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Doctoral Thesis

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The role of emotions in obsessive-compulsive experiences.

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Word Count

	Main Text	Appendices (including title pages, abstracts, tables, figures, and references)	Total
Thesis Abstract	294	-	294
Literature Review	7,983	13,045	21,028
Research Paper	7,435	4,742	12,177
Critical Appraisal	3,993	1,065	5,058
Ethics Section	4,788	10,446	15,234
Total	24,493	29,298	53,791

The word-length of this thesis conforms to the permitted maximum.

Thesis Abstract

The present thesis has investigated the role of emotions in obsessive-compulsive experiences. First, a literature review explored whether specific compulsive presentations were underpinned by consistent affective profiles. A systematic search procedure identified 23 studies which were eligible for inclusion. Analysis of the results reported across the studies led to five key conclusions. First, washing profiles were consistently characterised by elevated levels of disgust. Second, checking profiles were consistently characterised by elevated levels of guilt. Third, hoarding profiles appeared to be characterised by fewer undesirable phenomena. Fourth, aside from hoarding, anxiety and depression were found to be consistently present across the profiles of all compulsions. Fifth, individuals experiencing multiple compulsion types were considered to experience profiles characterised by increased affective phenomena of a potentially distressing nature, for example, anxiety and stress. These findings highlighted the importance of considering affective variables when assessing, formulating, and supporting obsessive-compulsive difficulties.

Second, a research project was designed to investigate the influence of self-disgust on obsessive-compulsive experiences, as this emotion had been rarely considered alongside such presentations. An online questionnaire was completed by 149 eligible participants with clinically significant obsessive-compulsive difficulties. The results of a multiple regression analysis revealed that self-disgust was a significant independent predictor of hoarding behaviours; no other compulsive behaviours were predicted by self-disgust. Results were explained in terms of existing theory and empirical evidence. Again, findings were considered with regards to their clinical implications and the importance of using holistic formulations to inform clinical interventions.

Third, a critical appraisal was completed to reflect upon the thesis. This comprised an extended discussion of the research paper. Additionally, consideration was given to the

research process, including the challenge of balancing the necessary use of the medical model with person-centred values.

Keywords. affect, emotion, obsessive-compulsive experiences, self-disgust

Declaration

This thesis records research activity completed between November 2016 and May 2017 for the Doctorate in Clinical Psychology course at Lancaster University. The work presented in thesis is my own except where reference to other authors is made. This work has not been submitted for the award of a higher degree elsewhere.

Name: Lucy Rathbone

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Contents Page

Glossary of Abbreviated Terms

ADIS-IV – Anxiety Disorder Interview Schedule IV (Brown, Di Nardo, & Barlow, 1994)

ADIS-IV-L – Anxiety Disorder Interview Schedule IV – Lifetime Version (Di Nardo et al., 1994)

APA – American Psychiatric Association

ASI – Anxiety Sensitivity Index (Peterson & Reiss, 1993)

ASI-3 – Anxiety Sensitivity Index-3 (Taylor et al., 2007)

ASI-3-SV – Anxiety Sensitivity Index-3-Spanish version (Sandin et al., 2007)

ASI-R – Anxiety Sensitivity Index – Revised (Taylor & Cox, 1998)

AUS – Australia

BAI – Beck Anxiety Inventory (Beck & Steer, 1993)

BDI – Beck Depression Inventory (Beck & Steer, 1987)

BDI-II – The Beck Depression Inventory-II (Beck, Steer, & Brown, 1996)

BPS – British Psychological Soceity

BRA – Brazil

CAN – Canada

CBT – Cognitive Behavioural Therapy

CINAHL – Cumulative Index to Nursing and Allied Health Literature (database)

DASS or **DASS-21** – Depression Anxiety Stress Scale (Lovibond & Lovibond, 1995)

DES – Disgust Emotion Scale (Walls & Kleinknecht, 1996)

DOCS – Dimensional Obsessive Compulsive Scale (Rosario-Campos et al., 2006)

DPSS-R – Disgust Propensity and Sensitivity Scale- Revised (van Overveld et al., 2008)

DPSS-R-SV – Disgust Propensity and Sensitivity Scale-Revised-Spanish version (Sandin et al., 2008)

DS – The Disgust Scale (Haidt, McCauley, & Rozin, 1994)

DS-R – Disgust Scale-Revised (van Overveld, de Jong, Peters, & Schouten, 2011)

DY-BOCS – Dimensional Yale-Brown Obsessive Compulsive Scale (Rosario-Campos et al., 2006)

ERP – Exposure-Response Prevention

ESP – Spain

fMRI – Functional magnetic resonance imaging (scan)

FSS – Fear Survey Schedule (Wolpe & Lange, 1964)

GAD – Generalised Anxiety Disorder

GBR – United Kingdom (see also UK)

GI – Guilt Inventory (Jones, Schratter, & Kugler, 2000)

IQR – Interquartile range

IRN – Iran

ITA – Italy

KOR – South Korea

M – Mean average

MD – Major Depression

Mdn – Median average

MOCI – Maudsley Obsessive Compulsive Inventory (Hodgson & Rachman, 1977)

NICE – National Institute for Health and Care Excellence (of the United Kingdom)

NIH – National Institute of Health

NHS – National Health Service (of the United Kingdom)

OCD – Obsessive-Compulsive Disorder

OCE – Obsessive-Compulsive Experiences

OCI-R – Obsessive Compulsive Inventory Revised (Foa et al., 2002)

PANAS – Positive and Negative Affect Scale (Watson, Clark, & Tellegen, 1988)

PI – Padua Inventory (Arntz, Voncken, & Goosen., 2007)

PI-R – Padua Inventory-Revised (van Oppen et al., 1995)

PRISMA – Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Moher, Liberati, Tetzlaff, & Altman, 2009)

PSWQ – Penn State Worry Questionnaire (Meyer et al., 1990)

REC – Research Ethics Committee

SCID-I – Structured Clinical Interview for DSM Disorders I (First et al., 1995)

SCID-I/ CV – Structured Clinical Interview for DSM Disorders I- Clinical Version (First et al., 1997)

SD – Standard deviation

SDS – Self-Disgust Scale (Overton et al., 2008)

SDS-R – Self-Disgust Scale Revised (Powell et al., 2015)

SPSS – Statistical Package for the Social Sciences

STAI-S – State Trait Anxiety Inventory-State (Spielberger et al., 1983)

STAI-S – State Trait Anxiety Inventory-Trait (Spielberger et al., 1983)

STROBE – Strengthening the Reporting of Observational Studies in Epidemiology Statement (von Elm et al., 2007)

TOSCA-3 – Test of Self-Conscious Affect version 3 (Tangney & Dearing, 2002)

TOSCA-3S – Test of Self-Conscious Affect version 3 – short form (Tangney, Dearing, Wagner, & Gramzow, 2000)

TUR – Turkey

UK – United Kingdom (see also GBR)

USA – United States of America

VIF – Variance Inflation Factor

VOCI – Vancouver Obsessional Compulsive Inventory (Thordarson et al., 2004)

WHO – World Health Organisation

Y-BOCS – Yale-Brown Obsessive-Compulsive Scale (Goodman et al., 1989)

Y-BOCS SC – Yale-Brown Obsessive-Compulsive Scale Symptom Checklist (Goodman et al., 1989)

Running head: Affective phenomena and OCE

Section I: Literature Review

Affective profiles in people who experience different obsessive-compulsive experiences: a systematic review of quantitative research.

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Abstract

Affective phenomena – including affects, emotions, and moods – are consistently found to be associated with mental health difficulties. In particular, recognition has been given to the affective phenomena that underlie obsessive-compulsive experiences (OCE), such as anxiety and disgust. To further understand such associations, this systematic review explored the relationships between affective phenomena and different compulsive-behaviours. Twenty-three studies were found to meet the inclusion criteria following a systematic search of the literature. The evidence from the reviewed studies was examined in terms of the affective profiles which may underlie different presentations; this led to five key conclusions. First, washing profiles were consistently characterised by elevated levels of disgust. Second, checking profiles were consistently characterised by elevated levels of guilt. Third, hoarding profiles appeared to be characterised by fewer undesirable phenomena. Fourth, aside from hoarding, anxiety and depression were found to be consistently present across the profiles of all compulsions. Fifth, individuals experiencing multiple compulsion types were considered to experience profiles characterised by increased affective phenomena of a potentially distressing nature, for example, anxiety and stress. Discerning affective profiles for different compulsions has clinical implications for how these experiences are formulated and supported therapeutically. Opportunities for future research are discussed.

Keywords: affective phenomena, compulsions, emotions, mood, obsessive-compulsive experiences

1. Introduction

Negative affective experiences are often associated with mental health difficulties (Gross & Jazaieri, 2014; Gross & Muñoz, 1995; Taylor, Lerner, Sage, Lehman, & Seeman, 2004). For example, anxiety has been linked to restrictive eating (Meier et al., 2015), and shame has been linked to low mood and social anxiety (Gilbert, 2000). The nature of this association is complex, as affective phenomena can be viewed either to contribute to, or result from, mental health presentations. For example, voice-hearing experiences have been evidenced as eliciting increased fear or anxiety (Hearing Voices Network, 2017; Woods, Jones, Alderson-Day, Callard, & Fernyhough, 2015). Alternatively, experiences of anxiety may lead to mental health difficulties such as compulsive-behaviours (Moulding & Kyrios, 2006). Such evidence highlights the likelihood of bidirectional relationships between affective phenomena and mental health difficulties, whereby experiences of one are likely to exacerbate experiences of the other. As such, it is reasonable to suggest that mental health difficulties and undesirable affective phenomena can create unhelpful, self-perpetuating cycles which are detrimental to psychological wellbeing.

The capacity of this interaction to impact negatively on psychological wellbeing creates rationale to investigate further the role of affective phenomena in mental health. This review thus explores the affective profiles of different obsessive-compulsive experiences (OCE). There is an extensive evidence-base highlighting the roles of multiple affective variables in OCE, yet currently recommended interventions tend to overlook affective influences and have limited effectiveness (Johnsen & Friborg, 2015; Kellner, 2010). Increased understanding in this area could inform the development of more effective psychological interventions, designed to alleviate undesirable affective phenomena in OCE. By understanding the affective profiles that underpin certain compulsive presentations,

clinicians will be better equipped to provide clinical interventions that consider, and address, the difficult affective phenomena which underlie clients' specific difficulties.

1.1. Affect, emotion, and mood

It is important to define the individual meanings of the affective phenomena covered in this review, as the terms "affect", "emotion", and "mood" are often used interchangeably despite their conceptual differences (Batson, Shaw, & Oleson, 1992).

1.1.1. Affect

"Affect" is the term used to define the feeling or "conscious experience" of emotion (Hogg, Abrams, & Martin, 2010; Panksepp, 2000). This means that rather than the emotion or mood itself, affect relates to an individual's state of experiencing and interpreting the emotion or mood. Examples of affective states include pleasure and displeasure, and tension and relaxation (Russell & Feldman-Barrett, 2009).

Broadly, affect can be categorised into either positive or negative experiences of emotions or moods. Naturally, whether an experience is perceived to be positive or negative is subjective. However, there is universal consensus that emotions such as "joy" and "love" are mostly experienced positively, and "fear", "anger", and "sadness" are mostly experienced negatively (Fredrickson, 1998). Empirical research has found that negative affect correlates with anxious and depressive presentations, and serves as a general predictor for psychological difficulties (Watson, Clark, & Carey, 1988).

1.1.2. Emotion

Substantial theoretically-driven work has aimed to define the concept of "emotion" (Dixon, 2012), with early research identifying as many as 92 distinct definitions (Kleinginna & Kleinginna, 1981). However, despite some disagreement, there is consensus that emotions are cross-culturally identifiable and have discrete survival-based functional values (Ekman, 1992). More recently, emotion has been defined as "a positive or negative experience that is associated with a particular pattern of physiological activity" (Schacter, Gilbert, Wegner, &

Hood, 2011). Additionally, emotions are said to comprise cultural labels (e.g., "anger" and "disgust"), expressive body actions (e.g., facial expressions), and the appraisal of specific situations and contexts (Thoits, 1989). As such, emotions differ from affects due to their situational and functional specificity and their ability to be universally recognised and thus more easily labelled; this understanding will be adopted throughout the review.

1.1.3. Mood

Moods appear to be primarily distinguishable from emotions as they are typically longer-lasting (Ekkekakis, 2012). Additionally, there is a general understanding that moods are less specific than emotions, as they can be perceived to pertain to either global or undefined causes (Frijda, 2009). A final defining-factor of a mood appears to be its temporal remoteness. Unlike emotions, which are considered more immediate reactions to specific stimuli, moods appear able to occur at any point after a triggering event (Morris, 1992).

Difficulties with mood are usually characterised by persistent low mood, elevated mood, or inconsistent mood. Evidence from comprehensive review studies suggests that one-half to two-thirds of completed suicides occur in individuals who have mood-related difficulties (Arsenault-Lapierre, Kim, & Turecki, 2004; Cavanagh, Carson, Sharpe, & Lawrie, 2003).

Understanding the conceptual differences between these terms allows for research to carefully consider the seemingly crucial roles of affects, moods, and emotions in mental health presentations, such as OCE. While these concepts have distinct identities, the term "affective phenomena" has been advised when referring to them collectively (Ekkekakis, 2012) and is consequently used in this review.

1.2. Obsessive-compulsive experiences

A range of terms are used for describing OCE, some of which are more medicalised than others. For example, experiences of an obsessive-compulsive nature can be classified under the diagnostic label of "obsessive-compulsive disorder" (OCD; APA, 2015b; World

Health Organization, 1992). The International Classification of Diseases (ICD-10) defines obsessions as “ideas, images or impulses that enter the individual's mind again and again in a stereotyped form” and compulsions as “stereotyped behaviours that are repeated again and again.” (World Health Organisation, 1992, p. 117). However, to avoid pathologizing this human experience, and in line with professional guidance, this review will consider such presentations as experiences, rather than “disorders” or “mental illnesses” (British Psychological Society [BPS], 2015).

1.3. Rationale for investigating OCE

1.3.1. Heterogeneous nature

OCE can present in multiple ways, which have led such difficulties to be described as having a “heterogeneous nature” (Chase, Wetterneck, Bartsch, Leonard, & Riemann, 2015; Leopold & Backenstrass, 2015). This adds complexity to the processes of identifying, assessing, and intervening with an individual’s presenting difficulties. Multiple research studies recognise the validity of subtyping OCE according to individual presentations; this is seen to be more effective than using a generalised approach which may incorrectly assume that varied presentations will respond to the same interventions (Fontenelle, Mendlowicz, & Versiani, 2005; Leckman, Bloch, & King, 2009; McKay et al., 2004). As such, further research into the differential factors behind specific OCE, for example, washing, checking, and hoarding, may be beneficial in developing bespoke means of early intervention and support for individual difficulties.

1.3.2. OCE and affective phenomena

OCE have been previously considered in terms of associated affective phenomena. This includes research into the roles of anxiety sensitivity, disgust, guilt, low mood, and shame (Calamari, Rector, Woodward, Cohen, & Chik, 2008; d'Olimpio et al., 2013; Seyfollahi & Gupta, 2014; Wetterneck, Singh & Hart, 2014). Not only have OCE been linked with various affective variables, but these variables have been reported to differ

according to specific compulsion-types. However, some findings regarding affective phenomena and OCE appear to be contradictory and thus require further consideration (d'Olimpio et al. 2013; Lawrence et al., 2007). While there is a clear affective component to OCE, there is a lack of clarity around the exact affective profiles that underlie different compulsions. Further exploration of existing research may be beneficial in explaining contradictory findings, and in turn, better understanding the affective underpinnings of specific presentations.

1.3.3. Global impact

The negative impact of OCE on quality of life continues to be widely recognised across empirical studies (Subramaniam, Soh, Vaingankar, Picco, & Chong, 2013). As it is estimated that 1.2% of the populations of both the United Kingdom (UK) and the United States of America (USA) experience difficulties of this nature (NHS Choices, 2014; Ruscio, Stein, Chiu, & Kessler, 2010), further research around OCE, and the affective phenomena which may underlie them, holds significant potential value.

1.3.4. Implications for interventions

Current guidelines recommend cognitive behaviour therapy (CBT), exposure-response prevention (ERP), and drug therapy as frontline interventions for OCE (Koran & Simpson, 2013; UK National Institute for Health and Care Excellence [NICE], 2005). However, as these interventions primarily focus on cognitions, behaviours, and biochemistry, underlying affective phenomena may be at risk of being overlooked; this holds negative implications, due to the recognised potential for affective phenomena and mental health difficulties – such as OCE – to enter unhelpful self-perpetuating cycles which could lead presentations to deteriorate further. As evidence has demonstrated the limited effectiveness of these interventions (Johnsen & Friborg, 2015; Kellner, 2010), research examining underlying affective influences on distinct compulsive behaviours may be beneficial in the development of more specified interventions.

1.4. The present review

Current findings regarding the differential role of affective phenomena in OCE appear unclear. Moreover, no review currently exists which has identified and collated this diverse evidence into a single, cohesive source. For this reason, the present paper will review and explore the affective profiles of individuals experiencing different obsessive-compulsive presentations. The research question, therefore, is "what are the affective profiles of individuals with different OCE?" To maximise reporting quality, the review is formatted in line with PRISMA reporting guidance (Moher, Liberati, Tetzlaff, & Altman, 2009).

2. Method

2.1. Data sources and search strategy

Four electronic databases were searched between 26th October and 9th November 2016. These were PsycINFO, PubMed, CINAHL, and Scopus. These databases were selected due to their relevance to the topics in question and their use in similarly-focused, recent systematic reviews (e.g., Angelakis, Gooding, Tarrier, & Panagioti, 2015; Ludvik, Boschen, & Neumann, 2015). To ensure that the databases were searched thoroughly, both free text and subject heading searches, using the databases' thesauruses, were completed. For this reason, search terms were slightly different across the various databases. Searches were also informed by common language evident across relevant research papers (Foa et al., 2002). The search terms and strategy used for the PsycINFO database are represented in Table 1. The methods used to search the other databases can be seen in Appendix A.

Insert Table 1 here

2.2. Eligibility criteria

In order to be included in the review, articles were required to meet the following eligibility criteria:

1) available in English.
2) published in a peer-reviewed journal.
3) present primary quantitative findings.
4) consider a minimum of one affective phenomenon (emotion, mood, or affect)[1].
5) consider more than one OCE (e.g. washing and checking) or levels thereof (e.g. high and low washing).
6) study adult populations only (aged 18+ years).
7) use a clinically-relevant sample, either individuals with a diagnosis of "obsessive-compulsive disorder", or who score above the clinical threshold on a validated measure of OCE[2].

2.3. Study selection

The systematic search procedure identified 4,667 studies. After initial screening using the predetermined eligibility criteria and removal of duplicates (n = 130), 274 articles

[1] Only two comorbid diagnoses were deemed to be representative of specific affective phenomena and thus eligible for inclusion; these were major depression and generalised anxiety disorder. These diagnoses were seen to represent presentations characterised by single affects, moods, or emotions, as depression is primarily representative of low mood/sadness, and anxiety of fear/worry. However, other mood and anxiety diagnoses, for example those of bipolar disorder and separation anxiety disorder, were not included, due to their capacities to represent multiple affective phenomena. For example, a presentation consistent with a diagnosis of bipolar disorder would entail both periods of elated mood and low mood. In order to draw reliable conclusions from the review, it was important to know the specific affective phenomena being represented in each measure.

[2] Despite the intention to avoid using a medicalised stance throughout the review, this criterion was deemed necessary for three reasons. First, the term "OCD" is often culturally misused and can therefore be misrepresented if not assessed clinically (Kelly & Winterman, 2011; Mind, 2013). Second, subclinical obsessions and compulsions may represent a distinctly different difficulty (Grabe et al., 2000), or indeed, a normal feature of personality. Third, most existing research has used diagnostic criteria to define a clinically-relevant sample.

remained. Following full text review, a final sample of 23 eligible papers was reached. The selection process is represented in Figure 1.

Insert Figure 1 here

2.4. Data extraction

The outcome data extracted from the articles were pertinent to the aims of the review. Data can be seen in Table 2, which captures details about the studies' samples and quality assessments, and Table C1 (Appendix C), which details measures and outcome data. In attempts to access data additional to that published in the included papers, 12 authors were contacted by email. Eight authors replied, of whom two were able to supply further relevant information.

Insert Table 2 here

2.5. Appraisal of included papers

The UK National Institute of Health's quality assessment tools for case-control and cross-sectional studies were used to assess the methodological quality of the included studies (NIH, 2014a; 2014b). They included items related to sample sizes and statistical analyses and have been used in a recent review (Mangin, Stephen, Bismah, & Risdon, 2016). The tools allowed the studies to be given a qualitative rating of "good", "fair", or "poor" following structured consideration of their internal validity and risk of bias.

Additional to the main researcher, an independent researcher rated a randomly-generated subsample of six papers (26%). Cohen's κ was calculated to determine the degree of agreement between both raters on all 14 items of the appraisal tool; high agreeability was

identified, $\kappa = .801$, $p < .001$. In labelling the articles as "good", "fair" or "poor", the degree of agreeability between the two researchers was 100% ($\kappa = 1.00$. $p < .001$). These findings represented a "strong" level of agreement between the researchers (McHugh, 2012) and demonstrated the reliability of both the appraisal tool and ratings assigned. The ratings assigned to each paper can be seen in Table 2 and the inter-rater decisions are available in Appendix B. As all papers were given ratings of fair or good, they were all considered appropriate for inclusion in the review.

The STROBE statement was also used to critically consider the reporting styles of each paper (da Costa, Cevallos, Altman, Rutjes, & Egger, 2011; von Elm et al., 2007).

3. Results

Table C1 (Appendix C) shows the relevant findings from the 23 studies included in the review. Washing, checking, and hoarding will be considered in further detail, as these were the most commonly studied presentations. Due to the breadth of data generated, only pertinent results will be discussed narratively.

3.1. Washing

Twenty of the 23 included studies considered a washing or cleaning subtype. Table 3 summarises which affective phenomena were measured alongside washing. Key findings are discussed in more detail.

Insert Table 3 here

3.1.1. Sadness and depression

Fourteen of the papers to consider a washing subtype also considered depression or sadness. Three studies evidenced that washing may be associated with increased depression. Seyfollahi and Gupta (2014) found individuals categorised as "washers" to be significantly more depressed than "checkers" ($d = 0.87$). Further, two studies found small to medium

correlations between the contamination scale of the Y-BOCS and BDI depression scores (Olatunji et al., 2010, r = .26; Olatunji, Ebesutani, David, Fan, & McGrath., 2011, r = .22), one of which was statistically significant ($p < .08$, $p < .01$, respectively).

In contrast, one study (Calamari, Wiegartz, & Janeck, 1999) found a "contamination" subgroup to report significantly fewer depressive symptoms than a "certainty" subgroup (d = 0.93); there were no other significant differences regarding the "contamination" subgroup. However, a later study by Calamari et al. (2004) did not find any significant differences between the "contamination" and other subgroups on the BDI, including the "certainty" subgroup (d = 0.10). As these studies had large and partially overlapping samples and highly similar quality appraisals, it is difficult to explain these contradictory findings.

Including Calamari et al. (2004), 10 of the 14 studies to consider depression or sadness alongside washing found no significant differences or relationships between washing and depression.

