Sheila Hamilton-Brown  
 for Keith Wilkins  
 Secretary, SUHREC

\*\*\*\*\*

Sheila Hamilton-Brown  
Administrative Officer (Research Ethics & Biosafety)  
[Tues, Wed & Fri]  
Swinburne Research (H68)  
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## Appendix J: Consent Information Statement for Study Two

### Consent Information Statement

**Date: 30/03/2012**

**Project title:** The role of personal experiences and beliefs in the development and maintenance of obsessive-compulsive phenomena

#### **Investigators and other project personnel:**

Dr Maja Nedeljkovic (Supervisor)  
 Dr Richard Moulding (Co supervisor)  
 Kate FitzGerald (Student researcher)  
 Helen Barnes (Student researcher)  
 Catherine Andreou (Student researcher)

#### **Introduction to OCD and the purpose of the research**

Obsessive-compulsive disorder (OCD) is an anxiety disorder that consists of intrusive thoughts and recurrent images or obsessions, as well as repetitive behaviour (e.g., washing or checking) or compulsions. OCD causes a lot of distress to individual sufferers, as they are often aware of the unusual and excessive nature of their symptoms, but feel that they cannot stop themselves from engaging in these behaviours. Clinical and research evidence has suggested specific beliefs about oneself, others and the world are related to obsessive-compulsive symptoms. The present study aims to explore beliefs, personal experiences and obsessive-compulsive phenomena in attempts to reveal relationships relating to the development and maintenance of such phenomena. Research has shown that these phenomena are commonly occurring in the general population albeit at lower levels.

As such we invite you to participate in this research that will help further the knowledge of OCD phenomena, its development and maintenance.

#### **What your participation will involve**

In this study you will be asked to complete a **writing task about your experiences in relationships**, a stove checking task and a number of questionnaires surrounding beliefs, relationships, behaviours and general everyday experiences related to obsessive-compulsive phenomena, current mood states, and views about yourself. **If you feel you may be uncomfortable with any of these types of questions you may not wish to participate. You are also welcome to ask any questions from the researcher if you have any concerns about this project before you decide to participate.** The project will take approximately 1 hour to complete and some of the tasks (e.g., stove checking) will be video recorded.

## **Important study considerations**

Although you may not receive any direct benefits from participating in this study, your results will contribute to further understanding obsessive compulsive phenomena and the disorder itself. There is a possibility of minimal discomfort associated with the study, as you will be asked to reflect on your mood, your beliefs about yourself, and your relationship with others. If any of these areas are particularly sensitive for you, you may decide not to participate. In addition, one of the tasks (i.e., stove checking task) will be video recorded. Information from the recording will be transcribed using a code for each participant and no identifying information will be used at any time. All recordings will be destroyed after information is transcribed. If this presents a problem, you may wish not to participate. It is important that you understand that your involvement in this project is voluntary and you can withdraw at anytime and request to withdraw your consent for use of any information/recording. If you become distressed at anytime throughout the research, then participation will be terminated. If you choose not to participate or if you participate, and then withdraw, this will not affect your relationship with Swinburne University of Technology.

## **Privacy and Confidentiality**

Confidentiality of the data and participant identity will be maintained at all times. Information will be recorded using numbers not names so that participants cannot be identified. Any information that may be published will contain group data and individual participant data will not be identified at any time. Data will be destroyed according to department rule, which is after the minimum time of seven years after the project is complete.

Signed consent forms will be stored separately from the data collected and will only be accessible to the primary researchers.

## **Research output**

For the most part this study is being performed to fulfil the requirements of the doctor of psychology, post-graduate diploma and honour in psychology programs. It is likely that the work will be published, in which case only group results will be presented. At the completion of the research a summary of results will be made available to those who elect to receive one, through a nominated email account. Furthermore those who elect to be notified of publications will receive notification via email.

## **Who to contact**

If you require further information regarding the project or have any questions or concerns regarding your participation please feel free to contact Dr. Maja Nedeljkovic.

Office: ATC 1011

Telephone: 9214 4428

Email: mnedeljkovic@swin.edu.au

## **Ethical approval**

This study has been approved by the Swinburne University Human Research Ethics Committee (SUHREC). If you have any concerns or complaints about the conduct of this project please contact: Research Ethics Office, Level 1, Swinburne place South, Swinburne University of Technology, 24 Wakefield street, HAWTHORN VIC 3122. Tel (03) 9214 8468.