3.1.2. Anxiety and anxiety sensitivity

Twelve studies considered either anxiety or anxiety-sensitivity alongside the washing compulsion-type. Three studies found reduced anxiety or anxiety sensitivity in washing. First, Raines, Oglesby, Capron, and Schmidt (2014) found that washing was the only subtype that did not significantly correlate with any ASI subscales; all washing coefficients were small ($r < .12$). Additionally, Calamari et al. (1999) found that their contamination subgroup had significantly lower trait (d = 0.73), but not state (d = 0.63), anxiety scores than their certainty subgroup; however, effect sizes for both forms of anxiety were relatively high. This was the only significant difference regarding anxiety and the contamination subgroup. Calamari et al. (2008) found that individuals with mixed presentations, characterised by both concerns about contamination and concerns about causing harm to self or others, had significantly higher scores than the contamination-only group on the ASI total (d = 0.67),

social concerns (d = 0.64), physical concerns (d = 0.62), and mental-dyscontrol concerns (d = 0.64) subscales.

In contrast, two studies evidenced higher anxiety in washing compulsions. While García-Soriano, Rosell-Clari, and Serrano (2016) found no significant differences between contamination and checking groups on validated measures of anxiety (d = 0.21) or anxiety-sensitivity (d = 0.78), the latter effect size was large, suggesting some evidence of increased anxiety in their washing group. Unfortunately, their limited washing (n = 16) and checking (n = 15) samples and lack of power calculation means it is difficult to determine the significance of these findings. Furthermore, findings from their disgust-inducing behaviour-avoidance task suggested that the contamination group reported significantly higher subjective anxiety ratings than the checking group following progressive exposure to the "disgusting" stimulus (d = 0.96). Similarly, while Phillips et al. (2000) found no significant differences between "washers" and "checkers" on a validated measure of state and trait anxiety, their univariate analysis of variance revealed that "washers" rated both normally-disgusting and washer-relevant stimuli as significantly more anxiety-evoking than "checkers". However, quality appraisal of this study highlighted that confounding variables had not been controlled, leading to difficulties making inferences about anxiety without considering the confounding effects of disgust. The role of disgust, and its potential interaction with anxiety in washing groups, must therefore be considered when interpreting both of these findings.

Seven of the 12 studies found no significant relationship or difference between anxiety or anxiety-sensitivity and a washing compulsion-type.

3.1.3. Fear

Three studies measured fear alongside the washing compulsion type. Phillips et al. (2000) found "washers" to rate both normally-disgusting and washer-relevant stimuli as significantly more frightening than "checkers". This finding is in line with that of Steketee,

Grayson, & Foa (1985), as they also found “washers” to be more fearful than “checkers”. As these papers did not control for confounding affective variables, conclusions about fear in “washers” cannot be drawn without considering potential interactions with other affective phenomena.

In contrast, Jhung et al. (2004) did not find any of the obsessive-compulsive dimensions they measured to predict the perception of fear in ambiguous facial expressions; this study did control for some confounds, but not affective variables. As no effect size data were available for any of these studies, it is difficult to develop reliable conclusions from the mixed results.

3.1.4. Disgust

Ten of the 23 studies included in the present review considered the emotion of disgust alongside a measure of washing, nine of which evidenced elevated disgust in people with washing presentations. Jhung et al. (2010) found a significant relationship between disgust and the cleaning dimension. Specifically, they reported that a higher cleaning score was a predictor of greater disgust-perception in ambiguous faces, suggesting a heightened sensitivity to disgust. Lawrence et al. (2007) also used the recognition of facial expressions to measure differences between obsessive-compulsions regarding disgust. Similarly, they reported that findings from fMRI scans provided evidence of higher disgust sensitivity in individuals with “high washing symptoms” compared to people with other compulsive tendencies.

García-Soriano et al. (2016) found no statistically significant differences between contamination and checking groups on the DPSS-R sensitivity and propensity subscales (d = 0.71, d = 0.73, respectively); however, medium to large effect sizes were observed. Although their small sample size (total N = 31; “washers” n = 16; “checkers” n = 15) meant that these effect sizes were not statistically significant at the .05 alpha level, their findings suggested that disgust propensity and sensitivity were indeed elevated in the contamination group.

Further, García-Soriano et al. found significant results during their behaviour avoidance task. This task required participants to rate subjectively their feelings of disgust from 0 to 10 as they experienced increasing contact with a disgust-inducing stimulus. As expected, the contamination group reported higher subjective disgust ratings than the checking group (d = 0.94). In a similar study, which used disgust-inducing images as stimuli, Phillips et al. (2000) also found that "washers" rated both normally-disgusting and washer-relevant stimuli as significantly more disgusting than "checkers".

Olatunji et al. (2007) found "washers" to score significantly higher than "non-washers" (d = 2.73) on the DS-R total score; this effect size is considered to be "huge" (Sawilowsky, 2009). This finding was also replicated when considering the Core Disgust (d = 0.62) and Contamination-based Disgust (d = 0.63) subscales of the DS, with the only non-significant finding pertaining to the Animal Reminder Disgust subscale (d = 0.06). Similarly, Woody and Tolin (2002) reported "washers" to have elevated scores on the DS. Although this finding was not found to be statistically significant, a medium effect size was reported (d = 0.59; N = 68).

In considering a variety of obsessive-compulsive presentations, Berle et al. (2012) found that all VOCI subscales, with the exception of hoarding, showed consistent small to medium-strength correlations with the total DES score. The strongest correlation was that between total DES and contamination (r = .51). This was similar to the findings of Olatunji et al. (2011), who found significant positive correlations between all six subscales of the OCI-R and all three measurements of disgust (total disgust, disgust sensitivity, and disgust propensity). Washing and obsessing showed the strongest correlations with the DPSS-R subscales.

Olatunji et al. (2010) also found significant correlations between total disgust and the washing subscale of the OCI-R, r = .35. An additional correlation analysis revealed that

washing, hoarding, ordering, and neutralising were significantly correlated to the disgust-propensity subscale. However, only the hoarding (r = .33) and washing (r = .35) correlations remained statistically significant after controlling for depression. The relationship between washing and disgust-sensitivity was the second strongest after hoarding (r = .24).

Only one of the ten studies reported non-significant findings in at least one aspect of their research. Despite recognising a moderate correlation between washing and disgust, d'Olimpio et al. (2013) found no significantly different scores between "washers" and "checkers" on the DS (d = 0.06). However, this study had uneven group sizes (washing group, n = 11, checking group, n = 49), a small washing sample, and queried the degree of overlap between the subgroups.

3.1.5. Affective profile for washing

As summarised in Table 3, four key findings were discovered when reviewing the data regarding washing and affective phenomena. First, individuals who engage in washing-compulsions may have affective profiles characterised by elevated disgust. Second, there may be an interaction between elevated disgust and elevated anxiety within washing groups. Third, anxiety and depression appear to be generally consistent across all compulsive presentations (see below). Fourth, experiencing multiple obsessive-compulsive difficulties (e.g., both concerns about causing harm and contamination) may be associated with increased experiences of negative affective phenomena, such as anxiety.

3.2. Checking

Fifteen studies considered a checking subtype. Table C1 reports how studies chose to measure this presentation while Table 4 summarises which affective phenomena were measured alongside checking.

Insert Table 4 here

3.2.1. Depression

Twelve of the papers to consider a form of checking subtype also considered depression, four of which found depression to be elevated in checking. Calamari et al. (1999) found their "certainty" subgroup of individuals – which appears to be equivalent to a "checking" subgroup – to report significantly more depressive symptoms than their "obsessional" (d = 0.78) and "contamination" (d = 0.93) subgroups. Although a later study by Calamari et al. (2004) did not find any significant differences between these subgroups (d = 0.34 and d = 0.10, respectively), they did find a medium to large effect size regarding higher depression in the certainty group than the hoarding group (d = 0.79). Checking was also found to significantly correlate with depressive symptoms in the studies of Olatunji et al. (2010; r = .38) and Olatunji et al. (2011; r = .32). Alternatively, Seyfollahi and Gupta (2014) found their washing group to score significantly higher than their checking group on the BDI-II (d = 0.87). However, as this was the only study to use a non-westernised sample regarding checking compulsions, contradictory findings between studies may be due to cultural differences.

Seven of the 12 studies to consider depression alongside checking reported no significant differences or relationships between checking and different compulsion subtypes regarding depression.

3.2.2. Anxiety, anxiety sensitivity, and worry

Eleven of the 15 studies to consider checking also considered either anxiety or anxiety sensitivity, four of which found evidence to suggest elevated anxiety in checking. Raines et al. (2014) found that checking was significantly correlated with all ASI subscales and the total ASI score, with correlation coefficients ranging between r = .32 and .39. Although Calamari et al. (2008) found no significant between-group differences with regards to checking and anxiety, they did find significant correlations between the certainty subscale of the Y-BOCS and three of the four ASI scores (total ASI: r = .66; physical ASI: r = .55; social

ASI: r = .59). Certainty scores and the mental dyscontrol ASI subscale were not significantly correlated, but a moderate correlation was reported (r = .52). However, significant correlations were also found between anxiety sensitivity and several compulsion-types, suggesting this relationship may not be unique to checking presentations (see Table C1). Regarding worry, Olatunji et al. (2011) found checking scores on the OCI-R to significantly correlate with PSWQ worry scores (r = .27). Significant correlations were also found between the PSWQ and hoarding (r = .17), neutralising (r = .17), obsessing (r = .52), and ordering (r = .18).

Additionally, Calamari et al (1999) found that their certainty subgroup had significantly higher trait anxiety scores than the contamination (d = 0.72), obsessional (d = 0.83), and hoarding (d = 1.29) subgroups. However, no between-group differences were found regarding state anxiety or anxiety sensitivity. García-Soriano et al. (2016) also found their checking group to report higher anxiety sensitivity than their contamination group (d = 0.78). However, this finding was not statistically significant, perhaps due to their limited sample size (N = 31).

The remaining seven studies to consider checking and anxiety reported no significant relationships or differences.

3.2.3. Fear

Two studies measured fear alongside the checking compulsion-type. "Checkers" were found to report significantly less fear than "washers" by Steketee et al. (1984), especially with regards to external cues such as approaching an unclean toilet. Phillips et al. (2000) also found evidence to this effect, however, the use of a disgust-inducing tasks may have influenced both of these findings.

3.2.4. Guilt

Three of the studies included in the review measured guilt, two of which found elevated guilt in checking. Shafran, Watkins, and Charman (1996) found that checking was

significantly correlated with trait guilt (r = .59) and total guilt (r = .59) scores on the GI; no other significant correlations were identified, but a correlation of moderate strength was also found between checking and state guilt (r = .46). Although there was no significant difference between "checker" and "washer" groups for trait guilt (d = 0.17) in the study of Seyfollahi and Gupta (2014), their research found that "checkers" reported significantly higher total guilt than "washers" (d = 0.35). Additionally, they found the "checker" group to score significantly higher than the "washer" group on a measure of state guilt (d = 0.64).[3]

In contrast to the above findings, d'Olimpio et al. (2013) found no significant differences between "washer", "checker", and mixed groups with regards to guilt. However, the researchers from this study raised queries about the discreteness of their washing and checking groups.

3.2.5. Affective profile for checking

As summarised in Table 4, two key findings were discovered when reviewing the data regarding checking and affective phenomena. First, that elevated guilt may contribute to the affective profile of individuals with checking or certainty OCE. Second, that reduced fear may also differentiate "checkers" from "washers", but that the role of disgusting stimuli may be crucial in this interaction. Third, that anxiety and depression may underlie the majority of obsessive-compulsive presentations and thus be inherent in all such affective profiles.

3.3. Hoarding

Thirteen studies considered hoarding. Table C1 reports how hoarding presentations were measured, while Table 5 highlights which affective phenomena were measured alongside hoarding.

[3] Seyfollahi and Gupta (2014) also found the "checker" group to score significantly lower than the "washer" group on the moral standard subscale of the GI (d = 0.10). However, this finding appears statistically inaccurate and therefore has been discounted from the findings of the review.

Insert Table 5 here

3.3.1. Depression

Ten studies considered "hoarding" alongside depression or sadness, five of which reported reduced depression in hoarding. Calamari et al. (2004) found that the hoarding subgroup reported significantly lower levels of depression (d = 0.43) than all other groups. This is in line with findings from Grisham, Brown, Liverant, and Campbell-Sills (2005) and Neziroglu, Weissman, Allen, and McKay (2012), who found people with hoarding presentations to report significantly less depression than other obsessive-compulsive groups (for example, individuals with other OCE with and without hoarding compulsions). In two studies, which used correlation analyses (Olatunji et al., 2010; Olatunji et al., 2011), hoarding was not significantly correlated with depression (r = .17 and r = .10, respectively); however, other compulsion-types were (see Table C1). This could be interpreted to suggest that "hoarders" are less likely to experience depression than some other compulsion-types.

In contrast, two studies suggested that "hoarders" may experience increased depression. Frost, Steketee, Williams, and Warren (2000) found "hoarders" to report higher depression than people with any other OCE, but this finding became non-significant when anxiety was controlled; this suggests the reported relationship between hoarding OCE and low mood may not be straightforward. Similarly, Torres et al. (2016) found scores of the hoarding dimension of the DY-BOCS to be independently associated with having a diagnosis of major depressive disorder (d = 0.28). However, this finding has a relatively small effect, perhaps only made statistically significant by the large sample size (N = 1001).

Three of the ten studies investigating hoarding behaviours and depression or sadness found no evidence to suggest a significant relationship or association between these constructs.

3.3.2. Anxiety and anxiety sensitivity

Eight studies from the review considered either anxiety or anxiety-sensitivity alongside hoarding, seven of which found evidence to suggest that people with hoarding-only presentations may experience less anxiety than other compulsion groups. Grisham et al. (2005) found individuals with hoarding-only OCE to report significantly less anxiety than either individuals with mixed obsessive-compulsive presentations (including hoarding; d = 0.75) or individuals with mixed OCE (not including hoarding; d = 0.86); they also found these patterns regarding worry and stress. Similarly, Neziroglu et al. (2012) found individuals with hoarding-only difficulties to report significantly lower anxiety than individuals with wider obsessive-compulsive presentations (both with, d = 0.70, and without, d = 0.93, hoarding aspects).

In addition, Calamari et al. (2008) found that the mixed contamination/harming subgroup had significantly higher ASI total scores than the hoarding subgroup (d = 1.01) and Calamari et al (1999) found that their certainty subgroup had higher trait anxiety scores than their hoarding subgroup (d = 1.29). Furthermore, Olatunji et al (2011) found no significant relationship between hoarding and anxiety (r = .09), despite observing relationships between anxiety and multiple other compulsions. Torres et al. (2016) found no significant association between hoarding presentations, or indeed any other compulsion-types, and diagnoses of generalized anxiety disorder. Finally, although Calamari et al. (2004) found no significant difference between hoarding and all other groups on the ASI-III, they reported a medium effect size for lower anxiety sensitivity in the hoarding group (d = 0.54).

Only one study (Frost et al., 2000) evidenced individuals with obsessive-compulsive hoarding difficulties to report higher anxiety levels than individuals with non-hoarding compulsions (d = 0.71). However, this finding became non-significant when depression was controlled, suggesting the reported relationship between hoarding OCE and anxiety may be influenced by low mood.

3.3.3. Positive affect, negative affect, and stress

Grisham et al. (2005) were the only researchers to consider measures of positive and negative affect, and stress. They found individuals with hoarding-only OCE to report significantly less negative affect and stress than either individuals with mixed OCE including hoarding (d = 1.01; d = 1.42, respectively) or individuals with non-hoarding OCE (d = 1.21; d = 1.14, respectively). Similarly, they found the hoarding-only group to report significantly more positive affect than the mixed-presentation group (d = 0.81), and the mixed-presentation group to report significantly more positive affect than the non-hoarding group (d = 0.62).

3.3.4. Affective profile for hoarding

As summarised in Table 5, two key findings were discovered when reviewing the data regarding hoarding and affective phenomena. First, that hoarding presentations alone may be characterised by fewer undesirable affective phenomena (including anxiety, fear, negative affect, stress and depression) than individuals with other obsessive-compulsive presentations. This is somewhat contradictory to previous suggestions that depression and anxiety may be consistently present in all obsessive-compulsive presentations. Second, data from the reviewed articles suggests that the presence of multiple compulsions may be associated with increased experiences of undesirable affective phenomena.

4. Discussion

4.1. Summary of key findings

This review has investigated the affective profiles of individuals with different obsessive-compulsive presentations; five key conclusions are discussed.

4.1.1. Washing affective profile

Disgust was consistently associated with washing presentations. The relationship between disgust and contamination-related OCE has also been recognised in the wider evidence base (Athey et al, 2015; Brady, Adams, & Lohr, 2010; Cisler, Olatunji, & Lohr, 2009). It is theorised that elevated levels of disgust sensitivity drive compensatory washing behaviours in attempts to reduce the potential threat from contagious sources (Berle &

Phillips, 2006). This fits with paradigms regarding the adaptive evolutionary function of disgust (Cisler, et al., 2009). Although one study in the review did not find significantly higher disgust in washing groups than checking groups, this may have been due to the mixed histories of participants in their sample, as the authors noted the history of checking behaviours in their sample of "washers" and washing behaviours in their sample of "checkers" (d'Olimpio et al., 2013). As such, it may be helpful for future research – if grouping participants by compulsive difficulties – to ensure discrete groups are achieved.

Two studies reported raised anxiety in contamination and washing groups during exposure to disgusting stimuli (García-Soriano et al., 2016; Phillips et al., 2000). This highlights a potential mediating role of anxiety in the relationship between disgust and washing behaviours. As such, it is plausible that when individuals with contamination-related OCE experience elevated disgust, it makes them feel anxious about the potential threat of disease, which in turn, drives washing compulsions. Indeed, research has highlighted that when disgust towards a stimulus is experienced, anxiety and fear towards that stimulus becomes elevated (Davey, MacDonald, & Brierley, 2008; Davey, 2011). Future research may benefit from using a mediation analysis to explore the interactions between disgust, anxiety, and washing compulsions. Additionally, future studies must ensure affective confounds are appropriately controlled to generate conclusions about specific affective variables.

4.1.2. Checking affective profile

Findings suggested that individuals with checking compulsions experience greater guilt than individuals with washing compulsions. This result could be explained in terms of underlying obsessional thoughts which may lead to checking behaviours. It is widely understood that checking compulsions are related to thoughts about being responsible for the cause or prevention of harm and, therefore, the safety of self and others (OCD-UK, 2013). Such feelings of inflated responsibility are thought to be related to the emotion of guilt

(Rachman, 1993), which could explain the current findings in terms of guilt-emotions driving checking-behaviours. Equally, it may be possible that the completion of checking rituals leads individuals to feel guilty afterwards, either due to failed attempts to resist checking urges or due to concerns about not "checking" to their necessary standards.

4.1.3. Hoarding affective profile

Findings suggest that individuals with hoarding difficulties may experience lower levels of undesirable affective phenomena than those with other compulsive difficulties. However, this finding may be due to the designs of the included studies, as hoarding groups were often compared to those with multiple difficulties, which have also been suggested to be more distressing to experience (see below). Furthermore, the results may not suggest that individuals with hoarding behaviours experience lower levels of negative affective phenomena initially, but rather that hoarding is a more effective strategy for avoiding distress (Frost & Hartl, 1996). This may be explained by the evolutionary psychology view of hoarding as a universally adaptive trait used functionally and effectively in humans and animals (Andrews-McClymont, Lilienfeld, & Duke, 2013).

However, the findings may also be representative of a distinct difference between compulsive-hoarding presentations and those characterised by other compulsions. While hoarding has long-since been recognised as an obsessive-compulsive experience (WHO, 1992), the most recently published diagnostic manual has also listed "hoarding disorder" as a distinct difficulty (APA, 2015a). While an international meta-analysis comprising 21 studies confirmed that hoarding is an independent factor of the "obsessive-compulsive disorder" diagnosis (Bloch, Landeros-Weisenberger, Rosario, Pittenger, & Leckman, 2008), several arguments have also been made as to why hoarding is conceptually different from other OCE. Not only has research suggested that hoarding urges are not experienced as intrusive obsessions (Steketee, Frost, & Kyrios, 2003), but evidence also suggests that they do not often share the repetitive and distressing properties of typical OCE (Kyrios, Frost, &

Steketee, 2004). These differences offer an evidence-based explanation as to why the affective profile of compulsive-hoarding may be characterised by fewer undesirable affective phenomena.

4.1.4. Affective profile of mixed presentations

Individuals who present with more than one compulsive difficulty may be prone to experiencing less positive affect and more anxiety, worry, negative affect, and anxiety sensitivity than individuals presenting with a single compulsion (Grisham et al., 2005; Neziroglu et al., 2012). However, this conclusion is based on consistent findings from a small number of studies (n = 4) out of only six studies that had groups with mixed or multiple compulsions.

While it is reasonable to assume that more compulsions may elicit more undesirable affective phenomena, there appears to be mixed evidence regarding this finding in the wider evidence base. In accordance with the current suggestion, Shetti et al. (2005) found that mixed OCE, as opposed to single compulsive-difficulties, were significantly associated with nonresponse to pharmacological treatment using serotonin reuptake inhibitors. However, Math and Janardhan Reddy (2007) found no significant difference between the course of presentation over a duration of five to six years in individuals with mixed and "predominantly obsessive" compulsive difficulties. With limited evidence available in this field, further research into the impact of experiencing multiple compulsions on mental health and recovery may increase understanding around mixed presentations.

4.1.5. Global affective profile

Finally, the results of the review found inconclusive results regarding anxiety and depression. Aside from the apparent reduction of these phenomena in hoarding presentations, as compared to other compulsions, no clear associations with specific compulsive-behaviours were identified. As such, it may be appropriate to conclude that all OCE are likely to feature degrees of elevated anxiety and depression. This finding is supported by research which

recognises the considerable overlaps between anxiety, depression, and OCE (Antony, Bieling, Cox, Enns, & Swinson, 1998; Goodwin, 2015). Additionally, research has reported significant correlations between measures of depression and anxiety and the OCI-R total score in a clinical sample (Gönner, Leonhart, & Ecker, 2008). As such, clinicians may benefit from recognising the likelihood of such difficulties co-occurring and the need to consider this when formulating and supporting clients. Furthermore, future research projects investigating the roles of affective phenomena in OCE should ensure that these overlapping factors are controlled in order to account for any confounding effects.

4.2. Quality appraisals

As reported, all included studies were rated either "fair" or "good" using the UK NIH quality assessment tools (2014a; 2014b). The process of quality appraisal facilitated the critical analysis of the studies' findings. Upon closer consideration, it is evident that all studies rated "good" have contributed findings which directly support one or more of the five key conclusions; this suggests conclusions are robust and well-evidenced.

Berle et al. (2012), d'Olimpio et al. (2013), Lawrence et al. (2007), and García-Soriano et al. (2016) all found evidence to suggest a relationship between disgust and washing presentations, be this a correlation between disgust measures and washing subscales, or a between-groups comparison. Although d'Olimpio et al. did not find between group differences regarding disgust in "washers" and "checkers", they were able to explain this unexpected finding in terms of the possible overlaps in their groups; additionally, their correlation analysis still evidenced a relationship between disgust and washing. Shafran et al. (1996) and d'Olimpio et al. (2013) both reported moderate to strong correlations between measures of guilt and checking, while Frost et al. evidenced that multiple presentations may lead to more undesirable affective phenomena. García-Soriano et al., d'Olimpio et al., and Lawrence et al., all also presented evidence of anxiety and low mood presenting consistently

across the different compulsions. As such, it is reasonable to suggest that the inconsistent findings within the review may have stemmed from studies with poorer methodological quality.