Also feel free to contact the free counselling services available to Swinburne students (also shown below) if you experience any distress. **Any contact with these services will be confidential.** If you are experiencing a crisis, need help urgently and cannot contact any of the researchers or counselling services please call Lifeline on 131 114.

### **Swinburne Psychology Clinic (low cost service)**

Reception: (03) 9214 8653

Opening hours: 9am-9pm weekdays, Saturdays 9am-1pm

Email: [psychclinic@swin.edu.au](mailto:psychclinic@swin.edu.au)

Location: Level 4, George Swinburne Building, 34 Wakefield Street, Hawthorn, VIC 3101

### **Student Development and Counselling (free service to all Swinburne students)**

Hawthorn Campus location: Level 4, The George, Wakefield street

Opening hours: 9am - 5pm weekdays

Phone: (03) 9214 8025

### **Swin-eCounselling (free to Swinburne students)**

Electronic advice resource for Swinburne University's TAFE and Higher Education students.

[http://www.swinburne.edu.au/stuserv/counselling/swin\\_ecounselling/](http://www.swinburne.edu.au/stuserv/counselling/swin_ecounselling/)

### **Anxiety online (free information and treatment)**

Anxiety online is an online mental health service

<http://www.anxietyonline.org.au/>

### Information Consent Form

**Project Title:** The role of personal experiences and beliefs in the development and maintenance of obsessive-compulsive phenomena

**Principal Investigator(s):**

Dr Maja Nedeljkovic (Supervisor)  
 Dr Richard Moulding (Co supervisor)  
 Kate FitzGerald (Student researcher)  
 Helen Barnes (Student researcher)  
 Catherine Andreou (Student researcher)

1. I consent to participate in the project named above. I have been provided a copy of the project consent information statement to which this consent form relates and any questions I have asked have been answered to my satisfaction.
  
2. **In relation to this project, please circle your response to the following:**
  - I agree to participate in the tasks required to fulfil the research project **Yes    No**
  - I agree to complete questionnaires asking me about the aforementioned topics **Yes    No**
  - I agree to allow the researcher to video recorded the checking task **Yes    No**
  - I agree to make myself available for further information if required **Yes    No**
  
3. I acknowledge that:
  - (a) My participation is voluntary and that I am free to withdraw from the project at any time without explanation;
  - (b) The Swinburne project is for the purpose of research and not for profit;
  - (c) Any identifiable information about me which is gathered in the course of and as the result of my participating in this project will be (i) collected and retained for the purpose of this project and (ii) accessed and analysed by the researcher(s) for the purpose of conducting this project;
  - (d) My anonymity is preserved and I will not be identified in publications or otherwise without my express written consent.

By signing this document I agree to participate in this project.

**Name of Participant:** .....

**Signature & Date:** .....

Dr. Maja Nedeljkovic, Ms. Kate FitzGerald, Ms. Helen Barnes, Ms. Catherine Andreou, Dr. Richard Moulding, Brain and Psychological Sciences Research Centre, Swinburne University of Technology, 9214 4886

## Appendix K: Stove Checking Task Script

1. Collect participant and bring them to the experimental room.
2. Welcome / thank you, introduce self and about project, using following:

**“Thanks for coming today. We appreciate your participation. This study aims to explore beliefs, personal experiences and obsessive-compulsive phenomena. It will take around 45-60 minutes, and you have the option to withdraw at any time should you wish to. Is there anything you would like to clarify?”**

**“Okay let’s begin.”**

3. Provide Plain Language Statement:

**“Have a read through this, and please sign the back sheet”**  
*Make sure it’s signed and all yes/no boxes circled before proceeding*

4. Participant to then complete self-report questionnaire (can ask them to knock on door to let you know when done. Questionnaire takes between 20-40 minutes depending on speed of participant)
5. When participant finishes questionnaire, take them to the stove to demonstrate the stove-task:

**“Now I’m going to show you how to carry out a stove checking task. This is a memory and attention task. To complete the stove task you need to first turn on the stove, secondly turn off the stove, and then the last step is to check that it is off. It is important that you check that the stove is off as it can be a bit fiddly and is sometimes difficult to turn off. Throughout this task you also need to be careful that you don’t burn yourself on the stove, as it is fully operational so please make sure to keep some distance (demonstrate).”**