4.3. Clinical implications

Several clinical recommendations can be made from this review. First, there is value in assessing and supporting discrete OCE individually, as affective differences exist between the various compulsive behaviours. Clients with multiple presentations may experience greater affective distress, and require a series of bespoke interventions and additional support. Second, it is advised that clients' co-occurring anxiety and low mood are always considered, as these may be contributing to, or resulting from, their OCE; providing an effective and holistic service requires awareness of the wider picture.

Third, clinicians are advised to consider important differences in underlying affective phenomena when supporting people with OCE, which could be contributing to, or resulting from, compulsions and contributing to reduced psychological wellbeing. This review suggests that feelings of disgust should be assessed and formulated when working with clients with washing or contamination-related presentations, as this may be driving an unhelpful pattern of obsessive thoughts and compulsive behaviours. Similarly, it may be beneficial to be mindful of guilt when working with individuals who experience checking compulsions. When working with these affective phenomena, it may be helpful to use interventions that focus on affect, for example compassion-focused therapy, (Gilbert, 2009), emotion-focused cognitive therapy (Power, 2010) or emotion-focused therapy (Greenberg, 2015). Finally, clinicians are encouraged to consider the similarities and differences between discrete hoarding presentations and obsessive-compulsive hoarding difficulties before formulating and supporting these experiences.

4.4. Strengths and limitations

4.4.1. Criticisms of the present review

The present review has several strengths. First, it has drawn upon studies with a breadth of methodologies and analyses, allowing for evidence to be assimilated from a range of sources. Second, the review has used a rigorous, systematic method to screen and select papers, and extract data. This, and the process of inter-rating the quality of the studies, seeks to reduce the influence of any researcher bias on the review findings. The review also contains papers from a variety of countries and cultures, making it potentially generalizable to an international population. Finally, the present review is the first of its kind to systematically consider the roles of a range of affective phenomena in a variety of OCE.

However, the review also had limitations. First, difficulties arose when attempting to compare and assimilate findings from papers that had used different measurement tools, designs, and analyses. This limitation was compounded by the volume of data available, which was difficult to organise and evaluate in a structured and meaningful way. While the use of multiple measures and designs added breadth to the review, it also limited the ability to succinctly summarise information across different studies. As such, the current review has only considered, in depth, a small proportion of the data it generated. While this was necessary for both clarity and brevity, this meant that only the most relevant and conclusive findings have been summarised.

Additionally, although multiple countries were represented in the review, the majority of reviewed papers considered westernised samples. While evidence suggests that “basic emotions”, such as disgust, are expressed and recognised cross-culturally (Ekman, 1992), consideration must also be given to the cultural contexts in which these emotions are likely to be first, evoked, and second, deemed appropriate or acceptable. The way in which different cultures understand emotions – and presentations such as OCE – must therefore be

considered when attempting to generalise the present findings to non-westernised populations.

4.4.2. Criticisms of the included papers

Although all included studies were rated "fair" or "good" using the NIH quality assessment tools (NIH, 2014a; 2014b), some of their designs limited the scope to draw confident conclusions; this included a lack of control over confounding affective influences. As no study used a longitudinal design which preceded the onset of OCE, the capacity to infer causality from the recognised relationships and associations was limited. This inhibits the review's ability to clarify the direction of the relationship between affective phenomena and obsessive-compulsive behaviours. Nevertheless, due to the bidirectional relationship between affective phenomena and OCE, exploring directional effects was beyond the scope of the review.

A second limitation of the reviewed papers regards the affective variables and compulsive behaviours they considered. As some of the affective and compulsive variables have only been considered in a small number of studies, conclusions regarding factors such as shame and ordering could not be given the same in-depth consideration as factors which were investigated in several studies. This lack of evidence highlights the potential scope for more scientific research in this area.

5. Conclusion

As discussed, the present review identified five main findings regarding the affective profiles behind specific OCE. These findings highlight the need for more controlled and robust research into the affective phenomena underlying various compulsion-types. This is especially important due to the potential for clearer findings to inform the work of mental health professionals in considering discrete affective profiles when supporting people with OCE. Controlled consideration of affective phenomena may be key in developing more effective strands of clinical support for those who need it.

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Literature Review Tables and Figures

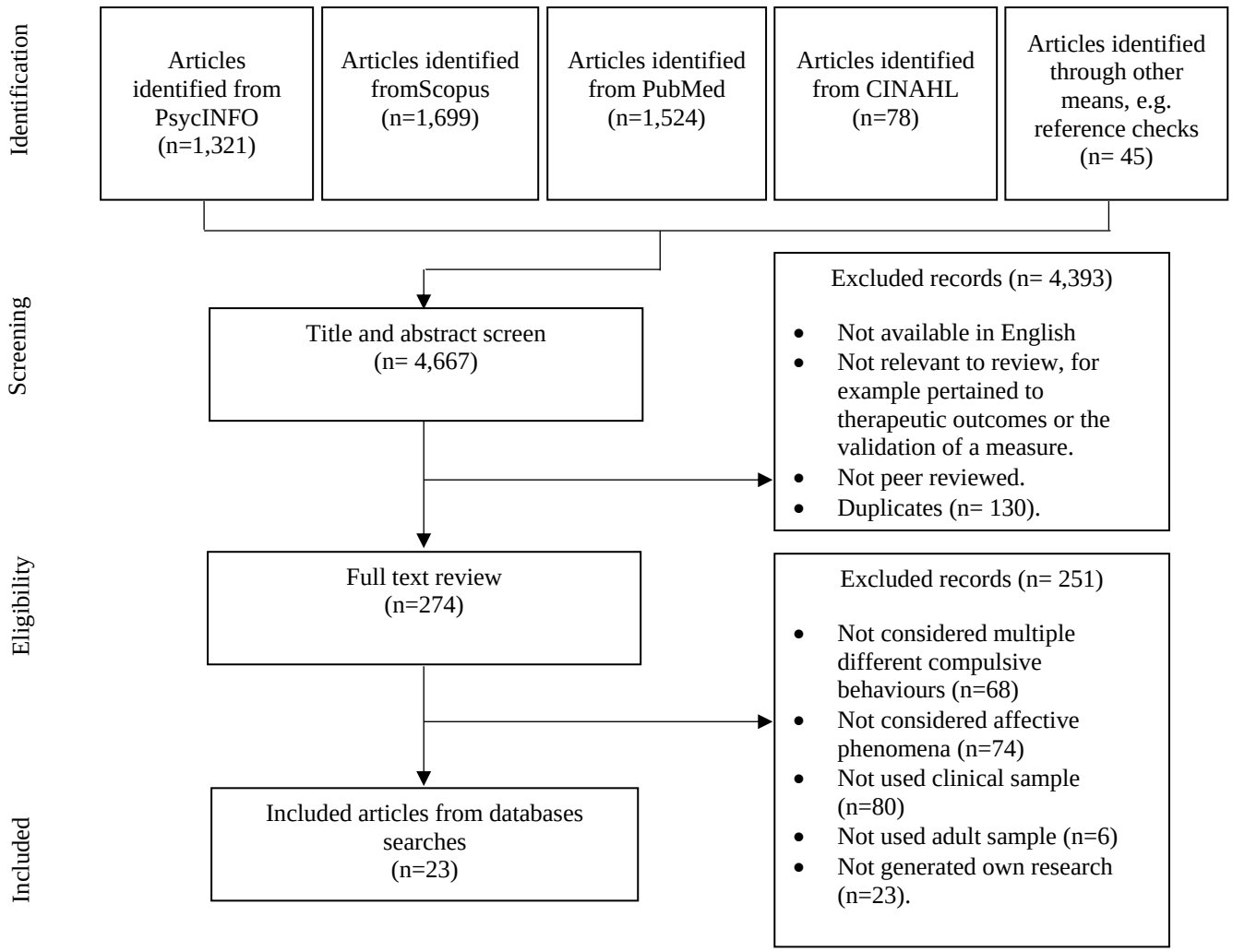

Figure 1. Flowchart illustrating the process of selecting papers, modelled on the work of Moher et al. (2009).

Table 1. Search strategy used for the PsycINFO database on 8th November 2016.

Search	Terms Used	Results
S1	DE “Obsessive Compulsive Disorder”	9,036
S2	DE “Emotions”	44,235
S3	AB OCD OR AB Obsessive Compulsive Disorder	11,551
S4	AB Emotion* OR AB Affect* OR AB Mood	429,097
S5	S1 OR S3	12,705
S6	S2 OR S4	437,031
S7	(DE "Compulsions" OR DE "Repetition Compulsion" OR DE "Hoarding Behavior") OR (DE "Symptoms")	42,265
S8	AB Wash* OR AB Check* OR AB Hoard* OR AB Symptom* OR AB "Compulsive behaviour*"	235,533
S9	S7 or S8	240,997
S10	S5 AND S6 AND S9	1,321

Note. DE = search using specific subject terms from PsycINFO thesaurus; AB = terms searched for in abstracts of articles. All searches were limited to exclude papers that were not available in English and were not published in peer-reviewed journals.

Table 2. Details of the studies included in the present review and quality assessment ratings from the National Institutes of Health's quality assessment tools for case-control, cohort, and cross-sectional studies.

Author, year and location	Sample size	Sample characteristics	Affective phenomena measured	Quality assessment rating
Berle et al. 2012 AUS	109	Principle diagnosis of OCD 64 females; 45 males	Disgust	GOOD
Calamari et al. 1999 USA	106	Met DSM-IV criteria for OCD 49 females; 57 males	Depression State Anxiety Trait Anxiety Anxiety Sensitivity	FAIR
Calamari et al. 2004 USA	114	Met DSM-IV criteria for OCD 56 females; 58 males	Depression Anxiety Sensitivity	FAIR
Calamari et al. 2008 CAN & USA	280	Met DSM-IV criteria for OCD 149 females; 131 males	Anxiety Sensitivity	FAIR
D'Olimpio et al. 2013 ITA	179	Control sample = 87. Clinical sample = 92. Of clinical sample, 73 with diagnosis of OCD; 19 with diagnosis of other anxiety disorders. Of OCD sample, 11 washer subtype, 49 checker subtype, 13 washer/checker. Of OCD sample, 42 females; 31 males.	Depression Disgust State Anxiety Trait Anxiety Guilt	GOOD
Frost et al. 2000 USA	104	Of total sample: 75 females; 29 males. 37 OCD hoarders; 20 OCD non-hoarders; 13 other anxiety disorder subjects; 34 community controls. Of OCD sample: had an OCD diagnosis from a mental health professional scored 10 or more on the Y-BOCS or 50 or more on the Padua Inventory. OCD hoarders were required to indicate significant hoarding difficulties on the Y-BOCS.	Depression Anxiety	GOOD
García-Soriano et al. 2016 ESP	45	All female. 16 scored 90th percentile or higher on OCI washing scale (contamination group); 15 scored 90th percentile or higher on OCI checking scale (checking group); 14 scored 25th percentile or lower on the OCI-R (non-OCD control group).	Depression Anxiety Anxiety Sensitivity Disgust Propensity Disgust Sensitivity	GOOD

Grisham et al. 2004 USA	162	Principle diagnosis of OCD 99 females; 63 males.	Worry Depression Anxiety Stress Positive Affect Negative Affect	FAIR
Jhung et al. 2010 KOR	78	41 OCD patients (9 females; 32 males) recruited from a psychiatric outpatient clinic, interviewed and diagnosed according to the SCID-CV. 37 matched controls (9 females; 28 males) with no psychiatry symptoms or history.	Anger Disgust Fear Sadness	FAIR
Lawrence et al. 2007 UK	36	17 OCD patients (7 females; 10 males) who met DSM-IV criteria for OCD diagnosis according to SCID-I assessment. 19 healthy volunteers (8 females; 11 males) of similar demographics.	State Anxiety Depression Disgust	GOOD
Neziroglu et al. 2012 USA	148	102 people diagnosed with OCD without hoarding symptoms (OCD only group); 21 diagnosed with hoarding symptoms but did not meet criteria for OCD diagnosis (hoarding only group); 25 diagnosed with OCD and hoarding (combined group). OCD only group: 48 females; 54 males. Hoarding only group: 14 females; 7 males. Combined group: 16 females; 9 males.	Anxiety Depression	FAIR
Olatunji et al. 2007 USA	70	56 with primary diagnosis of OCD (39 females; 17 males) 14 non-anxious controls	Disgust	FAIR
Olatunji et al. 2010 USA	46	46 treatment-seeking individuals with primary diagnoses of OCD (19 females; 27 males)	Disgust Depression	FAIR
Olatunji et al. 2011 USA	153	64 with principle diagnosis of OCD. 23 with primary diagnosis of social anxiety disorder. 29 with primary diagnosis of panic disorder. 14 with primary diagnosis of general anxiety disorder. 23 with primary diagnosis of anxiety disorder not otherwise specified. *Genders not reported*	Disgust Disgust Sensitivity Disgust Propensity Depression Anxiety Worry	FAIR
Phillips et al. 2000 GBR	28	14 patients (7 females; 7 males) with a DSM-IV OCD diagnosis. Of clinical sample, 7 predominantly washing-related symptoms (4 females; 3 males), 7 predominantly checking-related symptoms (3 females; 4 males). 14 normal controls.	Depression State Anxiety Trait Anxiety Disgust	FAIR

Raines et al 2014 USA	76	Individuals with a primary diagnosis of OCD recruited from a psychological outpatient service. 46 females; 30 males.	Anxiety Sensitivity	FAIR
Seyfollahi & Gupta 2014 IRN	90	60 individuals diagnosed with OCD according to DSM-IV-TR criteria: 30 "washers"; 30 "checkers". 30 control participants with no known psychiatric problems. *Genders not reported*	Anxiety Depression Guilt	FAIR
Shafran et al. 1996 GBR	60	Clinical sample: 30 adults who met DSM-III-R criteria for OCD diagnosis. 18 females, 12 males. Control sample: 30 adults with no psychiatric history. 18 females, 12 males.	Guilt Depression Anxiety	GOOD
Steketee et al. 1985 USA	59	Participants all met DSM-III criteria for obsessive-compulsive disorder and ritualised for at least one hour a day. 36 classified as washers; 23 classified as checkers. 38 females; 21 males.	Depression	FAIR
Torres et al. 2016 BRA	1001	Participants all met DSM-IV diagnostic criteria for OCD (confirmed using SCID-I). 569 females; 432 males.	Major depression General Anxiety Disorder	FAIR
Tükel et al. 2006 TUR	115	All OCD patients from the Anxiety Disorders Outpatient Clinic of the Psychiatry Department of Istanbul Faculty of Medicine, interviewed with the SCID-I/CV. 49 with OCD and no comorbid mood disorders (28 females; 21 males) 26 with OCD and comorbid bipolar disorder (16 females; 10 males) 42 with OCD and comorbid major depression (26 females; 16 males)	Major depression	FAIR
Wetterneck et al. 2014 USA	90	Individuals with clinical levels of OCD as measured by a screening tool. 67 females; 23 males.	Shame Worry	FAIR
Woody & Tolin. 2002 CAN	82	56 primary diagnosis of OCD (39 females; 17 males). 12 with diagnosis of generalised social phobia (6 females; 6 males). 14 non-anxious comparisons (10 females; 4 males).	Disgust	FAIR

Note. AUS = Australia, BRA = Brazil, CAN = Canada, ESP = Spain, GBR = United Kingdom, IRN = Iran, ITA = Italy, KOR = South Korea, TUR = Turkey, USA = United States of America.

Table 3. Summary of results from the 20 included studies that measure a form of washing.

Affective Phenomena Considered (*N* studies)	Results per Affective Phenomena	Affective Profile: Key Findings
Anger (1)	1/1 reported reduced anger in washing	• Anxiety and depression appear to consistently underlie obsessive-compulsive difficulties. • Anxiety and fear appear to be elevated for washers during tasks which involve exposure to disgusting stimuli, suggesting an interaction between disgust and anxiety in washers. • Washing appears to be associated with higher disgust. • Presenting with multiple compulsion-types appears to be associated with increased negative affective phenomena.
Anxiety / Anxiety Sensitivity (12)	2/12 reported elevated[a] anxiety in washing 3/12 reported reduced[b] anxiety in washing 7/12 reported no differences/ relationships[c]	
Depression/ Sadness (14)	3/14 reported elevated depression in washing 1/14 reported reduced depression in washing 10/14 reported no differences/ relationships	
Disgust (10)	9/10 reported elevated disgust in washing 1/10 reported no differences/ relationships	
Fear (3)	2/3 reported elevated fear in washing 1/3 reported no differences/ relationships	
Guilt (3)	1/3 reported reduced guilt in washing 2/3 reported no differences/relationships	
Shame (1)	1/1 reported no differences/relationships	
Worry (1)	1/1 reported no differences/relationships	

Note. [a]"Elevated" results include findings where washing groups had higher levels of affective phenomena than other groups, or where affective phenomena correlated positively with washing. [b]"Reduced" results include findings where washing groups had reduced levels of affective phenomena than other groups, or where affective phenomena correlated negatively with washing. [c]Results indicated no significant differences or relationships between affective phenomena and washing. Results are based on interpretations of findings according to both statistical significance - at the $p = .05$ level – and consideration of effect sizes.

Table 4. Summary of results from the 15 included studies to measure a form of checking.

Affective Phenomena Considered (number of studies)	Results per Affective Phenomena	Affective Profile: Key Findings
Anxiety / Anxiety Sensitivity / Worry (12) Depression (12) Disgust (7) Fear (2) Guilt (3)	5/12 reported elevated[a] anxiety in checking 7/12 reported no differences/ relationships[c] 4/12 reported elevated depression in checking 1/12 reported reduced[b] depression in checking 7/12 reported no differences/ relationships 2/7 reported elevated disgust in checking 2/7 reported reduced disgust in checking 3/7 reported no differences/ relationships 2/2 reported reduced fear in checking. 2/3 reported elevated guilt in checking 1/3 reported no differences/ relationships	• Checking may be associated with higher levels of guilt. • Checking groups may experience less fear than washing, especially where disgusting stimuli are involved. • Anxiety and depression may be consistently elevated across multiple compulsion-types.

Note. [a]"Elevated" results include findings where checking groups had higher levels of affective phenomena than other groups, or where affective phenomena correlated positively with checking. [b]"Reduced" results include findings where checking groups had lower levels of affective phenomena than other groups, or where affective phenomena correlated negatively with checking. [c]Results indicated no significant differences or relationships between affective phenomena and checking. Results are based on interpretations of findings according to both statistical significance - at the $p = .05$ level – and consideration of effect sizes.

Table 5. Summary of results from the 13 included studies to measure a form of hoarding.

Affective Phenomena Considered (number of studies)	Results per Affective Phenomena	Affective Profile: Key Findings
Anger (1)	1/1 reported no differences/ relationships	• Individuals with hoarding presentations may experience fewer undesirable affective phenomena (including anxiety, fear, negative affect, stress and depression) than individuals with other obsessive-compulsive presentations. • The presence of multiple compulsions may be associated with increased experiences of undesirable affective phenomena.
Anxiety /Anxiety Sensitivity (8)	1/8 reported elevated[a] anxiety in hoarding	
Depression/ Sadness (10)	7/8 reported reduced[b] anxiety in hoarding	
	2/10 reported elevated depression in hoarding	
Disgust (5)	5/10 reported reduced depression in hoarding	
	3/10 reported no differences/ relationships[c]	
Fear (1)	2/5 reported elevated disgust in hoarding	
Positive Affect (1)	2/5 reported reduced disgust in hoarding	
Negative Affect (1)	1/5 reported no differences/ relationships	
Stress (1)		
Worry (2)	1/1 reported no difference in relationships	
	1/1 reported elevated positive affect in hoarding	
	1/1 reported reduced elevated affect in hoarding	
	1/1 reported reduced stress in hoarding	
	1/2 reported elevated worry in hoarding	
	1/2 reported reduced worry in hoarding	

Note. [a]"Elevated" results include findings where hoarding groups had higher levels of affective phenomena than other groups, or where affective phenomena correlated positively with hoarding. [b]"Reduced" results include findings where hoarding groups had lower levels of affective phenomena than other groups, or where affective phenomena correlated negatively with hoarding. [c]Results indicated no significant differences or relationships between affective phenomena and hoarding. Results are based on interpretations of findings according to both statistical significance - at the $p = .05$ level – and consideration of effect sizes.

Appendix A

Search Tables for Additional Databases

Table A1. Search terms used and number of results generated in the search of the Scopus database completed on 26th October 2016.

Search	Terms Used	Results
S1	((TITLE-ABS-KEY (ocd) AND TITLE-ABS-KEY (disgust) OR TITLE-ABS-KEY (guilt) OR TITLE-ABS-KEY (shame) OR TITLE-ABS-KEY (depression OR low mood) OR TITLE-ABS-KEY (anxiety OR anxiety sensitivity) OR TITLE-ABS-KEY (emotion OR mood OR affect OR feeling))	1,699

Note. "TITLE-ABS-KEY" indicates that the terms were searched for within the titles, abstracts, and key words of articles.

Table A2. Search terms used and number of results generated in the search of the CINAHL database completed on 9th November 2016.

Search Number	Terms Used	Limiters	Number of Articles Found
S1	(MH "Obsessive-Compulsive Disorder")		2,014
S2	AB OCD or "Obsessive-Compulsive Disorder"		2,371
S3	S1 OR S2		2,371
S4	(MH "Emotions") OR (MH "Affect")		15,668
S5	AB "Emotion*" OR "Affect*" OR "Mood*"		153,793
S6	S4 OR S5		159,341
S7	S3 AND S6		327
S8	S3 AND S6	Excluded MEDLINE records	78

Note. "MH" indicates that terms were searched for within the database's exact subject headings.

Table A3. Search terms used and number of results generated in the search of the PubMed database completed on 26th October 2016.

Search Number	Terms Used	Number of Articles Found
S1	(OCD[MeSH Terms]) OR "obsessive compulsive disorder"[MeSH Terms]	12,593
S2	(ocd[Title/Abstract]) OR "obsessive compulsive disorder"[Title/Abstract]	11,637
S3	(((OCD[MeSH Terms]) OR "obsessive compulsive disorder"[MeSH Terms])) OR ((ocd[Title/Abstract]) OR "obsessive compulsive disorder"[Title/Abstract])	16,937
S4	((emotion*[Title/Abstract]) OR affect*[Title/Abstract]) OR mood*[Title/Abstract]	1,605,632
S5	((emotions[MeSH Terms]) OR affect[MeSH Terms]) OR mood[MeSH Terms]	193,702
S6	((((emotion*[Title/Abstract]) OR affect*[Title/Abstract]) OR mood*[Title/Abstract])) OR (((emotions[MeSH Terms]) OR affect[MeSH Terms]) OR mood[MeSH Terms])	1,722,217
S7	(((((OCD[MeSH Terms]) OR "obsessive compulsive disorder"[MeSH Terms])) OR ((ocd[Title/Abstract]) OR "obsessive compulsive disorder"[Title/Abstract]))) AND (((((emotion*[Title/Abstract]) OR affect*[Title/Abstract]) OR mood*[Title/Abstract])) OR (((emotions[MeSH Terms]) OR affect[MeSH Terms]) OR mood[MeSH Terms]))	4,085
S8	((compulsive behaviors[MeSH Terms]) OR behavioral symptoms[MeSH Terms]) OR hoarding[MeSH Terms]	300,399
S9	((((wash*[Title/Abstract]) OR check*[Title/Abstract]) OR hoard*[Title/Abstract]) OR "compulsive behaviour*"[Title/Abstract]) OR "symptom*"[Title/Abstract]	386,673
S10	((((compulsive behaviors[MeSH Terms]) OR behavioral symptoms[MeSH Terms]) OR hoarding[MeSH Terms])) OR (((((wash*[Title/Abstract]) OR check*[Title/Abstract]) OR hoard*[Title/Abstract]) OR "compulsive behaviour*"[Title/Abstract]) OR "symptom*"[Title/Abstract])	670,913
S11	((((((OCD[MeSH Terms]) OR "obsessive compulsive disorder"[MeSH Terms])) OR ((ocd[Title/Abstract]) OR "obsessive compulsive disorder"[Title/Abstract]))) AND (((((emotion*[Title/Abstract]) OR affect*[Title/Abstract]) OR mood*[Title/Abstract])) OR (((emotions[MeSH Terms]) OR affect[MeSH Terms]) OR mood[MeSH Terms]))) AND (((((compulsive behaviors[MeSH Terms]) OR behavioral symptoms[MeSH Terms]) OR hoarding[MeSH Terms])) OR (((((wash*[Title/Abstract]) OR check*[Title/Abstract]) OR hoard*[Title/Abstract]) OR "compulsive behaviour*"[Title/Abstract]) OR "symptom*"[Title/Abstract]))	1,524

Note. "MeSH Terms" indicates that the terms were searched for within the database's subject headings. [Title/Abstract] indicates that the terms were searched for within titles and abstracts of articles..