**“To turn on the stove, replace the knob on the burner, turn it to high, and then remove the knob. Do this for each of the burners (Demonstrate: Replace knob, turn to high and then remove the knob for each burner. When demonstrating, note to them that they do not need to push the knob all the way in). Next you will need to turn off the burner. To do this replace the knob on the burner, turn it to off, wiggle the knob to make sure it is off, and then remove the knob (Demonstrate: Replace knob, turn to off, wiggle and then remove the knob for each burner). At the end you need to do the last step of checking the stove is turned off properly. Make sure to do this by replacing the knob, turning it to high, then off again. And then just give it a good wriggle at the end. (Demonstrate: Replace knob, turn to high, turn off, wiggle and remove knob, for each burner). Once that’s done and you’re satisfied, pull it out and bring it back to me. Do you understand?”**

**“Okay we’ll do that later, first I need you to complete a short writing task. Can you please work on this for 5 minutes?”**

6. Direct participant back to desk and hand them writing task: Time for 5 minutes.

*If participant finishes before 5 minutes, prompt them to continue until 5 minutes is complete.*

7. Swap writing task once complete with blank ECR to complete immediately

*Turn on camera, and flash the participant number on video ready for experiment*

8. Once finished ECR, direct participant to perform the stove-task

**“Can you please perform the stove-checking task I showed you earlier? I’m just going to do some work in this back room – just knock on the door when you’re all done and bring the knob back to me.”**

*Leave room immediately.*

9. When participant knocks on door, open door and stay inside room to request second trial of task:

**“Thanks for that, please do the full task one more time. Just knock again when you’re finished”**

*Immediately close door again.*

10. Once participant has completed second trial, direct back to desk to complete post-survey.

11. Inform the participant that the experiment is over. Give debriefing statement and verbally step through key headings with participant ensuring to provide as much time as needed for participant questions. Sign course credit form (if applicable).

**“Do you have any questions about this experiment?”**

**“Thank-you for participating.”**

## Appendix L: Attachment Priming Task

1

Please try to recall a romantic/close relationship or a situation from a romantic relationship that you had experienced and that fits the description below:

**Recall a romantic/close relationship in which you had experienced intimacy, felt confident in the availability of your partner, in his/her love for you and in your ability to count on him/her. You knew that your partner is there for you for better or worse and felt comfortable depending on him/her and of him/her depending on you. You knew you could trust him/her and you didn't worry about him/her abandoning you.**

Below, describe a typical situation from the relationship you just thought of, that fits the attributes of the above description. Try to write in detail and refer to the place, circumstances, your thoughts and feelings and the thoughts and feelings of the different characters in that situation.

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1= not at all 7= to a great extent

1. Please mark the extent to which the situation you thought of feels real to you.  
1 2 3 4 5 6 7
2. Please mark the extent to which you were able to recall the situation  
1 2 3 4 5 6 7
3. please mark the extent to which it was difficult for you to remember the situation  
1 2 3 4 5 6 7
4. Please mark the extent to which you felt this situation is realistic  
1 2 3 4 5 6 7
5. Please mark the extent to which you felt close to your partner in the situation you described  
1 2 3 4 5 6 7
6. Please mark the extent to which you felt your partner was going to abandon you in the situation you described  
1 2 3 4 5 6 7
7. Please mark the extent to which you felt comfortable being dependent on your partner in the situation you described.

1 2 3 4 5 6 7



2

Please try to recall a romantic/close relationship or a situation from a romantic/close relationship that you had experienced and that fits the below description:

**Recall a romantic/close relationship in which you wanted to be closer to your partner, but found that your partners does not want to get as close as you would like. You frequently feared that your partner does not really love you or does not want to stay in the relationship with you. Often you felt that you care more about him/her that he/she does about you. Frequently you feared that he/she will abandon you and you often wished that your partners' feelings for you would be as strong as your feelings for him/her.**

Below, describe a typical situation from the relationship you just thought of, that fits the attributes of the above description. Try to write in detail and refer to the place, circumstances, your thoughts and feelings and the thoughts and feelings of the different characters in that situation.