Appendix B

Quality Assessments Completed by Author and Independent Rater

Table B1. Quality appraisal ratings given to each paper from the subsample which was inter-rated.

Study	Researcher's rating	Independent rating	Agreed rating
Calamari et al. (2008)	FAIR	FAIR	FAIR
Grisham et al. (2005)	FAIR	FAIR	FAIR
Neziroglu et al. (2012)	FAIR	FAIR	FAIR
Olatunji et al. (2011)	FAIR	FAIR	FAIR
Tükel et al. (2006)	FAIR	FAIR	FAIR
Wetterneck et al. (2014)	FAIR	FAIR	FAIR

Appendix C

Outcome Data Extracted from the Reviewed Papers

Table C1. Details of designs, measures, analyses, and results from the 23 reviewed studies.

Study	Obsessive-compulsive presentations considered	Affective phenomena considered	Mode of analysis	N^A	Results	Effect size
Berle et al. 2012	Contamination; Checking; Obsessions; Hoarding; "Just right"; Indecisiveness (VOCI)	Disgust (DES)	Pearson's correlation	109	corr(VOCI Contamination, DES total) corr(VOCI Checking, DES total) corr(VOCI Obsessions, DES total) corr(VOCI Hoarding, DES total) corr(VOCI Just Right, DES total) corr(VOCI Indecisiveness, DES total)	r = .51* r = .29* r = .26* r = .10 r = .42* r = .35*
Calamari et al. 1999	Harming; Hoarding; Contamination; Certainty; Obsessionals (Y-BOCS)	Depression (BDI); State Anxiety (STAI-S); Trait Anxiety (STAI-T); Anxiety Sensitivity (ASI)	Independent *t*-tests	106[a]	Between group differences on BDI: *t*(harming>hoarding) *t*(harming>contamination) *t*(harming<certainty) *t*(harming>obsessionals) *t*(hoarding>contamination) *t*(hoarding<certainty) *t*(hoarding>obsessionals) *t*(contamination<certainty) *t*(contamination<obsessionals) *t*(certainty>obsessionals) Between group differences on STAI-T: *t*(harming>hoarding) *t*(harming>contamination) *t*(harming<certainty) *t*(harming>obsessionals) *t*(hoarding<contamination) *t*(hoarding<certainty) *t*(hoarding<obsessionals) *t*(contamination<certainty) *t*(contamination>obsessionals) *t*(certainty>obsessionals) Between group differences on STAI-S:	 d = 0.066[b] d = 0.25[b] d = 0.58[b] d = 0.15[b] d = 0.24[b] d = 0.77[b] d = 0.11[b] d = 0.91*[b] d = 0.10[b] d = 0.78*[b] d = 0.51[b] d = 0.079[b] d = 0.56[b] d = 0.13[b] d = 0.47[b] d = 1.24*[b] d = 0.44[b] d = 0.73*[b] d = 0.055[b] d = 0.86*[b]

					t(harming>hoarding)	*d* = 0.17 [b]
					t(harming>contamination)	*d* = 0.0060 [b]
					t(harming<certainty)	*d* = 0.49 [b]
					t(harming<obsessionals)	*d* = 0.13 [b]
					t(hoarding<contamination)	*d* = 0.20 [b]
					t(hoarding<certainty)	*d* = 0.75 [b]
					t(hoarding<obsessionals)	*d* = 0.34 [b]
					t(contamination<certainty)	*d* = 0.63 [b]
					t(contamination<obsessionals)	*d* = 0.16 [b]
					t(certainty>obsessionals)	*d* = 0.42 [b]
					Between group differences on ASI:	
					t(harming>hoarding)	*d* = 0.54 [b]
					t(harming>contamination)	*d* = 0.21 [b]
					t(harming<certainty)	*d* = 0.16 [b]
					t(harming>obsessionals)	*d* = 0.072 [b]
					t(hoarding<contamination)	*d* = 0.41 [b]
					t(hoarding<certainty)	*d* = 0.76 [b]
					t(hoarding<obsessionals)	*d* = 0.53 [b]
					t(contamination<certainty)	*d* = 0.42 [b]
					t(contamination<obsessionals)	*d* = 0.15 [b]
					t(certainty>obsessionals)	*d* = 0.26 [b]
Calamari et al. 2004						
<u>Analysis 1</u> (Seven subgroup model)	Contamination; Harming; Hoarding; Obsessional; Symmetry; Certainty; Contamination/Harming (Y-BOCS)	Depression (BDI); Anxiety Sensitivity (ASI)	ANOVA/*t*-tests (Tukey's HSD)	220[a]	Between group differences on BDI:	
					t(harming>hoarding)	*d* = 0.62 [b]
					t(harming>contamination)	*d* = 0.0059 [b]
					t(harming<certainty)	*d* = 0.094 [b]
					t(harming>obsessional)	*d* = 0.20 [b]
					t(harming<symmetry)	*d* = 0.00074 [b]
					t(harming<contamination/harming)	
					t(hoarding<contamination)	*d* = 0.27 [b]
					t(hoarding<certainty)	*d* = 0.61 [b]
					t(hoarding<obsessional)	*d* = 0.79 [b]
					t(hoarding<symmetry)	*d* = 0.54 [b]
					t(hoarding<contamination/harming)	*d* = 0.52 [b]
					t(contamination<certainty)	*d* = 1.06 [b]
					t(contamination>obsessional)	*d* = 0.10 [b]

				t(contamination<symmetry)	*d* = 0.20 [b]
				t(contamination<contamination/harming)	*d* = 0.0059 [b]
				t(certainty>obsessional)	*d* = 0.27 [b]
				t(certainty>symmetry)	*d* = 0.34 [b]
				t(certainty<contamination/harming)	*d* = 0.080 [b]
				t(obsessional<symmetry)	*d* = 0.18 [b]
				t(obsessional<contamination/harming)	*d* = 0.17 [b]
				t(symmetry<contamination/harming)	*d* = 0.58 [b]
				t(hoarding<all others combined)	*d* = 0.23 [b]
					d = 0.61[†]
				Between group differences on ASI:	
				t(harming>hoarding)	
				t(harming>contamination)	*d* = 0.73 [b]
				t(harming>certainty)	*d* = 0.36 [b]
				t(harming>obsessional)	*d* = 0.27 [b]
				t(harming>symmetry)	*d* = 0.22 [b]
				t(harming<contamination/harming)	*d* = 0.38 [b]
				t(hoarding<contamination)	*d* = 0.090 [b]
				t(hoarding<certainty)	*d* = 0.38 [b]
				t(hoarding<obsessional)	*d* = 0.49 [b]
				t(hoarding<symmetry)	*d* = 0.55 [b]
				t(hoarding<contamination/harming)	*d* = 0.31 [b]
				t(contamination<certainty)	*d* = 0.90 [b]
				t(contamination<obsessional)	*d* = 0.10 [b]
				t(contamination>symmetry)	*d* = 0.15 [b]
				t(contamination<contamination/harming)	*d* = 0.043 [b]
				t(certainty<obsessional)	*d* = 0.48 [b]
				t(certainty>symmetry)	*d* = 0.048 [b]
				t(certainty<contamination/harming)	*d* = 0.14 [b]
				t(obsessional>symmetry)	*d* = 0.38 [b]
				t(obsessional<contamination/harming)	*d* = 0.19 [b]
				t(symmetry<contamination/harming)	*d* = 0.34 [b]
				t(hoarding<all others combined)	*d* = 0.49 [b]
					d = 0.54[†]
<u>Analysis 2</u> (Five subgroup model)	Contamination; Harming; Hoarding; Obsessional; Certainty (Y-BOCS)	ANOVA/*t*-tests (Tukey's HSD)	220[a]	Between group differences on BDI: *t*(hoarding<all others combined)	*d* = 0.43* [b]
				Between group differences on ASI:	

					No significant differences between specific subgroup means were found regarding the ASI.	N/R
Calamari et al. 2008						
Analysis 1	Contamination (contam); Harming; Hoarding; Obsessional; Symmetry; Certainty; Contamination/ Harming (contam/harm) (Y-BOCS)	Anxiety Sensitivity (ASI; ASI-R)	ANOVA/*t*-tests (Tukey's HSD)	266[a]	Between group differences on ASI Total: *t*(harming>hoarding) *t*(harming>contamination) *t*(harming>certainty) *t*(harming>obsessional) *t*(harming>symmetry) *t*(harming<contamination/harming) *t*(hoarding<contamination) *t*(hoarding<certainty) *t*(hoarding<obsessional) *t*(hoarding<symmetry) *t*(hoarding<contamination/harming) *t*(contamination<certainty) *t*(contamination<obsessional) *t*(contamination>symmetry) *t*(contamination<contamination/harming) *t*(certainty<obsessional) *t*(certainty>symmetry) *t*(certainty<contamination/harming) *t*(obsessional>symmetry) *t*(obsessional<contamination/harming) *t*(symmetry<contamination/harming)	 *d* = 0.76 [b] *d* = 0.44 [b] *d* = 0.0031 [b] *d* = 0.47 [b] *d* = 0.20 [b] *d* = 0.22 [b] *d* = 0.29 [b] *d* = 0.80 [b] *d* = 0.38 [b] *d* = 0.56 [b] *d* = 1.01* [b] *d* = 0.46 [b] *d* = 0.042 [b] *d* = 0.25 [b] *d* = 0.67* [b] *d* = 0.50 [b] *d* = 0.21 [b] *d* = 0.22 [b] *d* = 0.25 [b] *d* = 0.74* [b] *d* = 0.42 [b]
					Between group differences on ASI Physical: *t*(harming>hoarding) *t*(harming>contamination) *t*(harming>certainty) *t*(harming>obsessional) *t*(harming>symmetry) *t*(harming<contamination/harming) *t*(hoarding<contamination)	 *d* = 0.75 [b] *d* = 0.42 [b] *d* = 0.059 [b] *d* = 0.47 [b] *d* = 0.26 [b] *d* = 0.19 [b] *d* = 0.33 [b] *d* = 0.79 [b]

t(hoarding<certainty)	*d* = 0.37 [b]
t(hoarding<obsessional)	*d* = 0.45 [b]
t(hoarding<symmetry)	*d* = 0.94 [b]
t(hoarding<contamination/harming)	*d* = 0.47 [b]
t(contamination<certainty)	*d* = 0.00 [b]
t(contamination<obsessional)	*d* = 0.14 [b]
t(contamination>symmetry)	*d* = 0.62* [b]
t(contamination<contamination/harming)	*d* = 0.52 [b]
t(certainty<obsessional)	*d* = 0.31 [b]
t(certainty>symmetry)	*d* = 0.13 [b]
t(certainty<contamination/harming)	*d* = 0.15 [b]
t(obsessional>symmetry)	*d* = 0.68* [b]
t(obsessional<contamination/harming)	*d* = 0.44 [b]
t(symmetry<contamination/harming)	
Between group differences on ASI Mental Dyscontrol:	*d* = 0.53 [b]
t(harming>hoarding)	*d* = 0.45 [b]
t(harming>contamination)	*d* = 0.065 [b]
t(harming>certainty)	*d* = 0.28 [b]
t(harming>obsessional)	*d* = 0.089 [b]
t(harming>symmetry)	*d* = 0.13 [b]
t(harming<contamination/harming)	*d* = 0.064 [b]
t(hoarding<contamination)	*d* = 0.50 [b]
t(hoarding<certainty)	*d* = 0.31 [b]
t(hoarding<obsessional)	*d* = 0.47 [b]
t(hoarding<symmetry)	*d* = 0.74 [b]
t(hoarding<contamination/harming)	*d* = 0.42 [b]
t(contamination<certainty)	*d* = 0.22 [b]
t(contamination<obsessional)	*d* = 0.39 [b]
t(contamination>symmetry)	*d* = 0.64* [b]
t(contamination<contamination/harming)	*d* = 0.23 [b]
t(certainty<obsessional)	*d* = 0.027 [b]
t(certainty>symmetry)	*d* = 0.22 [b]
t(certainty<contamination/harming)	*d* = 0.20 [b]
t(obsessional>symmetry)	*d* = 0.47 [b]
t(obsessional<contamination/harming)	*d* = 0.24 [b]
t(symmetry<contamination/harming)	

			Between group differences on ASI Social:	$d = 0.64$ [b]
			t(harming>hoarding)	$d = 0.51$ [b]
			t(harming>contamination)	$d = 0.35$ [b]
			t(harming>certainty)	$d = 0.52$ [b]
			t(harming>obsessional)	$d = 0.26$ [b]
			t(harming>symmetry)	$d = 0.10$ [b]
			t(harming<contamination/harming)	$d = 0.15$ [b]
			t(hoarding<contamination)	$d = 0.35$ [b]
			t(hoarding<certainty)	$d = 0.18$ [b]
			t(hoarding<obsessional)	$d = 0.43$ [b]
			t(hoarding<symmetry)	$d = 0.78$ [b]
			t(hoarding<contamination/harming)	$d = 0.19$ [b]
			t(contamination<certainty)	$d = 0.022$ [b]
			t(contamination<obsessional)	$d = 0.28$ [b]
			t(contamination>symmetry)	$d = 0.64^*$ [b]
			t(contamination<contamination/harming)	$d = 0.19$ [b]
			t(certainty<obsessional)	$d = 0.091$ [b]
			t(certainty>symmetry)	$d = 0.48$ [b]
			t(certainty<contamination/harming)	$d = 0.27$ [b]
			t(obsessional>symmetry)	$d = 0.66^*$ [b]
			t(obsessional<contamination/harming)	$d = 0.39$ [b]
			t(symmetry<contamination/harming)	
Analysis 2	Simple correlations	251[a]	ASI Total correlations:	$r = .33^*$
			corr(ASI Total, Y-BOCS contam)	$r = .39^*$
			corr(ASI Total, Y-BOCS harming)	$r = .27$
			corr(ASI Total, Y-BOCS hoarding)	$r = .27$
			corr(ASI Total, Y-BOCS obsessional)	$r = .43^*$
			corr(ASI Total, Y-BOCS symmetry)	$r = .66^*$
			corr(ASI Total, Y-BOCS certainty)	$r = .37^*$
			corr(ASI Total, contam/harm)	
			ASI Physical correlations:	$r = .22$
			corr(ASI Physical, Y-BOCS contam)	$r = .31^*$
			corr(ASI Physical, Y-BOCS harming)	$r = .03$
			corr(ASI Physical, Y-BOCS hoarding)	$r = .19$
			corr(ASI Physical, Y-BOCS obsessional)	$r = .40^*$
			corr(ASI Physical, Y-BOCS symmetry)	$r = .55^*$
			corr(ASI Physical, Y-BOCS certainty)	$r = .22$

					corr(ASI Physical, contam/harm)	
					ASI Mental Dyscontrol correlations:	*r* = .27
					corr(ASI Mental, Y-BOCS contam)	*r* = .29
					corr(ASI Mental, Y-BOCS harming)	*r* = .48
					corr(ASI Mental, Y-BOCS hoarding)	*r* = .27
					corr(ASI Mental, Y-BOCS obsessional)	*r* = .35*
					corr(ASI Mental, Y-BOCS symmetry)	*r* = .52
					corr(ASI Mental, Y-BOCS certainty)	*r* = .39*
					corr(ASI Mental, contam/harm)	
					ASI Social correlations:	*r* = .19
					corr(ASI Social, Y-BOCS contam)	*r* = .32*
					corr(ASI Social, Y-BOCS harming)	*r* = .33
					corr(ASI Social, Y-BOCS hoarding)	*r* = .17
					corr(ASI Social, Y-BOCS obsessional)	*r* = .38*
					corr(ASI Social, Y-BOCS symmetry)	*r* = .59*
					corr(ASI Social, Y-BOCS certainty)	*r* = .32*
					corr(ASI Social, contam/harm)	
D'Olimpio et al. 2013	Checkers; Washers; Mixed (PI-R)	Depression (BDI); State Anxiety (STAI-S); Trait Anxiety (STAI-T); Disgust (DS); State Guilt, Trait Guilt, and Moral Standards (GI)	M/ANOVA/ t-tests (Lambda)	73	Between group differences on BDI:	
					MAN(washers<checkers)	*d* = 0.04 [b]
					MAN(washers>mixed)	*d* = 0.15 [b]
					MAN(checkers>mixed)	*d* = 0.18 [b]
					Between group differences on STAI-T:	
					MAN(washers>checkers)	*d* = 0.05 [b]
					MAN(washers>mixed)	*d* = 0.21 [b]
					MAN(checkers>mixed)	*d* = 0.16 [b]
					Between group differences on STAI-S:	
					MAN(washers<checkers)	*d* = 0.18 [b]
					MAN(washers<mixed)	*d* = 0.17 [b]
					MAN(checkers>mixed)	*d* = 0.02 [b]
					Between group differences on DS:	
					MAN(washers>checkers)	*d* = 0.06 [b]
					MAN(washers<mixed)	*d* = 0.22 [b]
					MAN(checkers>mixed)	*d* = 0.31 [b]

					Between group differences on GI - State: MAN(washers<checkers) MAN(washers<mixed) MAN(checkers>mixed) Between group differences on GI - Trait: MAN(washers>checkers) MAN(washers>mixed) MAN(checkers>mixed) Between group differences on GI – Moral Standards: MAN(washers<checkers) MAN(washers>mixed) MAN(checkers>mixed)	 *d* = 0.05 [b] *d* = 0.04 [b] *d* = 0.02 [b] *d* = 0.01 [b] *d* = 0.06 [b] *d* = 0.04 [b] *d* = 0.20 [b] *d* = 0.19 [b] *d* = 0.38 [b]
Analysis 2			Pearson's correlation	73	Disgust scale correlations: corr(DS disgust, PI-R total) corr(DS disgust, PI-R washing) corr(DS disgust, PI-R checking) corr(DS disgust, PI-R rumination) corr(DS disgust, PI-R precision) State guilt correlations: corr(GI state, PI-R total) corr(GI state, PI-R checking) corr(GI state, PI-R rumination) corr(GI state, PI-R precision) Trait guilt correlations: corr(GI trait, PI-R total) corr(GI trait, PI-R washing) corr(GI trait, PI-R checking) corr(GI trait, PI-R rumination) corr(GI trait, PI-R precision) Non-significant correlation coefficients were not reported.	 *r* = .52* *r* = .53* *r* = .26* *r* = .39* *r* = .35* *r* = .52* *r* = .28* *r* = .68* *r* = .25* *r* = .59* *r* = .39* *r* = .32* *r* = .57* *r* = .27* N/R
Frost et al. 2000	OCD Hoarding; OCD Non-hoarding (PI)	Depression (BDI); Anxiety (BAI)	ANOVA	57	Between group differences on BDI: ANO(OCD hoarding>OCD non-hoarding)	 *d* = 0.89* [b]

					Between group differences on BAI: ANO(OCD hoarding>OCD non-hoarding)	*d* = 0.71* [b]
			ANCOVA		OCD hoarders and non-hoarders did not significantly differ on measures of anxiety when controlling for depression, or on measures of depression when controlling for anxiety.	N/R
García-Soriano et al. 2016	Contamination group; Checking group (OCI-R)	Depression (BDI); Anxiety (BAI); Anxiety Sensitivity (ASI-3-SV); Disgust Propensity and Sensitivity (DPSS-R-SV)	ANOVA/ Tukey HSD or Brown-Forsythe/ Games-Howell	31	Between group differences on BDI: ANO(Contamination>Checking)	*d* = 0.19 [b]
					Between group differences on BAI: ANO(Contamination>Checking)	*d* = 0.21 [b]
					Between group differences on ASI-3: ANO(Contamination>Checking)	*d* = 0.78 [b]
					Between group differences on DPSS-R sensitivity: ANO(Contamination>Checking)	*d* = 0.71 [b]
					Between group differences on DPSS-R propensity: ANO(Contamination>Checking)	*d* = 0.80 [b]
		Disgust and anxiety were also measured before and during a behaviour avoidance task (which involved progressive exposure to a stimulus - a garbage bag) using subjective rating scales from 0 to 10.			Pre-task Disgust subjective rating: ANO(Contamination>Checking)	*d* = 0.86 [b]
					During-task Disgust subjective rating: ANO(Contamination>Checking)	*d* = 0.94* [b]
					Pre-task Anxiety subjective rating: ANO(Contamination>Checking)	*d* = 0.64 [b]
					During-task Anxiety subjective rating: ANO(Contamination>Checking)	*d* = 0.96* [b]
Grisham et al. 2005	Pure hoarding; Mixed OCD and hoarding;	Depression, Anxiety, Stress (DASS);	ANOVA/ Student-Newman-Keuls	162	Between group differences on DASS depression:	

	Non-hoarding OCD (ADIS-IV-L)	Worry (PSWQ); Positive and Negative Affect (PANAS)			ANO(pure hoarding<mixed hoarding) ANO(pure hoarding<non-hoarding) ANO(mixed hoarding>non-hoarding) Between group differences on DASS anxiety: ANO(pure hoarding<mixed hoarding) ANO(pure hoarding<non-hoarding) ANO(mixed hoarding<non-hoarding) Between group differences on DASS stress: ANO(pure hoarding<mixed hoarding) ANO(pure hoarding<non-hoarding) ANO(mixed hoarding>non-hoarding) Between group differences on PSWQ worry: ANO(pure hoarding<mixed hoarding) ANO(pure hoarding<non-hoarding) ANO(mixed hoarding<non-hoarding) Between group differences on PANAS positive: ANO(pure hoarding>mixed hoarding) ANO(pure hoarding>non-hoarding) ANO(mixed hoarding<non-hoarding) Between group differences on PANAS negative: ANO(pure hoarding<mixed hoarding) ANO(pure hoarding<non-hoarding) ANO(mixed hoarding<non-hoarding)	$d = 0.77$* [b] $d = 0.29$ [b] $d = 0.48$* [b] $d = 0.75$* [b] $d = 0.86$* [b] $d = 0.011$ [b] $d = 1.42$* [b] $d = 1.14$* [b] $d = 0.22$ [b] $d = 1.03$* [b] $d = 1.05$* [b] $d = 0.018$ [b] $d = 0.81$* [b] $d = 0.22$ [b] $d = 0.62$* [b] $d = 1.01$* [b] $d = 1.21$* [b] $d = 0.10$ [b]
Jhung et al. 2010	Symmetry; Forbidden thoughts; Cleaning; Hoarding (Y-BOCS)	Anger; Disgust; Fear; Sadness (subjective ratings) Participants were asked to choose which emotion ambiguous and	Multiple regression	41	Non-ambiguous facial expressions: reg(Disgust perception, Y-BOCS hoarding) After controlling for age, sex and MADRS (Montgomery–Asberg Depression Rating Scale; Davidson et al., 1986) scores: reg(Disgust perception, Y-BOCS hoarding)	 $\beta = -0.31$ $\beta = -0.28$

		non-ambiguous facial expressions most resembled among the four negative emotions.			No dimension score was a predictor of correct identification of anger, fear or sadness in non-ambiguous facial expressions either before or after controlling for covariates. Ambiguous facial expressions: reg(Disgust perception, Y-BOCS cleaning) reg(Anger perception, Y-BOCS cleaning) After controlling for age, sex and MADRS scores: reg(Disgust perception, Y-BOCS cleaning) reg(Anger perception, Y-BOCS cleaning) None of the dimension scores were a predictor of perception of fear or sadness in ambiguous facial expressions either before or after controlling for covariates.	 $\beta = 0.45$* $\beta = -0.39$* $\beta = -0.53$* $\beta = -0.41$*
Lawrence et al. 2007	Checking; Hoarding; Neutralising; Obsessing; Ordering; Washing (OCI-R; Y-BOCS) High washing symptoms Low washing symptoms Combined (“OCD group”)	Depression (BDI); State Anxiety (STAI-S); Disgust (DS) Participants were also shown either target faces (displaying fearful or disgusted expressions) or neutral faces while undergoing a fMRI scan.	Mann-Whitney *U* Test Stepwise Multiple Regression	16	Between group differences on BDI: mann(high washing>low washing) Between group differences on STAI-S: mann(high washing<low washing) Between group differences on Total DS: mann(high washing>low washing) Between group differences on DS Core Disgust: mann(high washing>low washing) Between group differences on DS Animal Reminder: mann(high washing=low washing) Total disgust regressions: reg(DS Total Disgust, OCI-R Washing)	$d = 0.26$ [b] $d = 0.56$ [b] $d = 0.81$ [b] $d = 1.14$* [b] $d = 0.00$ [b] $\beta = 0.52$* [b]

					reg(DS Core Disgust, OCI-R Washing)	β = 0.57* [b]
					None of the remaining OCI-R subscales correlated with disgust and no symptoms correlated with the Animal Reminder subscale of the DS.	N/R
			Mann-Whitney *U* Test		A significant difference was found in the left ventrolateral pre-frontal cortex activation between OCD patients with high washing symptoms and normal controls (p=0.037*)*. No difference was found between those with high-washing symptoms and those with low-washing symptoms (p=0.4), or between those with low-washing symptoms and controls (p=0.26).	N/R
					High and low hoarding, checking, and ordering groups did not show significant differences in ventrolateral activation suggesting that the enhanced ventrolateral PFC response to masked facial expressions of disgust observed in OCD patients was being driven by patients with high washing, but not other symptoms. (Ventrolateral pre-frontal cortex is associated with emotional processing. Authors suggest that increased activation indicates increased attention to bodily responses to the disgust faces, i.e. increased disgust sensitivity.)	N/R
Neziroglu et al. 2012	OCD without significant hoarding symptoms (OCD-only group); Hoarding diagnosis without OCD diagnosis (Hoarding-only group);	Anxiety (BAI); Depression (BDI-II)	ANCOVA/ Pairwise comparisons	148	Between group differences on BDI-II: ANCO(hoarding only<OCD only) ANCO(hoarding only<combined group) ANCO(OCD only<combined group) Between group differences on BAI:	 d = 0.91* [b] d = 1.09* [b] d = 0.22 [b]

	OCD diagnosis and clinically significant hoarding (Combined group) (Y-BOCS-SC; PI; Y-BOCS)				ANCO(hoarding only<OCD only) ANCO(hoarding only<combined group) ANCO(OCD only>combined group)	d = 0.93* [b] d = 0.70* [b] d = 0.22 [b]
Olatunji et al. 2007 (*Study 4*)	OCD washers; OCD non-washers (Y-BOCS)	Disgust (DS-R)	Univariate ANOVA/ Tukey's HSD	70	Between group differences on Total DS-R: ANO(washers>non-washers) ANO(washers>non-anxious controls) ANO(non-washers>non-anxious controls) Between group differences on DS-R Core Disgust: ANO(washers>non-washers) ANO(washers>non-anxious controls) ANO(non-washers>non-anxious controls) Between group differences on DS-R Contamination: ANO(washers>non-washers) ANO(washers>non-anxious controls) ANO(non-washers>non-anxious controls) Between group differences on DS-R Animal Reminder: ANO(washers>non-washers) ANO(washers>non-anxious controls) ANO(non-washers>non-anxious controls)	 d = 2.73* [b] d = 4.49* [b] d = 2.14* [b] d = 0.62* [b] d = 0.67* [b] d = 0.19 [b] d = 0.63* [b] d = 0.72* [b] d = 0.033 [b] d = 0.060 [b] d = 0.87* [b] d = 0.88* [b]
Olatunji et al. 2010 (*Study 3*)	Checking; Hoarding; Neutralising; Obsessing; Ordering; Washing (OCI-R)	Disgust (DPSS-R) Depression (BDI-II)	Pearson's Correlation	46	Disgust correlations: corr(DPSS Disgust, OCI-R Washing) corr(DPSS Disgust, OCI-R Hoarding) corr(DPSS Disgust, OCI-R Checking) corr(DPSS Disgust, OCI-R Neutralizing) corr(DPSS Disgust, OCI-R Obsessing) corr(DPSS Disgust, OCI-R Ordering) Disgust significant correlations with depression controlled: corr(DPSS Disgust, OCI-R Washing) corr(DPSS Disgust, OCI-R Hoarding)	 r = .35* r = .40* r = .15 r = .27 r = .23 r = .27 r = .27 r = .37*

Depression correlations:	
corr(BDI-II depression, OCI-R Washing)	$r = .26$
corr(BDI-II depression, OCI-R Hoarding)	$r = .17$
corr(BDI-II depression, OCI-R Checking)	$r = .38$*
corr(BDI-II depression, OCI-R Neutralizing)	$r = .28$
corr(BDI-II depression, OCI-R Obsessing)	$r = .51$*
corr(BDI-II depression, OCI-R Ordering)	$r = .35$*
Depression significant correlations with disgust controlled:	$r = .36$*
corr(BDI-II depression, OCI-R Checking)	$r = .47$*
corr(BDI-II depression, OCI-R Obsessing)	$r = .26$
corr(BDI-II depression, OCI-R Ordering)	
Disgust Sensitivity (DS) correlations:	$r = .24$
corr(DPSS-R DS, OCI-R Washing)	$r = .38$*
corr(DPSS-R DS, OCI-R Hoarding)	$r = .12$
corr(DPSS-R DS, OCI-R Checking)	$r = .20$
corr(DPSS-R DS, OCI-R Neutralizing)	$r = .20$
corr(DPSS-R DS, OCI-R Obsessing)	$r = .21$
corr(DPSS-R DS, OCI-R Ordering)	
DS significant correlations with depression controlled:	$r = .35$*
corr(DPSS-R DS, OCI-R Hoarding)	
Disgust Propensity (DP) correlations:	$r = .42$*
corr(DPSS-R DP, OCI-R Washing)	$r = .37$*
corr(DPSS-R DP, OCI-R Hoarding)	$r = .17$
corr(DPSS-R DP, OCI-R Checking)	$r = .30$*
corr(DPSS-R DP, OCI-R Neutralizing)	$r = .22$
corr(DPSS-R DP, OCI-R Obsessing)	$r = .31$*
corr(DPSS-R DP, OCI-R Ordering)	
DP correlations with depression controlled:	$r = .33$*
corr(DPSS-R DP, OCI-R Hoarding)	$r = .35$*
corr(DPSS-R DP, OCI-R Washing)	$r = .18$
corr(DPSS-R DP, OCI-R Neutralizing)	$r = .16$

					corr(DPSS-R DP, OCI-R Ordering)	
Olatunji et al. 2011	Checking; Neutralising; Obsessing; Ordering; Washing; Hoarding (OCI-R)	Disgust (DES); Disgust (DPSS-R); Depression (BDI); Anxiety (BAI); Worry (PSWQ)	Correlation	153	Disgust correlations:	
					corr(DES Disgust, OCI-R Washing)	*r* = .24*
					corr(DES Disgust, OCI-R Hoarding)	*r* = .21*
					corr(DES Disgust, OCI-R Checking)	*r* = .34*
					corr(DES Disgust, OCI-R Neutralizing)	*r* = .14
					corr(DES Disgust, OCI-R Obsessing)	*r* = .33*
					corr(DES Disgust, OCI-R Ordering)	*r* = .31*
					Disgust Propensity (DP) correlations:	
					corr(DPSS-R DP, OCI-R Washing)	*r* = .36*
					corr(DPSS-R DP, OCI-R Hoarding)	*r* = .27*
					corr(DPSS-R DP, OCI-R Checking)	*r* = .26*
					corr(DPSS-R DP, OCI-R Neutralizing)	*r* = .26*
					corr(DPSS-R DP, OCI-R Obsessing)	*r* = .40*
					corr(DPSS-R DP, OCI-R Ordering)	*r* = .27*
					Disgust Sensitivity (DS) correlations:	
					corr(DPSS-R DS, OCI-R Washing)	*r* = .30*
					corr(DPSS-R DS, OCI-R Hoarding)	*r* = .26*
					corr(DPSS-R DS, OCI-R Checking)	*r* = .26*
					corr(DPSS-R DS, OCI-R Neutralizing)	*r* = .28*
					corr(DPSS-R DS, OCI-R Obsessing)	*r* = .43*
					corr(DPSS-R DS, OCI-R Ordering)	*r* = .27*
					Depression correlations:	
					corr(BDI depression, OCI-R Washing)	*r* = .22*
					corr(BDI depression, OCI-R Hoarding)	*r* = .10
					corr(BDI depression, OCI-R Checking)	*r* = .32*
					corr(BDI depression, OCI-R Neutralizing)	*r* = .18*
					corr(BDI depression, OCI-R Obsessing)	*r* = .41*
					corr(BDI depression, OCI-R Ordering)	*r* = .29*
					Anxiety correlations:	
					corr(BAI anxiety, OCI-R Washing)	*r* = .01
					corr(BAI anxiety, OCI-R Hoarding)	*r* = .09
					corr(BAI anxiety, OCI-R Checking)	*r* = .07
					corr(BAI anxiety, OCI-R Neutralizing)	*r* = .11
					corr(BAI anxiety, OCI-R Obsessing)	*r* = .31*

					corr(BAI anxiety, OCI-R Ordering)	*r* = .12
					Worry correlations:	
					corr(PSWQ worry, OCI-R Washing)	*r* = .15
					corr(PSWQ worry, OCI-R Hoarding)	*r* = .17*
					corr(PSWQ worry, OCI-R Checking)	*r* = .27*
					corr(PSWQ worry, OCI-R Neutralizing)	*r* = .16*
					corr(PSWQ worry, OCI-R Obsessing)	*r* = .52*
					corr(PSWQ worry, OCI-R Ordering)	*r* = .18*
Phillips et al. 2000	Washers; Checkers (Y-BOCS)	Depression (BDI) State Anxiety (STAI-S) Trait Anxiety (STAI-T)	Descriptive Statistics	14	No significant differences between washers' and checkers' measures of depression, state anxiety, and trait anxiety.	N/R
		Disgust, Fear, Anxiety – measured by subjected emotional rating scales completed by participants after viewing normally-disgusting and washer-relevant disgusting images.	Univariate ANOVA		Washers rated washer-relevant stimuli as significantly more disgusting ($F(2, 22) = 4.6$, $p = .02$), frightening ($F(2, 22) = 4.3$, $p = .03$), and anxiety-evoking ($F(2, 22) = 5.4$, $p = .01$) than checkers. Washers also rated normally-disgusting stimuli as significantly more frightening than checkers ($F(2, 22) = 6.1$, $p = .01$).	N/R
		Echoplanar imaging data was also used to compare brain activation in washers, checkers, and controls during exposure to disgusting images.	ANOVA		Checkers showed significantly greater activation to washer-relevant pictures than washers in right frontal regions (inferior and medial frontal gyri and the anterior cingulate gyrus), the left thalamus and left caudate nucleus. These areas are reportedly associated with the urge to ritualise. No areas were activated significantly more by washers compared with checkers. Authors reported findings to suggest that checkers and normal controls may have attended to the non-emotive visual details of these pictures, possibly evoking checking urges in the checkers. Washers may have focused more on emotive aspects.	N/R

Raines et al 2014	Checking; Ordering; Neutralising; Obsessing; Washing (OCI-R)	Anxiety Sensitivity (ASI) ASI comprises subscales for: Cognitive concerns (cog) Physical concerns (phys) Social concerns (soc). ASI total score is also calculated.	Zero order correlations	76	ASI Cognitive Concerns (cog) correlations: corr(ASI cog, OCI-R Checking) corr(ASI cog, OCI-R Ordering) corr(ASI cog, OCI-R Neutralising) corr(ASI cog, OCI-R Obsessing) corr(ASI cog, OCI-R Washing) ASI Physical Concerns (phys) correlations: corr(ASI phys, OCI-R Checking) corr(ASI phys, OCI-R Ordering) corr(ASI phys, OCI-R Neutralising) corr(ASI phys, OCI-R Obsessing) corr(ASI phys, OCI-R Washing) ASI Social Concerns (soc) correlations: corr(ASI soc, OCI-R Checking) corr(ASI soc, OCI-R Ordering) corr(ASI soc, OCI-R Neutralising) corr(ASI soc, OCI-R Obsessing) corr(ASI soc, OCI-R Washing) Total ASI correlations: corr(ASI total, OCI-R Checking) corr(ASI total, OCI-R Ordering) corr(ASI total, OCI-R Neutralising) corr(ASI total, OCI-R Obsessing) corr(ASI total, OCI-R Washing)	 *r* = .35* *r* = .26* *r* = .35* *r* = .52* *r* = - .00 *r* = .32* *r* = .36* *r* = .22 *r* = .26* *r* = .02 *r* = .39* *r* = .47* *r* = .09 *r* = .18 *r* = .12 *r* = .39* *r* = .41* *r* = .27* *r* = .36* *r* = .02
			Hierarchical regression analysis		When accounting for the effect of diagnoses of major depressive disorder and other anxiety disorders: ASI Cognitive Concerns (cog) regression: reg(ASI cog, OCI-R Checking) reg(ASI cog, OCI-R Ordering) reg(ASI cog, OCI-R Neutralising) reg(ASI cog, OCI-R Obsessing) reg(ASI cog, OCI-R Washing)	 β = .21 β = .01 β = .37* β = .58* β = - .09

					ASI Physical Concerns (phys) regression: reg(ASI phys, OCI-R Checking) reg(ASI phys, OCI-R Ordering) reg(ASI phys, OCI-R Neutralising) reg(ASI phys, OCI-R Obsessing) reg(ASI phys, OCI-R Washing) ASI Social Concerns (soc) regression: reg(ASI soc, OCI-R Checking) reg(ASI soc, OCI-R Ordering) reg(ASI soc, OCI-R Neutralising) reg(ASI soc, OCI-R Obsessing) reg(ASI soc, OCI-R Washing)	 β = .01 β = .08 β = .04 β = - .10 β = - .02 β = .28 β = .40* β = - .014 β = - .09 β = .20
Seyfollahi & Gupta 2014	Washer; Checker (Y-BOCS)	Anxiety (BAI); Depression (BDI-II); State Guilt, Trait Guilt, and Moral Standards (GI)	ANOVA	60	Between group differences on Total GI: ANO(washer group<checker group) Between group differences on State GI: ANO(washer group<checker group) Between group differences on Trait GI: ANO(washer group<checker group) Between group differences on Moral Standard GI: ANO(washer group<checker group) Between group differences on BAI: ANO(washer group<checker group) Between group differences on BDI-II: ANO(washer group>checker group)	 d = 0.35* [b] d = 0.64* [b] d = 0.17 [b] d = 0.10* [b] d = 0.20 [b] d = 0.87 [b]
Shafran et al. 1996	Checking; Washing; Doubting; Slowness (MOCI)	State Guilt, Trait Guilt, and Moral Standards (GI); Depression (BDI); Anxiety (BAI)	Pearson's Product-Moment Correlation	30	corr(GI Total Guilt, MOCI Checking) corr(GI Total Guilt, MOCI Washing) corr(GI Total Guilt, MOCI Doubting) corr(GI Total Guilt, MOCI Slowness) corr(GI Trait Guilt, MOCI Checking) corr(GI Trait Guilt, MOCI Washing)	r = .59* r = .40 r = .04 r = - .15 r = .59* r = .33

					corr(GI Trait Guilt, MOCI Doubting) corr(GI Trait Guilt, MOCI Slowness) corr(GI State Guilt, MOCI Checking) corr(GI State Guilt, MOCI Washing) corr(GI State Guilt, MOCI Doubting) corr(GI State Guilt, MOCI Slowness) corr(GI Moral Standards, MOCI Checking) corr(GI Moral Standards, MOCI Washing) corr(GI Moral Standards, MOCI Doubting) corr(GI Moral Standards, MOCI Slowness) There were moderate but nonsignificant correlations between Checking and BDI scores in the OCD group. No other significant correlations were reported.	r = .13 r = - .12 r = .46 r = .32 r = .05 r = .03 r = .03 r = .13 r = - .18 r = - .22 r = .35 N/R
Steketee et al. 1985	Washers; Checkers (MOCI)	Depression (BDI); Fear (FSS)	ANOVA	59	Washers found to be more fearful than checkers ($F(1, 50) = 4.53$, $p < .05$). No other significant differences between groups.	N/R N/R
Torres et al. 2016	Aggressive; Sexual-religious (S-R); Symmetry-ordering (S-O); Contamination-cleaning (C-C); Hoarding (DY-BOCS; Y-BOCS)	Comorbid major depression (MD) or generalized anxiety disorder (GAD; SCID-I)	Bivariate analysis	1001	Major depression bivariate analysis: reg(MD, DY-BOCS Aggressive) reg(MD, DY-BOCS S-R) reg(MD, DY-BOCS S-O) reg(MD, DY-BOCS C-C) reg(MD, DY-BOCS Hoarding) General Anxiety Disorder bivariate analysis: reg(GAD, DY-BOCS Aggressive) reg(GAD, DY-BOCS S-R) reg(GAD, DY-BOCS S-O) reg(GAD, DY-BOCS C-C) reg(GAD, DY-BOCS Hoarding)	 d = 0.16* [c] d = 0.20* [c] d = 0.24* [c] d = 0.032 [c] d = 0.28* [c] d = - 0.023 [c] d = 0.022 [c] d = 0.21 [c] d = -0.071 [c] d = 0.00 [c]

			Logistic regression (adjusted for sex and age)		Major depression regressions: reg(MD, DY-BOCS Aggressive) reg(MD, DY-BOCS S-R) reg(MD, DY-BOCS S-O) reg(MD, DY-BOCS C-C) reg(MD, DY-BOCS Hoarding) General Anxiety Disorder regressions: reg(GAD, DY-BOCS Aggressive) reg(GAD, DY-BOCS S-R) reg(GAD, DY-BOCS S-O) reg(GAD, DY-BOCS C-C) reg(GAD, DY-BOCS Hoarding)	 *d* = 0.04 [c] *d* = 0.16* [c] *d* = 0.19 [c] *d* = - 0.06 [c] *d* = 0.22* [c] *d* = - 0.04 [c] *d* = 0.02 [c] *d* = 0.26* [c] *d* = - 0.096 [c] *d* =- 0.0055 [c]
Tükel et al. 2006	Cleaning/ Washing; Checking; Repeating; Counting; Ordering/ Arranging; Hoarding/ Collecting; Miscellaneous (Y-BOCS)	Major depression (SCID-I/CV)	Chi-square test	115	There were no significant differences in Y-BOCS compulsive dimension scores between OCD individuals with and without Major Depressive Disorder.	N/R
Wetterneck et al. 2014	Contamination (contam); Harm; Unacceptable Thoughts (UT); Symmetry (DOCS)	Shame (TOSCA-3)	Pearson's correlation	90	Shame correlations: corr(TOSCA-3 shame, DOCS harm) corr(TOSCA-3 shame, DOCS symmetry) corr(TOSCA-3 shame, DOCS contam) corr(TOSCA-3 shame, DOCS UT) Shame significant correlations with worry controlled: corr(TOSCA-3 shame, DOCS harm) corr(TOSCA-3 shame, DOCS symmetry)	 *r* = .41* *r* = .35* *r* = .10 *r* = .14 *r* = .28* *r* = .25*
Woody & Tolin. 2002 (*Study 3*)	Washers; Non-washers (Y-BOCS)	Disgust (DS)	ANOVA/ Tukey's HSD	68	Between group differences on Total DS: ANO(washer group>non-washer group) Washers were also reported to have elevated scores on Animals, Body Products, and Sympathetic Magic subscales of the DS when compared to non-washers, non-	 *d* = 0.59 [b] N/R

	anxious controls, and individuals with General Social Phobia diagnoses.

Note. ADIS-IV = Anxiety Disorder Interview Schedule IV (Brown, Di Nardo, & Barlow, 1994), ADIS-IV-L = Anxiety Disorder Interview Schedule IV – Lifetime Version (Di Nardo et al., 1994), ASI = Anxiety Sensitivity Index (Peterson & Reiss, 1993), ASI-3-SV = Anxiety Sensitivity Index-3-Spanish version (Sandin et al., 2007), ASI-R = Anxiety Sensitivity Index – Revised (Taylor & Cox, 1998), BAI = Beck Anxiety Inventory (Beck & Steer, 1993), BDI = Beck Depression Inventory (Beck & Steer, 1987), BDI-II = The Beck Depression Inventory-II (Beck, Steer, & Brown, 1996), DASS = Depression Anxiety Stress Scale (Lovibond & Lovibond, 1995), DES = Disgust Emotion Scale (Walls & Kleinknecht, 1996), DOCS = Dimensional Obsessive Compulsive Scale (Rosario-Campos et al., 2006), DPSS-R = Disgust Propensity and Sensitivity Scale- Revised (van Overveld et al., 2008), DPSS-R-SV = Disgust Propensity and Sensitivity Scale-Revised-Spanish version (Sandin et al., 2008), DS = The Disgust Scale (Haidt, McCauley, & Rozin, 1994), DS-R = Disgust Scale-Revised (van Overveld, de Jong, Peters, & Schouten, 2011), DY-BOCS = Dimensional Yale-Brown Obsessive Compulsive Scale (Rosario-Campos et al., 2006), FSS = Fear Survey Schedule (Wolpe & Lange, 1964), GI = Guilt Inventory (Jones, Schratter, & Kugler, 2000), MOCI = Maudsley Obsessive Compulsive Inventory (Hodgson & Rachman, 1977), PANAS = Positive and Negative Affect Scale (Watson, Clark, & Tellegen, 1988), PI = Padua Inventory (Arntz, Voncken, & Goosen., 2007), PI-R = Padua Inventory-Revised (van Oppen et al., 1995); PSWQ = Penn State Worry Questionnaire (Meyer et al., 1990), OCI-R = Obsessive Compulsive Inventory Revised (Foa et al., 2002); SCID-I = Structured Clinical Interview for DSM Disorders I (First et al., 1995), SCID-I/ CV = Structured Clinical Interview for DSM Disorders I- Clinical Version (First et al., 1997), STAI-S = State Trait Anxiety Inventory-State (Spielberger et al., 1983), STAI-S = State Trait Anxiety Inventory-Trait (Spielberger et al., 1983), TOSCA-3 = Test of Self-Conscious Affect version 3 (Tangney & Dearing, 2002), VOCI = Vancouver Obsessional Compulsive Inventory (Thordarson et al., 2004), Y-BOCS = Yale-Brown Obsessive-Compulsive Scale (Goodman et al., 1989), Y-BOCS SC = Yale-Brown Obsessive-Compulsive Scale Symptom Checklist (Goodman et al., 1989); N^A = sample size used in analysis; N/R = Not Reported; *statistically significant ($p < .05$); [†] $p < .10$; [a]The three Calamari studies had overlapping samples: the 1999 study included 106 OCD patients, the 2004 study included 114 different OCD patients but reported results taken from the combined 1999 and 2004 samples resulting in a combined sample size of 220, the 2008 study included 280 OCD patients, 149 of whom overlapped with the 1999 and 2004 studies; [b] Effect size estimated from available means and SDs for the purpose of this review (tests of significance are based on those reported in the paper); [c]Cohen's *d* transformed from Odds Ratio data.