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1= not at all 7= to a great extent

1. Please mark the extent to which the situation you thought of feels real to you.  
1 2 3 4 5 6 7
2. Please mark the extent to which you were able to recall the situation  
1 2 3 4 5 6 7
3. please mark the extent to which it was difficult for you to remember the situation  
1 2 3 4 5 6 7
4. Please mark the extent to which you felt this situation is realistic  
1 2 3 4 5 6 7
5. Please mark the extent to which you felt close to your partner in the situation you described  
1 2 3 4 5 6 7
6. Please mark the extent to which you felt your partner was going to abandon you in the situation you described  
1 2 3 4 5 6 7
7. Please mark the extent to which you felt comfortable being dependent on your partner in the situation you described.  
1 2 3 4 5 6 7

3

Please try to recall a situation that fits the below description:

**Recall yourself going to the supermarket buying products you need for your house. Recall all the other people around you that are buying products, while talking among themselves about daily routines, checking new products and comparing prices.**

Below, describe a typical situation you just thought of, that fits the attributes of the above description. Try to write in detail and refer to the place, circumstances, your thoughts and feelings and the thoughts and feelings of the different characters in that situation.

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1= not at all 7= to a great extent

1. Please mark the extent to which the situation you thought of feels real to you.  
1 2 3 4 5 6 7
2. Please mark the extent to which you were able to recall the situation  
1 2 3 4 5 6 7
3. please mark the extent to which it was difficult for you to remember the situation  
1 2 3 4 5 6 7
4. Please mark the extent to which you felt this situation is realistic  
1 2 3 4 5 6 7

## Appendix M: Post-experiment Questionnaire

### Questionnaire for after the stove-checking task:

How much responsibility did you feel for ensuring that the stove was off?

Not at all	A little	Moderately	A lot	Extremely
0	1	2	3	4

How confident are you the stove is off?

Not at all	A little	Moderately	A lot	Extremely
0	1	2	3	4

How strongly do you want to go back and check the stove is off?

Not at all	A little	Moderately	A lot	Extremely
0	1	2	3	4

How strongly do you want to check with the experimenter that the stove is off?

Not at all	A little	Moderately	A lot	Extremely
0	1	2	3	4

Did you think the stove elements (or ‘burners’) were actually being switched on and off by the knob you were given?

Not at all	A little	Moderately	A lot	Extremely
0	1	2	3	4

## **Appendix N: Debriefing Statement for Study Two**

### **Debriefing Statement**

#### **The role of personal experiences and beliefs in the development and maintenance of obsessive compulsive phenomena**

Thank-you for your participation in this experiment. This sheet contains further information about the research project; it is important that you read and fully understand the following information.

#### **Non-disclosed information**

There were some procedures and aims in this experiment that participants have been given only limited information. This occurred as knowledge of the additional aims could have inappropriately affected performance and results.

At no time was there intent to cause any harm to participants through the withholding of such information. Past research and use of the measures in this project have shown that they should not cause any more distress to participants than most other everyday life activities and events. Nevertheless, we apologise for withholding the information and if we have caused any emotional distress. If you do experience any discomfort due to involvement in this experiment, we strongly encourage you to contact one of the researchers involved or refer back to the Consent Information Statement on available support services.

#### **Non-disclosed aim and activities**

The full aim of this study was looking at the effects of attachment style on the OCD-related phenomena of reassurance seeking and checking behaviours.

The relationship between attachment style and OCD has received very little experimental in past research. As such, involvement in this experiment by participants has provided significant and important initial steps regarding the investigation of this area of research.

To assist the measurement of the above aim, the following occurred: the priming of insecure and secure emotional states in participants, video observation to monitor checking and reassurance seeking, and the disguise of the stove as operational.

#### **1) Priming of an emotional state: insecure and secure attachment**

A prime was used to elicit secure or insecure attachment styles in participants. Attachment is a relationship style learned at a young age, which is then suggested to underpin how an individual engages in close relationships during their life. People exhibiting an insecure attachment style are characterised as feeling less confidence and support in their relationships than those with secure attachment styles.

The insecure and secure primes were facilitated in the writing task exercise. Insecurely primed participants wrote about a time they felt abandoned by a

significant other; securely primed wrote about being supported by a significant other; and the final group wrote about a neutral event aimed to not elicit either of the attachment styles (e.g., a trip to the supermarket).

It was expected that the insecure attachment group would exhibit the most reassurance seeking and checking behaviours, that the group primed securely would exhibit the least; and the neutral prime would average somewhere in between.