Appendix D

Abbreviated Guidelines for Authors from the Journal Of Anxiety Disorders

JOURNAL OF ANXIETY DISORDERS - GUIDE FOR AUTHORS

(Retrieved from https://www.elsevier.com/wps/find/journaldescription.cws_home/801? generatepdf=true.)

Submission checklist

You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details: • E-mail address • Full postal address

All necessary files have been uploaded: Manuscript: • Include keywords • All figures (include relevant captions) • All tables (including titles, description, footnotes) • Ensure all figure and table citations in the text match the files provided • Indicate clearly if color should be used for any figures in print Graphical Abstracts / Highlights files (where applicable)) • Supplemental files (where applicable)

Further considerations • Manuscript has been 'spell checked' and 'grammar checked' • All references mentioned in the Reference List are cited in the text, and vice versa • Permission has been obtained for use of copyrighted material from other sources (including the Internet) • Relevant declarations of interest have been made • Journal policies detailed in this guide have been reviewed • Referee suggestions and contact details provided, based on journal requirements

Manuscripts based on original research are limited to 6000 words of main text (i.e., not including cover page, Abstract, and references) and reviews, meta-analyses, and theoretical treatises will be limited to 8000 words of main text. Tables and figures will be limited to 5 each, regardless of manuscript type. Longer manuscripts may be considered on occasion where there is a strong and compelling rationale supported by editorial pre-approval.

REVISED SUBMISSIONS - Article structure

Subdivision - numbered sections

Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

Introduction

State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Material and methods

Provide sufficient detail to allow the work to be reproduced. Methods already published should be indicated by a reference: only relevant modifications should be described.

Theory/calculation

A Theory section should extend, not repeat, the background to the article already dealt with in the Introduction and lay the foundation for further work. In contrast, a Calculation section represents a practical development from a theoretical basis.

Results

Results should be clear and concise.

Discussion

This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions

The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section. Appendices If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

The title page must be the first page of the manuscript file. Title. Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible. Author names and affiliations. Where the family name may be ambiguous (e.g., a double name), please indicate this clearly. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lowercase superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name, and, if available, the email address of each author.

Corresponding author.

Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. Ensure that telephone and fax numbers (with country and area code) are provided in addition to the e-mail address and the complete postal address. Present/permanent address. If an author has moved since the work described in the article was done, or was visiting at the time, a "Present address" (or "Permanent address") may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Abstract

A concise and factual abstract is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself. The abstract should not exceed 200 words in length and should be submitted on a separate page following the title page.

Highlights

Highlights are mandatory for this journal. They consist of a short collection of bullet points that convey the core findings of the article and should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point). You can view example Highlights on our information site. Keywords Include a list of four to six keywords following the Abstract. Keywords should be selected from the APA list of index descriptors unless otherwise approved by the Editor.

Abbreviations

Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

Formatting of funding sources

List funding sources in this standard way to facilitate compliance to funder's requirements:

Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].

It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

If no funding has been provided for the research, please include the following sentence:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Math formulae

Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., X/Y. In principle, variables are to be presented in italics. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

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Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors build footnotes into the text, and this feature may be used. Should this not be the case, indicate the position of footnotes in the text and present the footnotes themselves separately at the end of the article.

Figure captions

Ensure that each illustration has a caption. A caption should comprise a brief title (not on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

Tables

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

Citation in text

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

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As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list

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There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct.

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Appendix E

Highlights

- Twenty-three quantitative research studies were reviewed and analysed.
- Affective profiles for washing, checking, and hoarding compulsions are proposed.
- Washing is characterised by elevated disgust.
- Checking is characterised by elevated guilt.
- Hoarding is characterised be fewer undesirable affective phenomena.
- Implications for emotionally-mindful formulations and interventions are discussed.

Running head: Self-disgust and obsessive-compulsive experiences

Section II: Research Paper

Does self-disgust predict compulsive behaviours?

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Word count: 7, 435 words excluding references and appendices

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Prepared for submission to the Journal of Anxiety Disorders (see Section I, Appendix D for summarised author guidelines).

Abstract

Extensive research highlights the role of emotional variables in obsessive-compulsive experiences (OCE). More specifically, particular emotions have been identified to predict certain compulsive presentations. For example, elevated disgust has been found to predict obsessive-compulsive washing-behaviours. However, there is no previous research regarding the role of self-disgust as a predictor of different obsessive-compulsive experiences. The current study, therefore, investigated whether self-disgust predicted different types of compulsive behaviours in people with clinically significant OCE. An online questionnaire - comprising validated measures of affective variables and obsessive-compulsive presentations - was disseminated via social media and relevant charities; a clinical sample size of 149 was generated. Contrary to expectations, self-disgust did not significantly predict washing behaviours, or five out of six symptom types. However, self-disgust was found to be a significant independent predictor of hoarding compulsions. Given the limitations of the design, this association can be explained in terms of a bidirectional relationship between self-disgust and hoarding. Clinical implications regarding emotion-focused interventions are discussed.

Keywords: emotion, hoarding, obsessive-compulsive experiences, self-disgust

1. Introduction

Extensive research highlights the relationship between mental health difficulties and experiences of negative emotions, affects, and moods, known collectively as "affective phenomena" (Ekkekakis, 2012; Gross & Jazaieri, 2014; Gross & Muñoz, 1995; Taylor, Lerner, Sage, Lehman, & Seeman, 2004). This includes links between obsessive-compulsive difficulties and disgust sensitivity (Berle & Phillips, 2006), restrictive eating and anxiety (Kaye, Bulik, Thornton, Barbarich, & Masters, 2004), voice-hearing and stress (Myin-Germeys & van Os, 2007), and substance misuse and low-mood (Stice, Presnell, & Spangler, 2002). Despite this evidence-base, clinical guidelines continue to recommend interventions targeted at cognitions, behaviours, and neurochemistry for the majority of mental health presentations (Koran & Simpson, 2013; United Kingdom National Institute for Health and Care Excellence [NICE], 2017). Unfortunately, research evidence has highlighted the inconsistent and often limited effectiveness of these approaches (Johnsen & Friborg, 2015; Kellner, 2010). Further research into the affective influences underlying mental health presentations may be key, therefore, to the development of more effective interventions.

1.1. Obsessive-compulsive experiences (OCE)

One particular mental health presentation which has been consistently recognised as having an affective underpinning is that characterised by obsessive thoughts and compulsive behaviours. While research evidences that such presentations are influenced by multiple factors – including individual roles of neurobiology, genetics, cognitions, and environmental variables (Gwilliam, Wells, & Cartwright-Hatton, 2004; Heyman, Mataix-Cols, & Fineberg, 2006) – extensive research also highlights the role of affective factors. Multiple empirical research studies have found OCE to be associated with emotional variables, including anxiety sensitivity, disgust, guilt, low mood, anxiety, and shame (Calamari, Rector, Woodward,

Cohen, & Chik, 2008; d'Olimpio et al., 2013; Seyfollahi & Gupta, 2014; Wetterneck, Singh & Hart, 2014).

The degree of evidence linking emotions with OCE demonstrates the importance of considering these factors when attempting to better understand presentations of this nature. However, not only have some existing papers found contradictory results regarding the affective underpinnings of OCE (e.g., Olatunji et al., 2007 and d'Olimpio et al., 2013), but additionally, previous studies have not always controlled for the confounding effects of other affective variables on their results (e.g., Phillips et al., 2000). The rationale to further consider affective factors in OCE is thus evident. As OCE are commonly experienced as both distressing and detrimental to daily functioning (Eisen et al., 2006), a greater understanding of potential underlying influences appears crucial. Such an understanding may inform the development of preventative measures and effective interventions.

1.2. Use of language

The present study explores experiences of mental health difficulties characterised by obsessions and compulsions. These difficulties are often categorised under the diagnostic label of "obsessive-compulsive disorder" or "OCD" (American Psychiatric Association [APA], 2015; World Health Organization, 1992). However, the use of such labels has been critically questioned by clinical psychologists (Cromby, Harper, & Reavey, 2007). Arguments against the use of diagnosis include the potentially "damaging consequences" it can have on affected individuals (Hearing Voices Network, 2013), the unspecific and nonperson-centred pharmacological treatments to which it can lead (Moncrieff, 2008), and the continued inability to evidence this medicalised approach through the identification of biological markers (Deacon, 2013). Diagnostic classifications can also dismiss the heterogeneity of individual experiences that exists within grouped categories, such as the "OCD" label.

In order to be useful to as many readers as possible, the current study is intended to be palatable to people from all theoretical stances. For this reason, neutral language will be used throughout the report so as not to alienate readers from different approaches. Obsessive thoughts and compulsive behaviours will be considered as obsessive-compulsive experiences (OCE) or difficulties, rather than symptoms of a disorder. As such, non-medicalised definitions will be used to describe such experiences; obsessive thoughts will be considered as "unwelcome thoughts, images, urges or doubts that repeatedly appear in your mind", while compulsive behaviours will be described as "repetitive activities that you feel you have to do" (Mind, 2013a).

This non-medicalised approach hopes to avoid assuming that all readers will consider difficulties of this nature as representing an underlying mental illness. When referring to any previous literature which uses medicalised terminology, this will be included in quotation marks. This decision is in line with the British Psychological Society's guidelines on language use in relation to psychiatric diagnosis (British Psychological Society [BPS], 2015).

1.3. The heterogeneous nature of OCE

Due to a diverse range of clinical presentations, OCE can be described as having a "heterogeneous nature" (Chase, Wetterneck, Bartsch, Leonard, & Riemann, 2015; Leopold & Backenstrass, 2015). The multiple ways in which these difficulties can be experienced adds complexity to the processes of identifying, assessing and intervening with an individual's obsessive thoughts and compulsive behaviours. Empirical research recognises the validity of subtyping OCE according to more specific subgroups, rather than using a more generalised approach which overlooks individual differences in presentation and need (Fontenelle, Mendlowicz, & Versiani, 2005; Leckman, Bloch, & King, 2009; McKay et al., 2004).

Six commonly experienced compulsive behaviours are reported to be washing, checking, ordering, obsessing, hoarding, and mental neutralizing (Foa, Kozak, Salkovskis,

Coles, & Amir, 1998). Recent research has demonstrated neuropsychological, cognitive, and personality differences between individuals presenting with different compulsive behaviours, such as those characterised by washing and checking (Horesh, Dolberg, Kirschenbaum-Aviner, & Kotler, 1997; Leopold & Backenstrass, 2015; Murayama et al., 2013). While it is likely that some key factors underlie all presentations of an obsessive-compulsive nature (e.g., increased anxiety), the above research further validates the need to consider individual presentations when researching this clinical population. The present study will thus consider individual compulsion-types as opposed to a general measure of OCE. This will allow for conclusions relevant to more specific OCE presentations; this is congruent with the person-centred approach of clinical psychology.

1.4. Disgust and OCE

The role of disgust within obsessive-compulsive presentations has been well researched. Disgust is defined as a "revulsive response towards potential sources of contagion" (Cisler, Olatunji, & Lohr, 2009). Within evolutionary psychology, it is believed that the emotion of disgust has evolved universally as an adaptive feature which promotes survival through stimulating the avoidance of disease (Darwin, 1872/1965). Curtis, de Barra, and Aunger (2011) add that disgust is a key emotional ingredient of a "behavioural immune system", which orchestrates hygienic behaviour in the presence of threat from diseases or pathogens. The potential for the emotion of disgust to drive washing-compulsions triggered by obsessive thoughts of contamination is thus evident.

Regarding OCE, d'Olimpio et al. (2013) found correlations between feelings of disgust and "OCD symptom severity" and Olatunji, Tart, Ciesielski, McGrath and Smits (2011) found that individuals with "OCD diagnoses" had significantly greater disgust propensities than individuals with "General Anxiety Disorder", or those from a non-clinical population. They proposed that higher disgust propensity may explain the drive for disease

avoidance in obsessive experiences which include a fear of contamination. In line with this, several empirical studies have found that individuals with washing presentations are more likely to experience elevated levels of disgust than individuals with different presentations, for example checking or hoarding (Jhung et al., 2010; Lawrence et al., 2007; Phillips et al., 2000). The role of disgust in different OCE is therefore evident and the presence of elevated disgust in people who experience washing compulsions appears to be seemingly well-understood. However, this evidence provides rationale to further investigate the similar but discrete concept of self-disgust.

1.5. Self-disgust and OCE

As discussed, the coherent research pertaining to disgust highlights scope to research the construct of self-disgust; this has been rarely considered in relation to OCE. In line with theory pertaining to the nature of emotions (Keltner & Gross, 1999), self-disgust is believed to have adaptive, functional properties (Siegal, Fadda, & Overton, 2011). For example, in children, self-disgust is theorised to "affect a child's propensity to approach a contaminated item, through a negative appraisal of the actions that led (or might lead) to the encounter with the item, and a negative evaluation of the self that resulted" (Siegal et al., 1999, p. 3429). However, in adult populations, self-disgust has been recognised to become maladaptive when excessive (Overton et al., 2008). As such, dysfunctional self-disgust has been defined as "a maladaptive and persistent, self-focused generalisation (or internalisation) of the otherwise adaptive disgust response" (Powell, Simpson, & Overton, 2015, p.4). Despite being recognised as distinct emotional responses, self-disgust and disgust sensitivity – defined as a predisposition to experiencing disgust (Petrowski et al., 2010) - have been found to correlate, as significant concurrent validity has been recorded between the Disgust Sensitivity Scale (Haidt, McCauley, & Rozin, 1994) and the Self-disgust Scale (Overton, Markland, Taggart, Bagshaw, & Simpson, 2008).

At present, there appears to be a gap in the literature regarding self-disgust and OCE, which has only been considered on one previous occasion (Olatunji, Cox, & Kim, 2015). This study evidenced self-disgust – and depression – to mediate the relationship between shame and OCE, providing evidence to suggest that this emotion must be considered when trying to further understand the affective underpinnings of particular OCE. However, as discussed, research consistently highlights the value in subtyping OCE according to compulsive behaviours (McKay et al., 2004). As the work of Olatunji et al. did not subtype OCE in this way, the rationale to further investigate the emotion of self-disgust with regards to different obsessive-compulsive presentations is evident.

Although little empirical research has tested the relevance of self-disgust in OCE, theoretically, its potential involvement in the development and maintenance of such difficulties is highly plausible. For example, self-disgust may offer an explanation as to why hand-washing behaviours (cleansing of the self) may occur alongside, or instead of, behaviours which clean the external environment (for example, compulsively cleaning a bathroom). As the research into self-disgust is limited, but the theory supporting its potential role is evident, self-disgust will be the main variable of interest in the present study.

1.6. The present study

In sum, existing research has identified the role of affective variables, particularly disgust, in obsessive-compulsive experiences. As self-disgust is a relatively novel research concept, research which further considers the relationship between self-disgust and different OCE is required. With evidence suggesting a relationship between specific obsessive-compulsive experiences and disgust sensitivity, and an acknowledged relationship between disgust sensitivity and self-disgust, it is reasonable to consider the possibility of a potential relationship between certain obsessive-compulsive experiences and self-disgust. Further

research in this field may contribute towards improved understanding and support for individuals with difficulties of this nature.

In light of that discussed, this study aims to explore whether self-disgust is a useful predictor of the degree of different types of compulsive behaviours experienced by individuals with OCE. In line with existing research regarding disgust and OCE, the prediction is that self-disgust will be a significant independent predictor of washing compulsions, over and above other statistically important predictors.

2. Method

2.1. Design

This study used a cross-sectional design and an online questionnaire comprising relevant validated measures to collect data. Participants were able to self-assess their eligibility to participate in the research, resulting in a convenience sample; responses were also screened for eligibility according to the prespecified criteria. The questionnaire was disseminated via social media accounts likely to access individuals from the target population: adults experiencing obsessive-compulsive difficulties.

2.2. Participants

Participants were required to meet a set of predetermined recruitment criteria. They were only eligible for inclusion in the research project if they:

- were aged 18 or over.
- provided informed consent to participate.
- were able to access and complete the questionnaire, which was only disseminated in English.
- reported either a formal diagnosis of “obsessive-compulsive disorder” or scored 21 or greater on the revised Obsessive-Compulsive Inventory (OCI-R; Foa et al., 2002).

This is the cut-off score to suggest that an individual is likely to be experiencing clinically significant obsessive-compulsive difficulties.

A total of 203 participants began the online questionnaire, seven of whom were excluded as they neither reported an obsessive-compulsive diagnosis nor scored above the OCI-R threshold for clinical significance. Forty-seven cases were also excluded due to a substantial proportion of missing data, which exceeded the 10% allowance recommended by Bennett (2001). This left a total of 149 included participants. An *a priori* power calculation had determined that a sample size of 86 or greater would be sufficient to detect a medium f^2 effect size of 0.15 with a total of 16 predictors at power of .8.

Insert Table 1 here

The majority of participants were female (73.2%); the gender ratio in the present study mirrors previous findings which have also reported higher female participation rates within health research (Markanday, Brennan, Gould, & Pasco, 2013). The age of participants ranged from 18 to 68 years (M = 30.15, SD = 9.99). Age was non-normally distributed (Mdn = 27.0, IQR = 23.0–35.0), with skewness of 1.14 (SE = 0.20) and kurtosis of 1.15 (SE = 0.40). Research into life-time prevalence of obsessive-compulsive difficulties shows a similar distribution across the life span to that shown in the present study (Kessler, Berglund, Demler, Jin, & Walters, 2005).

Most participants were white (86.6%) and identified as being American (from the USA; 39.6%) or British (35.6%). Of the 149 participants, 81.2% reported having received a formal diagnosis of "obsessive-compulsive disorder". The remaining participants either reported no existing diagnosis (17.4%) or chose not to disclose this information (1.3%). The mean OCI-R score for individuals with diagnoses was 33.93 (SD = 13.60) with scores

ranging from 3 to 66. Regarding individuals without diagnoses, the mean OCI-R score was 38.54 (*SD* = 13.17); their scores ranged from 22 to 66. In order to maintain a clinically significant sample, individuals without diagnoses who scored lower than 21 on the OCI-R were excluded from the analysis.

Regarding participants' responses to the DASS-21, average scores for the depression (*M* = 11.28, *SD* = 4.72) and stress (*M* = 13.04, *SD* = 4.43) subscales both fell within the "severe" range. Mean scores on the anxiety subscale fell within the "extremely severe" range (*M* = 9.56, *SD* = 4.59). The DASS-21 uses these labels to characterise the severity of these presentations relative to those of the general population. Scores in the "severe" and "extremely severe" ranges suggest that levels of low mood, anxiety, and stress within the present sample were far higher than the general population mean scores for these subscales. This finding supports that of previous research, which also reported elevated DASS-21 subscale scores in individuals with obsessive-compulsive difficulties (Antony, Bieling, Cox, Enns, & Swinson, 1998).

2.3. Measures

2.3.1. Demographic measures

The survey recorded participants' age, gender, nationality and ethnicity (see Appendix A); questions were developed in accordance with those used by the United Kingdom (UK) Office for National Statistics (2011). To maintain confidentiality, no identifiable information was collected.

2.3.2. Obsessive-compulsive presentations

The study aimed to investigate differences in scores pertaining to different obsessive-compulsive experiences. Therefore, it required a measure which categorised such difficulties into different compulsion-types. The Obsessive-Compulsive Inventory-Revised measure (OCI-R; Foa et al., 2002) was therefore selected for use in the present study. The OCI-R includes 18 items and generates a score for each of the six most commonly experienced

obsessive-compulsive presentations. These are: washing, checking, ordering, obsessing, hoarding, and mental neutralizing (Foa et al., 1998). The OCI-R was chosen due to its relative brevity (when compared to similar measures), eligibility for online use, and previous use in similar studies (Abramowitz & Deacon, 2006; Raines, Oglesby, Capron, & Schmidt, 2014). Huppert et al. (2007) reported the OCI-R to have adequate internal consistency when used with a clinical sample. Cronbach's alpha values from their research were as follows: obsessing, α = .88; washing, α = .69; checking, α = .87; neutralizing, α = .57; ordering, α = .89; hoarding, α = .93; total scale, α = .84. Higher alpha values represent higher internal consistency and covariance between items, but a score of 1.0 would suggest that multiple questions may be measuring the exact same thing. Field (2013) suggests that alpha values between .7 and .8 indicate that a scale has good overall reliability, however values as low as .5 can be acceptable for scales with few items.

2.3.3. Affective phenomena

In order to control for potential confounding effects, the following affective variables were measured alongside self-disgust.

2.3.3.1. Anxiety sensitivity. The Anxiety Sensitivity Index 3 (ASI-3; Taylor et al., 2007) was used to measure anxiety sensitivity. This measure comprises three subscales which measure physical, social, and cognitive anxiety sensitivity. Each subscale contains six questions and a total score – comprising all three subscales – can also be calculated; however, as this was a control variable, only the total score was used for the purpose of the present study. This measure was chosen as it is the most widely used and available measure of anxiety sensitivity; while other versions of the ASI are available, this was chosen due to its relative brevity. The ASI-3 was also chosen as it has been previously used to measure anxiety sensitivity in individuals presenting with "obsessive-compulsive disorder" (Raines et al., 2014). Permissions from the publishing body (American Psychological Association) and

one of the measure's authors (Dr Richard G. Heimberg) were ascertained in order to use this measure (Appendix B); all other measures used were openly available.

Recent research suggests that this scale is a valid and consistent measure of anxiety with high internal consistency across the three subscales (Wheaton, Deacon, McGrath, Berman, & Abramowitz, 2012). Cronbach's alpha values from Wheaton et al.'s research were as follows: ASI-3 social subscale, α = .80; ASI-3 physical subscale, α = .88; ASI-3 cognitive subscale, α = .90.

2.3.3.2. Depression, anxiety and stress. The Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995) was used to measure depression. This scale also allowed for consideration of anxiety and stress, both of which have been found to be associated with obsessive-compulsive experiences and thus warrant controlling (Antony et al., 1998). The scale is composed of three subscales designed to measure depression, anxiety, and stress discretely; each subscale contains seven questions. This measure has been chosen due to its use in clinical research and practice (Ng, 2007) and its free accessibility.

High internal consistency has been identified for each subscale on this measure using Cronbach's alpha calculations (Tran, Tran, & Fisher, 2013). Their results found the following alpha values: DASS-21 depression subscale, α = .72; DASS-21 anxiety subscale, α = .77; DASS-21 stress subscale, α = .70; DASS-21 overall subscale, α = .88. The internal consistency and concurrent validity of the DASS-21 was also in the acceptable range in a study which used the measure with people with "obsessive-compulsive disorder" (Antony et al., 1998).