## 2) Justification for use of video observation and disguised stove

The key purpose of the video monitoring was so the experimenter could observe the reassurance seeking and checking behaviours without having to be present and thus inadvertently offer reassurance. The stove was also disguised as fully functional even though it was not plugged in.

**This format was necessary to reduce as much undue bias and influence on checking and reassurance-seeking behaviours. Both the absence of the experimenter and the use of a stove that appeared to be real were important for making the experimental situation seem more 'real life', and promote more natural reactions and behaviours by the participants.**

## **Further feedback and support**

If you have any questions or concerns about any aspect of this project or the manner in which it was conducted, please contact one of the researchers listed below, or alternatively the:

Research Ethics Office  
Level 1 Swinburne Place South, 24 Wakefield Street, Hawthorn Campus.  
P.O Box 218, HAWTHORN VIC 3122.  
Tel (03) 9214 8468.

Once again, thank-you for your participation in this research project. **To ensure the effectiveness of the experiment it is important that you do not divulge information surrounding your experimental involvement, or the supplied information within this debriefing statement to potential future participants. Your compliance is greatly appreciated.**

### Appendix O: The Effects of the Attachment Priming Task on Attachment Avoidance Scores

For attachment avoidance, there was no significant interaction between the three conditions and time,  $F(2, 77) = 0.42, p = .66, \eta^2_p = .01$ . There was no main effect of time,  $F(1, 77) = 0.03, p = .86, \eta^2_p < .01$ , suggesting no difference in attachment avoidance scores at Time 1 compared to Time 2. There was a moderate main effect of condition,  $F(2, 77) = 3.42, p = .04, \eta^2_p = .08$ , suggesting differences in attachment avoidance scores between the three conditions. This is consistent with previous analyses of baseline difference between the three conditions, which illustrated that the insecure group reported consistently higher attachment avoidance compared to the control group. Figure O.1. illustrates the means for this model.

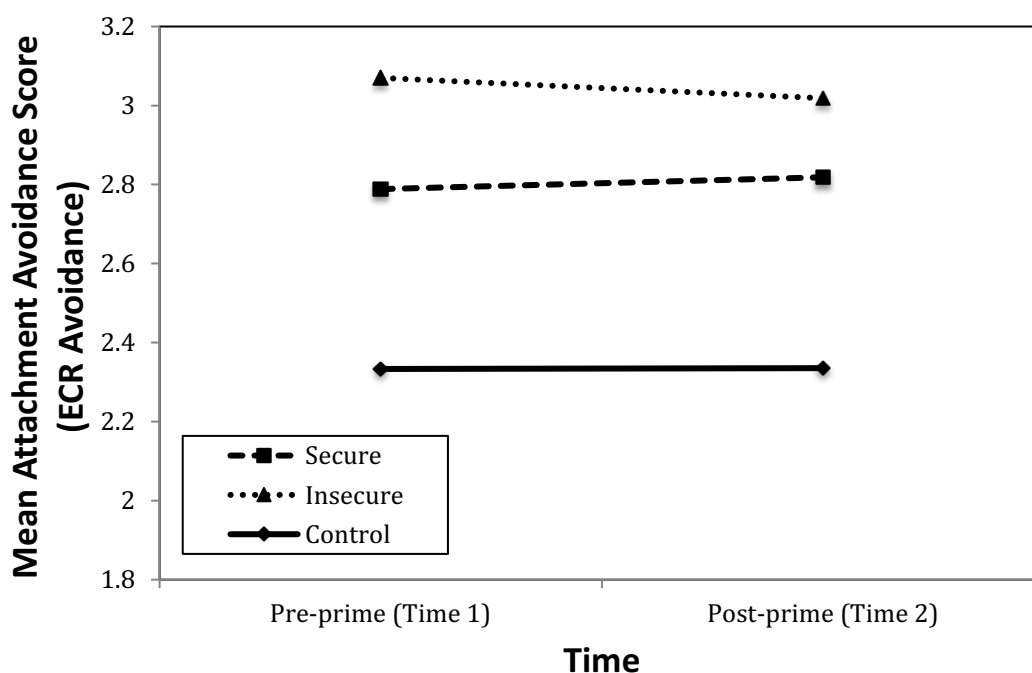


Figure O.1. Average attachment avoidance scores before and after the attachment priming task.