2.3.3.3. Shame and guilt. The Test of Self-Conscious Affect-3S (TOSCA-3S; Tangney, Dearing, Wagner, & Gramzow, 2000) was used to measure both shame and guilt. This measure asks participants about 11 scenarios, each with three different responses to consider; this is a shortened version of the original measure. From the scenarios, this

measure produces three subscale scores; these represent shame self-talk, guilt self-talk, and blaming others; shame and guilt will be the focus of the present study. The measure was chosen as it has been used in previous research which has explored the relationship between obsessive-compulsive experiences and shame (Wetterneck et al., 2014).

The TOSCA-3S has also been shown to be valid and reliable in research studies (Gao et al., 2013). Adequate internal consistency of the shame-proneness and guilt-proneness scales of the TOSCA-3S has been reported with Cronbach's alpha values of $\alpha = .75$ and $\alpha = .62$, respectively (Crocker et al., 2014).

2.3.3.4. Disgust. The Disgust Propensity and Sensitivity Scale–Revised (DPSS–R; van Overveld, de Jong, Peters, Cavanagh, & Davey, 2006) was chosen to measure disgust. It is a 12-item scale comprising two subscales: disgust propensity and disgust sensitivity. Each subscale contains six questions. This scale was chosen as it is considered to have addressed the limitations of the previous full-length version (Fergus & Valentiner, 2009). The scale is also shorter than the original version; this is beneficial as longer measures can lead to lower response rates (Rolstad, Adler, & Ryden, 2011). The measure has also been used with previous obsessive-compulsive research samples (Olatunji et al., 2010; Olatunji et al., 2011).

The DPSS-R also appears to be both reliable and valid; internal consistency scores for the disgust propensity and disgust sensitivity subscales have previously been calculated at $\alpha = .78$ and $\alpha = .77$, respectively (Fergus & Valentiner, 2009).

2.3.3.5. Self-disgust. The Self-disgust Scale – Revised (SDS-R, Powell, Overton, & Simpson, 2015), which contained 22 items, was used to measure self-disgust. This measure contains seven filler items which are not used for the final analysis. Of the remaining 15 items, five make up the behavioural self-disgust subscale, and five make up the physical self-disgust subscale. A total score using all 15 items can also be calculated, and this will be used for the purpose of the present analysis. This measure has been chosen as it is a revised

version of the only measure known to measure this construct published in English (the Self-disgust Scale [SDS]; Overton et al., 2008). The SDS has been used in a recent paper which considered the relationship between self-disgust, shame and obsessive-compulsive experiences (Olatunji et al., 2015).

The Cronbach's alpha value for the total revised SDS has been previously calculated at $\alpha = .92$, suggesting that this measure has adequate internal consistency (P. A. Powell, personal communication, April 3, 2017).

Due to a technical error, one of the five questions from the physical subscale of the revised Self-Disgust Scale (SDS-R; Powell et al., 2015) was omitted from the questionnaire. In order to aid comparability with other publications that have used the SDS-R, the missing values for this item were imputed using participants' mean responses to the other four items of this subscale (Little & Rubin, 2014). The results were not affected by the imputation of this data.

2.4 Procedure

2.4.1. Ethical approval

Prior to recruitment, ethical approval for the study was granted by the Research Ethics Committee of the UK National Health Service. This was received from the East of England - Essex Research Ethics Committee on 4th November 2016. The REC reference number was 16/EE/0441.

2.4.2. Developing the questionnaire

The present study used an online survey to collect data from participants; this was purposely designed for the study using the Qualtrics Survey Software (Qualtrics ©, 2017). The survey began by providing participants with detailed information about the study, along with information on who to contact should the study have evoked feelings of distress at any time. Before beginning the survey, participants were asked to provide informed consent, agreeing that they were happy to participate and for their data to be used in the research.

Participants were made aware of their right to withdraw from the study at any time and links to end their participation in the study were available on every page. Following the completion of the survey, participants were provided with full debriefing information. Experts by experience – individuals with experiences of obsessive-compulsive difficulties – were consulted throughout the development of the questionnaire; they advised on the construction of the materials (including the participant information and the debriefing sheet) and trialled the questionnaire to provide an idea of its layout, organisation, and length. This included information about how long the questions took to complete.

The survey collated demographic information along with data captured using validated psychological measures pertinent to the research aim. Participants were required to answer every question on each measure before progressing to the next one; this precaution was included to eliminate random missing data caused by participants accidentally missing-out questions.

2.4.3. Recruitment

The survey was exclusively disseminated online via the websites and social media accounts of relevant charities and organisations, including OCD Action and the International OCD Foundation. Information about the study and a link to the survey was also posted on appropriate Facebook support pages, for example, "OCD Sufferers Friendship and Support Group". Additionally, the study was disseminated via Twitter by asking individuals who regularly tweet about OCE to retweet details of the research project. This included "SayNoToAnxiety" and "BeingMeWithOCD". All participants who fitted the inclusion criteria were invited to take part in the study. Recruitment began on 8th November 2016 and ended on 3rd February 2017.

2.5. Statistical analysis

Data were extracted from the Qualtrics Survey Software into IBM SPSS Statistics (23.0) for analysis (IBM Corporation, 2013; Qualtrics ©, 2017). Data were then screened for

outliers and missing data. Due to the high number of correlation analyses computed, a corrected *p* value of < .01 was used to determine statistical significance; this informed subset selection. This technique has been used in previous research (Simpson, Lekwuwa, & Crawford, 2013).

Given the potential for high levels of multicollinearity between some of the measures, tolerance and inflation statistics were assessed. It is recommended that tolerance levels should exceed 0.2 and the variance inflation factor (VIF) should be less than 10.0 (Field, 2013). To inspect levels of autocorrelation, Durbin-Watson statistics were also calculated; these should fall between the acceptable range of 1.0 and 3.0 (Field, 2013).

2.5.1. Outliers

Multivariate outliers were assessed using the Mahalanobis distance computation; no multivariate outliers were identified. Using boxplot charts, univariate outliers were identified and the degree of bias which they were likely to contribute to the study was considered. Data points were labelled as extreme outliers if they deviated from the rest of the scores by three times the value of the interquartile range or greater. Only one extreme outlier was present in the data; this was a score on the TOSCA-3S guilt subscale. This value, which was far lower than any other for this variable, was amended to one increment lower than the next lowest value. This technique is recommended to reduce the impact an extreme outlier might have on a distribution (Weiner, Schinka, & Velicer, 2003). Mild outliers (between 1.5 and 3 times the interquartile range) were not corrected due to their limited impact on the analysis (Hampel, Ronchetti, Rousseeuw, & Stahel, 2011; Orr, Sackett, & Dubois, 1991).

2.5.2. Missing data

As participants were required to answer every question on each measure before moving to the next one, there were no random missing data points. This was confirmed using the Little MCAR analysis. Instead, 144 out of the 149 included participants had complete datasets. The remaining five participants had not completed the final measure, the TOSCA-

3S; scores were imputed for these five individuals using the Expectation Maximisation (EM) estimation function (IBM Corporation, 2013).

2.5.3. Modes of analysis

First, Pearson correlation analyses were used to assess the bivariate relationships between variables, and, in particular, the relationship between compulsive presentations and self-disgust. The data were assessed for the potential to categorise participants according to their primary presentations (e.g., washing groups and checking groups), however, the data did not lend itself to this analytical method. Instead, a hierarchical multiple regression analysis was used to investigate what degree of the variance in the outcome variable (compulsion-type) could be explained by the predictor variable (self-disgust), while controlling for confounding factors. Only one outcome variable was correlated with self-disgust at the significance level necessary to justify a hierarchical multiple regression ($p < .01$).

2.5.4. Subset selection

Overfitting regression models can lead to misleading and non-replicable findings that allow too much influence from the idiosyncrasies of the data (Babyak, 2004). Subset selection for the regression model had to therefore be carefully considered to find a balance between controlling for confounding variables and preventing overfitting. Entry into the model was therefore based on findings from the correlation analyses that were significant at the corrected p value of $< .01$ (Simpson, Lekwuwa, & Crawford, 2013); this reduced the number of variables entered into the model. As indicated in the introduction, the selection of all investigated variables was based on theoretical rationale; this also informed the order in which variables were entered into the regression analyses. In accordance with published guidance (Field, 2013), the previously untested self-disgust variable entered the regression model last.

3. Results

3.1. Scale reliability and responses

Cronbach's alpha analyses were calculated for each subscale used within the study; alpha values are displayed in Table 2. All scales were found to have acceptable internal consistency as per the published guidance for interpreting Cronbach's alpha statistics (Field, 2013). Descriptive statistics are also reported.

Insert Table 2 here

3.2. Correlations

In line with the analytic plan, correlations were conducted between all predictor variables and all outcome variables (see Table 3). Age and sex were also included in the correlation analyses, however nationality and ethnicity were not included, as they provided non-ordinal, nominal data that were not suitable for inclusion in the correlation analysis. Self-disgust was significantly positively correlated with the hoarding subscale of the OCI-R at the corrected significance level, $r = .24$, $p < .01$. No other significant correlations were found between self-disgust and OCI-R subscales. However, self-disgust was significantly correlated with the total OCI-R score, $r = .26$, $p < .01$. Although self-disgust was not found to be significantly correlated with the OCI-R washing subscale, $r = .16$, $p = .054$, OCI-R washing was found to be positively correlated with disgust propensity and sensitivity ($r = .45$, $p < .01$ and $r = .35$, $p < .01$, respectively), as per the existing evidence.

Insert Table 3 here

3.3. Multiple regression analysis

Results from the correlation analyses showed that only the OCI-R hoarding subtype was statistically correlated with self-disgust at the corrected level of significance ($p < .01$). A regression analysis was computed to investigate whether self-disgust predicted the hoarding compulsion-type when other affective variables were controlled. To ensure that the residuals from the regression analysis were normally distributed, the OCI-R hoarding variable was transformed using a square root data transformation. Within the regression analysis, the data met the assumption of independent errors, as the Durbin-Watson value was 1.87 (Field, 2013). Tolerance and VIF statistics were also in the acceptable ranges (Field, 2013).

As explained, only correlations significant at the .01 alpha value were entered into the regression model. The total ASI-III scale and the DASS-21 anxiety scale were entered into the first block of the regression model for the OCI-R hoarding outcome variable. Disgust sensitivity was entered into the second block of the regression model and the total SDS-R score was entered into the third block. The regression model and statistics can be seen in Table 4.

Insert Table 4 here

ASI-III total anxiety sensitivity and DASS-21 anxiety scores accounted for 9.2% of the variance in OCI-R hoarding scores, $R^2 = 0.092$, $p = .001$. Disgust sensitivity explained a further 0.3% of the model, $R^2 = 0.096$, $\Delta R^2 = 0.003$, $p = .47$, however this change was not statistically significant. Finally, total self-disgust explained a further 4.5% of the model, $R^2 = 0.140$, adjusted $R^2 = 0.116$, $\Delta R^2 = 0.045$, $p = .007$. Regression coefficients revealed that total SDS-R was a significant independent predictor of the total variance in OCI-R hoarding, $\beta = .23$, $p = .007$. This indicates that higher self-disgust predicts a greater degree of hoarding

compulsions. The total variance explained by this model was 14.0%, $F(4, 144) = 5.87$, $p < .001$. This result demonstrates that self-disgust is an independent significant predictor of hoarding behaviour, over and above other statistically important predictors.

4. Discussion

The research investigated whether levels of self-disgust could predict the degree of different compulsive behaviours experienced by individuals with clinically significant obsessive-compulsive difficulties. It was initially predicted that higher rates of self-disgust, as measured by the SDS-R, would predict higher scores on the OCI-R washing subscale, even when controlling for confounding variables. While the current study added to the existing evidence regarding the relationship between disgust and washing behaviours, the initial prediction was not supported. Self-disgust was not found to be significantly related to washing behaviours, nor five out of six different compulsion-types. However, findings suggest that self-disgust is a significant independent predictor of hoarding behaviours, even when controlling for anxiety, anxiety sensitivity, and disgust sensitivity. Although the degree of variance explained by the hoarding regression model was relatively low, research has highlighted the value of small R^2 findings which commonly occur within the social sciences (Abelson, 1985).

4.1. Washing and self-disgust

Regarding individuals with washing presentations, it is possible that the disgust they experience is largely focused towards external factors, for example, bacteria or pathogens outside the body. Indeed, this would fit with theoretical understandings of disgust, which argue that the disgust emotion serves to deter people from potential sources of contagion and avoid disease (Cisler, et al., 2009; Darwin, 1872/1965). When considering disgust to be the primary emotional component of a "behavioural immune system" which drives hygienic behaviour to address threat from pathogens (Curtis et al., 2011), it is logical to suggest that

washing behaviours may prohibit feelings of disgust from being internalised. By washing and cleaning both external environments and themselves to alleviate high levels of disgust, individuals with washing behaviours may come to see themselves as clean and hygienic. This may explain the non-significant correlation between OCI-R washing and self-disgust (see Figure 1).

Additionally, it is important to consider that the SDS-R operationalises self-disgust as a trait characteristic, whereas the DPSS-R measures propensity and sensitivity to disgust. The chosen measure of self-disgust, therefore, does not consider how people feel about experiencing this emotional construct, nor how likely certain scenarios are to elicit such feelings. This prohibits findings regarding how self-disgust varies according to changes in the environment, for example, if washing or cleaning behaviours have, or have not, occurred. It may be useful for further research to measure how self-directed disgust reactions change before, during, and after washing rituals have commenced. This information may lead to an increased understanding of the interaction between self-disgust and cleaning behaviours.

Insert Figure 1 here

4.2. Hoarding and self-disgust

The significant relationship between self-disgust and hoarding presentations could represent two, non-mutually-exclusive possibilities. First, that increased self-disgust leads to people adopting hoarding behaviours, or second, that hoarding behaviours lead to increased self-disgust. These possibilities will be discussed in turn.

4.2.1. Self-disgust as a precipitator of hoarding

The research into hoarding behaviours is extensive, as hoarding presentations can be considered both within the context of OCE and as a distinct mental health difficulty. Theories about the onset of hoarding differ, however it is commonly associated with critical

incidents, including trauma, comorbid difficulties, including low mood and social anxiety, and core beliefs about being unlovable and unworthy (Bream, 2013; Steketee & Frost, 2014). It is reasonable to suggest, therefore, that self-disgust may lead to hoarding presentations in a similar way to the above difficulties, as previous research has found relationships between self-disgust and trauma (Ille et al., 2014), low mood (Overton et al., 2008; Simpson, Hillman, Crawford, & Overton, 2010), and low self-esteem (Simpson et al., 2010). Of course, the control variables measured in the current model suggest that self-disgust may explain hoarding behaviours above and beyond explanations offered by the previously investigated affective variables. As such, results show that although never previously researched, self-disgust may be one of the emotional factors that precipitates hoarding.

Regarding functionality, hoarding behaviours are often viewed as behavioural avoidance mechanisms (Frost et al., 1998), for example, as means to avoid distressing emotions (Frost & Hartl, 1996) or relationships (Gamble, 2011). The avoidance of relationships in hoarding is described to stem from individuals' desires to "protect themselves from the outside world" or "hide behind walls" (Gamble, 2011, p. 1); this could be seen as avoiding society and thus fits with the aforementioned evidence regarding hoarding and social anxiety. Indeed, hoarding is often associated with social isolation (Wilbram, Kellett, & Beail, 2008). Self-disgust is evidenced to cause personal feelings of repulsiveness and undesirability; this is linked with a tendency towards social withdrawal (Powell, Overton, & Simpson, 2014). As such, hoarding behaviours may result from self-disgust and the urge to build barriers between themselves and others.

Consideration of existing research therefore provides two different theoretically-grounded explanations as to why self-disgust may cause hoarding behaviours. First, self-disgust may partially underpin hoarding behaviours in a similar way to low mood, low self-esteem, and social anxiety. Indeed, the regression analysis demonstrated the unique

contribution that self-disgust offered to the hoarding model, suggesting its capacity to independently predict hoarding severity above and beyond previously researched factors, such as anxiety and low mood. Second, hoarding may also offer a way for individuals with such experiences to withdraw from society.

4.2.2. Hoarding as a precipitator of self-disgust

It is also possible to interpret the findings to suggest that hoarding precipitates self-disgust. Hoarding behaviours often result in cluttered, unclean, and dangerous home environments (Holmes, Whomsley, & Kellett, 2015). These environments are often portrayed negatively by the media, for example in documentaries including "Obsessive Compulsive Hoarder" and "Hoarding: Buried Alive". Such programmes, which hope to shock and repulse viewers by showing products of significant hoarding difficulties, can propel stigmatising views around this mental health presentation. It is reasonable to suggest that such conditions, and the surrounding narratives of disgust and revulsion, may elicit feelings of self-disgust in those with hoarding difficulties. Although this has not been previously researched, evidence regarding experiences of "symptom-based shame" in people with hoarding OCE supports the underlying mechanism behind this suggestion (Weingarden & Renshaw, 2015).

Hoarding behaviours are also considered to lead to self-neglect, as individuals in cluttered homes are less able, and inclined, to access washing facilities (Holmes et al., 2015). Not only may reduced access to washing facilities prevent individuals experiencing self-disgust from engaging in compensatory washing behaviours, but this reduced self-care may also further induce disgust towards the self. However, it is also possible that self-neglect may be a product of other recognised underlying emotional factors such as low mood and low self-esteem, not just the hoarding behaviour itself. As mentioned, hoarding can also increase social isolation; research has shown a correlation between hoarding severity and rejecting attitudes in relatives (Tolin, Frost, Steketee, & Fitch, 2008). This rejection, which is often

caused by others' repulsed responses to hoarding conditions, may further reinforce feelings of self-disgust.

In sum, while it is difficult to conclude the directional nature of the relationship between feelings of self-disgust and hoarding behaviours, the existing evidence-base provides a sound theoretical basis for why this relationship may exist. It is likely that there is a bidirectional relationship between these two variables, with both factors influencing each other. Indeed, such relationships were recognised between dysfunctional cognitions and self-disgust in a study which considered these factors over time (Powell, Simpson, & Overton, 2013). Bidirectional relationships can become self-perpetuating, resulting in unhelpful patterns of escalating distress. This creates a need for increased research and understanding of such presentations.

4.3. Strengths and limitations

The present study included several strengths. Not only was a large, multi-national, and clinical sample recruited, but the study also contributed to the novel research area of self-disgust. By robustly researching a previously novel area, the study allowed for clinically-relevant conclusions to be made. Furthermore, the study drew on existing research to develop theoretical explanations of the findings. To ensure high reporting quality, findings were reported in accordance with STROBE recommendations (von Elm et al., 2007), and experts-by-experience were consulted in the development of materials. However, the present study also had several limitations, to be discussed in turn.

Although online recruitment was multi-national, accessible to many, and cost and time-effective, it also caused potential biases in the study. This included a skew towards younger and female participants (Correa, Hinsley, & de Zúñiga, 2010; Sax, Gilmartin, & Bryant, 2003). Recruiting by visiting local services, charities, or support groups may have accounted for some of this bias. Further, online recruitment posed a greater risk of duplicate

responses, as although there was no incentive to complete the study more than once, individuals with repetitive behavioural rituals may have felt inclined to do so. The data were, however, screened for duplicated responses to further safeguard against this risk (DeSimone, Harms, & DeSimone, 2015).

Additionally, recruiting online meant that clinical assessments could not be completed. This meant that the study had to rely on a standardised clinical measure to ensure presentations were at a clinically significant level. This was not ideal, especially due to concerns about the colloquial use of obsessive-compulsive labels, which are often applied to minor idiosyncratic behaviours (Kelly & Winterman, 2011; Mind, 2013b). Future studies may benefit from, at minimum, a subset of participants that have been assessed and interviewed by the research team. This would allow for comparisons to be made against online and in-person responses, which could clarify the influence of online recruitment.

Finally, the online questionnaire comprised non-inclusive elements, as it was not accessible to people without access to computers, non-English speakers, or those with visible-impairments or learning disabilities. While resources to increase the inclusivity of the study were limited, this criticism must still be considered, as a more inclusive sample would have generated more broadly generalisable results. Future research would benefit from creating surveys which could be accessed more readily by minority groups from within the population.

4.4. Clinical implications

The findings of this study suggest that self-disgust significantly and independently predicts obsessive-compulsive hoarding presentations. Furthermore, significant relationships were identified between multiple affective phenomena and various compulsive behaviours. These findings highlight the importance of considering the role of emotional factors when working clinically with OCE. In particular, when completing collaborative assessments and

formulations with individuals experiencing washing compulsions, clinicians should be mindful of the potential role of disgust in these people's presentations. Similarly, when formulating hoarding behaviours, self-disgust should be sensitively considered as part of an inclusive and holistic understanding of these compulsive experiences. Clinicians should also be mindful of, and responsive to, elevated anxiety, anxiety sensitivity, and stress when working with all OCE.

While causality cannot be ascertained from the present findings, relationships between emotions and behaviours often have a bidirectional nature. This means that each is likely to influence the other. For this reason, clinical interventions which alleviate affective variables are likely to have a positive impact on distressing behaviours, whether they initially caused the compulsions or resulted from them. As current clinical guidelines for supporting OCE recommend cognitive, behavioural, and pharmaceutical interventions (Koran & Simpson, 2013; NICE, 2017), this research provides a clear rationale for the consideration of specific affective variables in the support of obsessions and compulsions. As discussed, interventions for washing behaviours should follow from formulations which have mindfully considered disgust, while interventions for hoarding behaviours should be informed by formulations which have considered the potential impact of elevated self-disgust.

Choices of interventions should always be based on holistic and collaborative formulations. If, as suggested, said formulations highlight the need to address affective factors such as disgust and self-disgust, interventions which target emotional variables may be implicated. Such interventions may include compassion-focused therapy, (Gilbert, 2009), emotion-focused cognitive therapy (Power, 2010) or emotion-focused therapy (Greenberg, 2015). These alternative interventions differ from current approaches by targeting affective variables, including emotional regulation skills (Afshari, Neshat-Doost, Maracy, Ahmady, &

Amiri, 2014). Trials designed to investigate the clinical effectiveness of these interventions with different obsessive-compulsive presentations would be highly beneficial.

5. Conclusion

In sum, the present study investigated whether self-disgust would predict compulsive behaviours in a clinical sample of people with OCE. Findings showed that self-disgust was a significant independent predictor of hoarding compulsions, even when controlling for related affective variables. This finding was explained both in terms of self-disgust causing, and resulting from, hoarding behaviours. Clinical interventions which target underlying affective variables, such as self-disgust, have been justified. Increased sensitivity surrounding the way hoarding compulsions are stigmatised in the media may also be beneficial in changing the way individuals may feel about their difficulties and behaviours.

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Research Paper Tables and Figures

Table 1. Demographic and clinical information (*N*= 149).

Discrete variables	Frequency (Percentage)
Sex	
Female	109 (73.2)
Male	40 (26.8)
Ethnic Group	
White	129 (86.6)
Mixed/ Multiple ethnic groups	7 (4.7)
Asian/ Asian British	6 (4.0)
Not Specified	1 (0.7)
Other:	6 (4.0)
Hispanic	3 (2.0)
Arab	1 (0.7)
Indian	1 (0.7)
Indo Mauritian	1 (0.7)
National Identity	
American (USA)	59 (39.6)
British	54 (35.6)
Canadian	9 (6.0)
Australian	6 (4.0)
Irish	5 (3.4)
Not Specified	4 (2.7)
Other:	12 (8.7)
German	2 (1.4)
Indian	2 (1.4)
Filipino	1 (0.7)
Greek Scottish	1 (0.7)
Malaysian	1 (0.7)
Mauritian	1 (0.7)
New Zealand	1 (0.7)
Peruvian	1 (0.7)
Swedish	1 (0.7)
Syrian	1 (0.7)
OCD Diagnosis Received?	
Yes	121 (81.2)
No	26 (17.4)
Not Specified	2 (1.3)

Continuous variables	Mean (*SD*)	Median (Range)
Age (in years)	30.15 (9.99)	27.0 (18.0 – 68.0)
OCI-R Total		
Total sample	35.01 (13.61)	36.0 (3.00 – 66.0)
Individuals with diagnosis	33.93 (13.60)	35.0 (3.00 – 66.0)
Individuals without diagnosis	38.54 (13.17)	36.5 (22.0 – 66.0)
Did not specify diagnosis	54.00 (2.83)	54.0 (52.0 – 56.0)

Note. OCI-R = Obsessive-Compulsive Inventory Revised; OCD = obsessive-compulsive disorder; SD = standard deviation.