## **Appendix P: ANCOVA Analyses of the Data after the Experimental Stove Task, across the Three Attachment Priming Dimensions**

*Examination of the effects of the three attachment priming conditions on the urge to seek reassurance and the urge to compulsively check following a stove task.* A one-way between groups analysis of covariance (ANCOVA) was used to examine the hypothesis that the urge to seek reassurance would be higher in individuals allotted the insecure attachment priming task, compared to individuals allotted the secure and control attachment priming task. The independent variable was the attachment priming condition the participant was assigned to (i.e., control, secure, and insecure), and the dependent variable was the single item asking about participants urge to seek reassurance from the experimenter (Urge to RS). Participants' baseline scores on the ECR (ECR Anxiety T1 and ECR Attachment T1) were used as covariates to control for baseline differences between the two groups.

There were no violations to assumptions of normality, linearity, reliable measurement of covariates, correlations between covariates, homogeneity of variances, or homogeneity of regression slopes. After adjusting for baseline variation in attachment orientation, there was no significant difference between the three groups,  $F(2, 66) = 2.40, p = .10, \eta^2_p = .07$ . The covariate, baseline attachment avoidance (ECR Avoidance T1), was strongly related to the urge to seek reassurance,  $F(1, 66) = 14.08, p < .001, \eta^2_p = .18$ . There was no significant relationship between the covariate, baseline attachment anxiety (ECR Anxiety T1), and the urge to seek reassurance,  $F(1, 66) = .52, p = .47, \eta^2_p = .01$ .

A one-way between groups ANCOVA was conducted to test the hypothesis that the urge to check the stove would be higher for individuals who completed the insecure attachment priming task compared to the secure and control attachment priming tasks, whilst controlling for baseline attachment orientation. The independent variable was the attachment priming condition the participant was randomly assigned to (i.e., control, secure, and insecure) and the dependent variable was the single item asking about the participants urge to check the stove again (Urge to Check). Baseline attachment orientation scores (ECR Anxiety T1 and ECR Avoidance T2) were entered into the model as covariates, to control for pre-existing differences between the two groups.

Normality checks, reliability checks, inspection of independence of covariate and dependent variable, Levene's test of equality of error variances, and inspection of homogeneity of regression slopes indicated that ANCOVA assumptions were met. After controlling for baseline attachment orientation, there was no significant difference between the three groups in terms of urge to compulsively check,  $F(2, 66) = 2.29, p = .11, \eta^2_p = .07$ . The covariate, baseline attachment avoidance (ECR Avoidance T1) was strongly associated with the urge to check,  $F(1, 66) = 13.12, p = .001, \eta^2_p = .17$ . There was no significant relationship between the covariate of baseline attachment anxiety (ECR Anxiety T1) and the urge to check,  $F(1, 66) = .35, p = .57, \eta^2_p < .01$ .

***Examination of the effects of the three attachment priming conditions on reassurance-seeking behaviour and compulsive-checking behaviour following the stove task.***

As discussed in the main body of the thesis, the hypothesis that participants in the insecure attachment priming condition would seek reassurance more frequently than individuals in the other attachment priming conditions could not be tested, as only two of the 80 participants sought reassurance and this variable did not contain enough variability for analysis.

The hypothesis that individuals in the insecure attachment priming condition would spend longer checking the stove after the stove checking task, compared to individuals in the secure and control conditions was analysed using a one-way between groups ANCOVA. Total duration of the stove-checking task (Task Duration) was the independent variable and attachment priming condition was the independent variable (i.e., control, secure, and insecure). Covariates were baseline attachment orientation (ECR Anxiety T1 and ECR Avoidance T1).

Results evaluating the assumptions of normality of sampling distributions, linearity, homogeneity of variance, homogeneity of regression slopes, were satisfactory. After adjusting for baseline attachment orientations, there was no significant relationship between the attachment priming condition and total task duration,  $F(2, 66) = .53, p = .59, \eta^2_p < .02$ . The covariate, baseline attachment avoidance, was significantly associated with task duration,  $F(1, 66) = 6.28, p = .02, \eta^2_p = .09$ . The covariate, baseline attachment anxiety, was not significantly associated with task



duration,  $F(1, 66) = 1.64, p = .21, \eta^2_p = .02$ . This indicates that baseline attachment avoidance but not attachment anxiety was associated with task duration.