Table 2. Descriptive information for scales and subscales in the present study.

	Items	Possible range	Mean (SD)	Median (Range)	*a*
ASI-3- Total	18	0.0 – 72.0	37.40 (15.00)	37.0 (8.0 – 69.0)	.91
ASI-3- Physical	6	0.0 – 24.0	10.81 (6.06)	11.0 (0.0 – 24.0)	.86
ASI-3-Cognitive	6	0.0 – 24.0	12.24 (6.64)	13.0 (0.0 – 24.0)	.90
ASI-3-Social	6	0.0 – 24.0	14.34 (5.55)	15.0 (0.0 – 24.0)	.81
DASS-21-Depression	7	0.0 – 21.0	11.28 (4.72)	11.0 (0.0 – 21.0)	.85
DASS-21-Anxiety	7	0.0 – 21.0	9.56 (4.59)	9.0 (0.0 – 21.0)	.82
DASS-21-Stress	7	0.0 – 21.0	13.04 (4.43)	14.0 (1.0 – 21.0)	.84
DPSS-R-Propensity	6	6.0 – 30.0	19.11 (4.42)	19.0 (6.0 – 30.0)	.86
DPSS-R-Sensitivity	6	6.0 – 30.0	15.85 (5.08)	15.0 (6.0 – 30.0)	.79
OCI-R-Total	18	0.0 – 72.0	35.01 (13.61)	36.0 (3.0 – 66.0)	.88
OCI-R-Checking	3	0.0 – 12.0	5.63 (3.44)	5.0 (0.0 – 12.0)	.87
OCI-R-Hoarding	3	0.0 – 12.0	4.67 (3.48)	4.0 (0.0 – 12.0)	.86
OCI-R-Neutralising	3	0.0 – 12.0	5.05 (3.86)	4.0 (0.0 – 12.0)	.84
OCI-R-Obsessing	3	0.0 – 12.0	8.80 (3.01)	9.0 (1.0 – 12.0)	.86
OCI-R-Ordering	3	0.0 – 12.0	5.75 (3.71)	5.0 (0.0 – 12.0)	.92
OCI-R-Washing	3	0.0 – 12.0	5.12 (3.91)	5.0 (0.0 – 12.0)	.90
SDS-R-Total[b]	15	15.0 – 105.0	57.80 (18.31)	57.5 (18.0 – 95.8)	.91
SDS-R-Physical[a]	5	5.0 – 35.0	19.48 (7.91)	18.8 (5.0 – 35.0)	.87
SDS-R-Behaviour	5	5.0 – 35.0	19.29 (6.26)	19.0 (5.0 – 32.0)	.80
TOSCA-3S-Shame	11	11.0 – 55.0	41.29 (7.89)	43.0 (21.0 – 55.0)	.82
TOSCA-3S-Guilt	11	11.0 – 55.0	47.82 (5.63)	48.1 (21.0 – 55.0)	.75
TOSCA-3S-Blame	11	11.0 – 55.0	24.02 (7.02)	24.0 (11.0 – 42.0)	.79

Note. α = Cronbach's alpha; ASI-3 = Anxiety Sensitivity Index-3; DASS-21 = Depression Anxiety Stress Scale-21; DPSS-R = Disgust Propensity and Sensitivity Scale-Revised; OCI-R = Obsessive-Compulsive Inventory-Revised; SDS-R = Self-Disgust Scale- Revised; TOSCA-3S = Test of Self-Conscious Affect-3S. [a] due to data error, one item was imputed at the mean of this subscale; [b] due to data error, one item of this total score was imputed from the mean of the subscale from which it was missing.

Table 3. Correlation coefficients of variables (*N* = 149).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 Age	1.00	-.167*	.005	-.009	-.210**	-.144	-.093	-.191*	.057	-.192*	.056	-.220**	-.105	-.038	-.194*	-.225**	-.099	-.182*
2 Sex		1.00	.059	-.183*	-.094	-.032	.005	-.075	-.036	.188*	.107	-.034	-.123	.034	.027	-.056	-.033	.005
3 ASI-3 Total			1.00	.305**	.635**	.447**	.318**	.602**	.391**	.459**	.181*	.421**	.244**	.259**	.353**	.274**	.296**	.179*
4 DASS-21 Depression				1.00	.478**	.463**	.221**	.206*	.455**	.163*	.014	.303**	.110	.157	.201*	.307**	.294**	.104
5 DASS-21 Anxiety					1.00	.605**	.365**	.570**	.298**	.360**	.141	.475**	.294**	.275**	.390**	.351**	.282**	.226**
6 DASS-21 Stress						1.00	.254**	.307**	.276**	.312**	.203*	.422**	.362**	.198*	.296**	.346**	.318**	.113
7 DPSS-R Propensity							1.00	.466**	.241**	.226**	.268**	.429**	.291**	.199*	.185*	.187*	.297**	.454**
8 DPSS-R Sensitivity								1.00	.225**	.328**	.139	.394**	.214**	.237**	.329**	.132	.210*	.346**
9 SDS-R Total									1.00	.433**	.148	.262**	.101	.242**	.155	.175*	.172*	.158
10 TOSCA-3S Shame										1.00	.447**	.234**	.128	.152	.130	.127	.151	.199*
11 TOSCA-3S Guilt											1.00	.163*	.130	.096	.083	.061	.050	.192*
12 OCI-R Total												1.00	.741**	.600**	.739**	.413**	.729**	.557**
13 OCI-R Checking													1.00	.290**	.500**	.294**	.438**	.307**
14 OCI-R Hoarding														1.00	.305**	.050	.392**	.229**
15 OCI-R Neutralising															1.00	.288**	.467**	.208*
16 OCI-R Obsessing																1.00	.119	-.033
17 OCI-R Ordering																	1.00	.300**
18 OCI-R Washing																		1.00

Note. ASI-3 = Anxiety Sensitivity Index-3; DASS-21 = Depression Anxiety and Stress Scale-21; DPSS-R = Disgust Propensity and Sensitivity Scale- Revised; OCI-R = Obsessive Compulsive Inventory-Revised; SDS-R = Self-Disgust Scale-Revised; TOSCA-3S = Test of Self-Conscious Affect- 3S; *significant at .05 alpha level ($p < .05$); **significant at .01 alpha level ($p < .01$).

Table 4. Summary of hierarchical regression analysis for variables predicting OCI-R hoarding (N = 149).

	Block 1			Block 2			Block 3		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Anxiety	.029	.022	.132	.024	.023	.108	.019	.023	.086
Anxiety Sensitivity	.013	.007	.202*	.011	.007	.172	.006	.007	.090
Disgust Sensitivity				.015	.020	.076	.017	.020	.086
Self-disgust							.013	.005	.230**
R^2		.092			.096			.140	
Adjusted R^2		.080			.077			.116	
F for change in R^2		7.42**			0.53			7.47**	

Note. *significant at .05 alpha level ($p < .05$); **significant at .01 alpha level ($p < .01$).

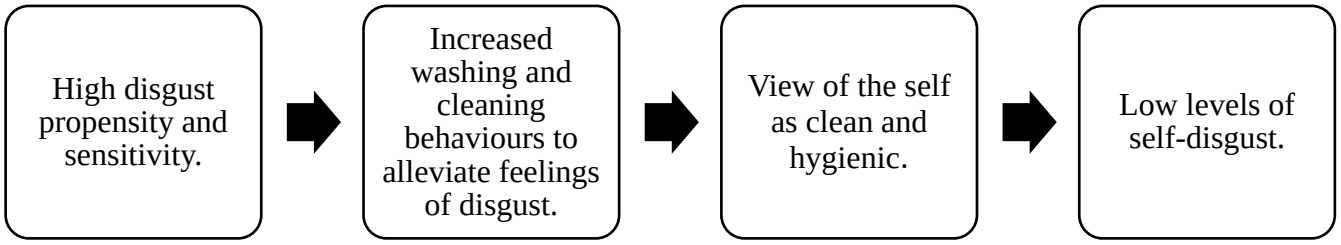

Figure 1. Chart to explain interaction between disgust, obsessive-compulsive washing, and self-disgust.

Appendix A

Demographic Questions

Q1 What is your age in years?

Q2 What is your sex?

- Male (1)
- Female (2)

Q3 Have you ever received a diagnosis of obsessive-compulsive disorder? (Your answer to this question will not affect your eligibility to participate in this research study.)

- Yes (1)
- No (2)
- I would prefer not to say (3)

Q4 What is your ethnic group?

- White (1)
- Mixed / multiple ethnic groups (2)
- Asian / Asian British (3)
- Black / African / Caribbean/ Black British/ African American (4)
- Other ethnic group (please specify) (5) _____
- I would prefer not to say (6)

Q5 How would you describe your national identity?

- British (1)
- Irish (2)
- American (3)
- Australian (4)
- Canadian (5)
- Other national identity (please specify) (6) _____
- I would prefer not to say (7)

Appendix B

Permission to Use ASI-3 Measure

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- Taylor, S., Zvolensky, M. J., Cox, B. J., Deacon, B., Heimberg, R. G., Ledley, D. R., . . . Cardenas, S. J. (2007). Robust dimensions of anxiety sensitivity: Development and initial validation of the Anxiety Sensitivity Index-3. *Psychological Assessment*, *19*(2), 176-188. http://dx.doi.org/10.1037/1040-3590.19.2.176

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Applicant

1st September 2016
Date

PERMISSION GRANTED ON ABOVE TERMS: Karen A Thomas

for the American Psychological Association

August 30, 2016
Date

Appendix C

Highlights

- Self-disgust is a significant independent predictor of hoarding severity.
- No other compulsions are predicted by self-disgust.
- Implications for holistically supporting such difficulties are discussed.

Running head: Emotions in OCE: A Critical Appraisal

Section III: Critical Appraisal

A Critical Appraisal of the thesis: "The role of emotions in obsessive-compulsive experiences".

Lucy Rathbone

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1. Key Findings

My empirical research project investigated the role of self-disgust in different obsessive-compulsive experiences (OCE). OCE are often characterised as single, homogeneous difficulties, and clinical interventions are often constructed in line with this assumption (Koran & Simpson, 2013; National Institute for Health and Care Excellence [NICE], 2017). However, while many OCE share some common characteristics, for example intrusive thoughts and elevated anxiety (American Psychiatric Association [APA], 2015), research studies have recognised emotional, cognitive, neurological, and personality differences between individuals with different compulsive presentations (Grisham, Brown, Liverant, & Campbell-Sills, 2004; Horesh, Dolberg, Kirschenbaum-Aviner, & Kotler, 1997; Leopold & Backenstrass, 2015; Murayama et al., 2013). Such findings highlighted to me the potential shortcomings of my national clinical guidelines in recommending the same psychological or pharmaceutical interventions to all individuals seeking support for their diverse OCE (NICE, 2005).

This reflection brought to my attention the potential value of subtyping OCE to consider more specific presentations. This created a rationale to design research which facilitated a greater understanding of the underlying factors these behavioural differences represented. Both through my clinical experience and my reading around the topic, I was especially drawn to the differentiating role of emotions in OCE. Although the role of emotions has been long recognised in a variety of mental health difficulties (Gross & Jazaieri, 2014; Gross & Muñoz, 1995), it continues to be overlooked when advising therapeutic interventions (NICE, 2017); this is despite evidence to suggest that approaches which focus on cognitive and behavioural change have limited effectiveness with OCE (Johnsen & Friborg, 2015). This consideration of current recommendations further strengthened the rationale for my project. The extensive literature around the relationship between disgust and

washing-behaviours led me to become curious about the potential influence of self-disgust. Self-disgust is a relatively novel research concept and it felt appropriate to consider whether this affective factor could contribute to existing efforts to understand the processes underlying different compulsive-behaviours.

Contrary to my expectation that self-disgust would be most strongly related to washing-behaviours, I found that hoarding behaviours shared the strongest correlation with self-disgust. In fact, self-disgust was a significant independent predictor of hoarding compulsions, even when controlling for anxiety, anxiety sensitivity, and disgust sensitivity. The ability of self-disgust to predict variance in hoarding behaviours, even after controlling for these highly-correlated variables, highlights the significant role of self-disgust within this presentation. I therefore considered the different theory-based explanations that could account for these findings.

First, I proposed that washing-compulsions may protect the emotion of disgust from being internalised towards the self. I inferred that individuals who scored highly on the washing subscale of the revised Obsessive-Compulsive Inventory (OCI-R, Foa et al., 2002) may view the external world as contaminated, only cleaning themselves to neutralise any contact they may have had with external sources of pathogens. By engaging in compensatory cleansing behaviours, I concluded that individuals with washing compulsions were still able to see themselves as clean and hygienic, despite high propensity for, and sensitivity to, the emotion of disgust. However, the measure of self-disgust I used considered this as a trait characteristic, rather than a response to a given situation or behaviour. Future research, which measures self-disgust alongside experiences of washing obsessions and compulsions, may facilitate further understanding of the interaction between triggering events, disgust, self-disgust, and washing behaviours.

Second, my interpretation of the findings also considered whether hoarding behaviours arose as a means through which those experiencing self-disgust could isolate themselves from others. I identified research linking hoarding behaviours to social isolation (Wilbram, Kellett, & Beail, 2008) and linking self-disgust to social withdrawal (Powell, Overton, & Simpson, 2014). From these theoretical findings, I inferred that the function of hoarding may be to withdraw from others due to feelings of self-disgust. This fit with evidence that understood hoarding as a means of avoiding distressing emotions (Frost & Hartl, 1996) and isolating oneself from the outer world (Gamble, 2011).

Finally, I questioned whether the outcome of compulsive hoarding (i.e. a cluttered home environment) may lead to elevated self-disgust. Within this, I considered how individuals living in cluttered and unhygienic houses may begin to feel about their homes and, by extension, themselves. I also considered the potential for self-disgust to begin inter-subjectively; I proposed that if someone with hoarding difficulties is around people who find them, or their home environment, to be "disgusting", this could lead them to internalise those feelings and begin to see themselves in this way. I broadened out this inference to consider the influence of media portrayals of hoarding, which often convey a misinformed narrative. Television programmes such as "Obsessive Compulsive Cleaners" and "Hoarding: Buried Alive" often overlook the functional value and distressing impact of this mental health presentation and focus on documenting unsavoury living conditions. Indeed, charities which support people with OCE are appealing against such stigmatising media messages (OCD-UK, 2017).

Consideration of the results highlighted the likelihood of a bidirectional relationship between self-disgust and compulsive hoarding-behaviours; this may be best addressed and supported by an emotion-focused psychological intervention (Whelton, 2004). Unfortunately, current clinical guidelines presently group diverse OCE under a single

diagnostic label and regularly recommend interventions which focus on cognitions, behaviours, and neurochemistry (NICE, 2005). A clinical guide which recognises the individual differences behind different obsessive-compulsive presentations would fit better with the person-centred values and approaches endorsed by clinical psychologists. This means recommending interventions which are informed by holistic and collaborative formulations and thus consider a range of influencing factors, including individual contexts and affective variables.

Findings also led to the recommendation that further research would benefit from considering wider influencing factors, including affective, behavioural, cognitive and neuropsychological variables. A model that encompasses a greater breadth of underlying factors may explain more of the variance in specific compulsive presentations.

2. Strengths and Limitations

Strengths of the study included the empirical investigation of a novel research area which allowed meaningful conclusions and clinical implications to be generated. These conclusions stemmed from the responses collected from a large, international sample comprising individuals with clinically significant OCE. The sample meant the study had good external validity, and findings could therefore be generalised across males and females of different ages and nationalities. Additionally, anonymous participation meant that participants did not have to disclose private and identifiable information. The study also identified potential confounding affective variables and controlled for these during the analysis. Importantly, the study drew upon theoretical evidence throughout the early developmental stages of designing the project, through to the final stages of analysis and interpretation. Experts by experience were also consulted in the development of the research materials.

Unfortunately, several limitations of the study were also recognised. These included the potential barriers towards participation and the limited percentage of variance the model could explain. This highlighted some areas for development regarding the design of the study, which may have benefitted from considering a broader selection of recruitment strategies and control variables. For example, consideration of cognitive variables and life experiences may have also been useful in understanding the wider factors that are predictive of specific compulsive behaviours.

Another key area of difficulty during the project regarded my attempts to avoid endorsement of the medical model. My experiences of balancing the demands of the research with this professional value will now be discussed.

2.1. Reflections on the medical-model

Throughout the process of developing and constructing the research paper, I had to critically engage with a diagnostic approach to the description and classification of mental illness. As such, it was important to reflect upon my own beliefs and values, to assess whether they could fit comfortably within this medicalised approach. This led me to consider my epistemological stance. I generally favour a critical realist perspective (Bhaskar, 2011); this perspective considers there to be an objective truth, of which there can be multiple different interpretations. For this reason, knowledge is difficult to confirm, however not impossible (Collier, 1999). When conducting empirical quantitative research, this meant I was mindful of my influence on the analysis and the subjective OCE of participants. However, I believed measures could be taken to ensure the research contributed towards an objective understanding of the significant and true relationships between emotions and compulsive-behaviours.

With regards to labelling mental health presentations, I believe that diagnostic classifications are overly reductionist and endorse a more positivist approach. This approach

suggests that facts discovered by science are the only valid form of knowledge (Egan, 1997) and thus overlooks subjective truths. In my opinion, this dismisses the personal, cultural, and societal interpretations of psychological difficulties and does not fit with my own epistemological stance. In light of this conflict, I made a conscious decision to consider obsessive-compulsive difficulties as understandable and subjective human experiences, as opposed to pathologised symptoms of a mental illness. This choice not only sat within my own value base, but also within the recommendations of my professional body (British Psychological Society [BPS], 2015).

With regards to professional views, clinical psychologist David Pilgrim (2000) proposes that "diagnosis is a medical task that creates a simple dichotomy between the sick and the well" (p. 302). He goes on to suggest that, in contrast, "psychological formulations assume a continuity between the normal and the abnormal" (p. 302). These formulations draw upon psychological theory to "create a working hypothesis or 'best guess' about the reasons for a client's difficulties, in the light of their relationships, social context, and the sense they have made of their lives" (p. xx; Johnstone & Dallos, 2013). Pilgrim adds that where psychiatry may question if an individual is "suffering" from a mental disorder, clinical psychology attempts to understand how someone's actions or experiences may be explained in a given context. This approach betters fits with my own conceptualisation of how mental health difficulties arise.

Additionally, I was also concerned about the medical model's tendency to assume that all clinical presentations are accompanied by distress and should thus be "treated" accordingly. I have recently been reviewing the research around experiences of psychosis, in particular, qualitative analyses which consider individual accounts of hearing voices (de Jager et al., 2016; Luhrmann, Padmavati, Tharoor, & Osei, 2015). This evidence base suggests that while some individuals find it useful to turn away from such experiences, for example, by

using medication to suppress voice-hearing, others find it more helpful to engage with their experiences, in attempts to explore and understand their functional meanings. Reading about cultural differences in beliefs about voice-hearing has led me to consider the possibility of a social constructivist element to experiences which westernised medical models define as "hallucinations". As such, individual experiences should not be immediately pathologised or assumed to be distressing. Rather, the presentation should be explored and understood from the perspective of the client.

Similarities can be drawn between voice-hearing experiences and OCE. While it is often assumed that all OCE are distressing to affected individuals, evidence suggests that some individuals do not experience distress alongside, for example, hoarding-compulsions (Steketee, Frost, & Kyrios, 2003). In fact, distress experienced around hoarding is often related to the threat of having to discard products of the compulsion (Rachman, Elliot, Shafran, & Radomsky, 2009). This led me to consider that the medical model's pathologisation of unusual behaviours may create a rush to "treat" rather than understand compulsive presentations, and in doing so, potentially cause more harm than good. The functional properties of many presentations should not be underestimated, and a simplistic desire to eliminate "symptoms" of "mental illness" may leave individuals without important coping strategies.

Further, pathologising human experiences in this way often carries the assumption that distress is a disordered experience which must be avoided. Rather, reviews of research literature highlight the necessity of distress in adaptive human functioning (Ryrie & Norman, 2004). Cromby, Harper, and Reavey (2013) remind us that "the boundaries between normal and abnormal, between everyday experience and distress, are fluid, variable, and contingent upon historical and cultural norms" (p. 85). Again, this conceptualisation of distress and mental health difficulties fit my value base and my approach to clinical practice. However,

despite my intentions to disengage with the medicalised model of mental health, my efforts to do so often felt restricted.

When initially reviewing the relevant literature around the topic, it quickly became apparent that the terms "Obsessive Compulsive Disorder" and "OCD" were predominantly used to describe difficulties of this nature (de Mathis et al., 2011; Lochner & Stein, 2003). This fits within the dominant “disease model” that surrounds mental health presentations across both empirical literature and clinical practice (BPS, 2015). The dominance of this use of language made it difficult to avoid entirely. For example, when developing the search strategy for my literature review, I was required to use the term "OCD" to ensure that no relevant papers were missed. Further, I was required to endorse this medicalised language when describing the samples used in previous studies, as diagnoses were often used to determine clinical samples. I used quotation marks when reporting the medicalised language of other authors to denote that these were not words of my choosing; however, this could not completely negate the implicit messages that such terminology carries.

This consideration had implications both when considering previously published research and the future of my own research paper. In order to pay respect to the time participants invested in my study, it was important to develop research with the intent of publication and dissemination. I had to, therefore, carefully consider my choice not to use medicalised language, as straying from the dominant terminology may go on to affect the accessibility of the article. By continuing to use the term “obsessive-compulsive”, I hope to ensure that the paper will still be captured by database searches which screen for the term “Obsessive-Compulsive Disorder”. However, this may not be guaranteed.

Additionally, clinical samples are often required to generalise findings to clinical populations (Comer & Kendall, 2013). To generate clinical implications regarding mental health interventions, it was therefore important to use a clinical sample in the research paper.

Thus, when developing the recruitment resources, it felt important to communicate that the research was intended for individuals experiencing clinically significant obsessions and compulsions. The common colloquial use of the term "OCD" made this consideration especially poignant, as I was concerned that idiosyncratic behaviours would be misleadingly considered to hold clinical significance. Indeed, when discussing my research with friends and acquaintances, I was often faced with anecdotes concerning people they felt to be "a bit OCD". As such, it was necessary to assess presentations beyond self-report.

In light of this decision, the eligibility criteria needed to be structured in a way that neither promoted the medical model nor allowed participation from individuals without clinically significant difficulties. The revised Obsessive-Compulsive Inventory (OCI-R; Foa et al., 2002) was therefore used to measure the degree of participants' difficulties and to assess whether these were sufficient to ensure eligibility for participation. This meant individuals without diagnoses could participate. However, the use of the screening measure alone felt overly reductionist and risked completely ignoring the clinical judgement and extended psychological assessment that often precedes diagnosis. Presence of a diagnosis was therefore also considered to represent clinically significant OCE. However, this meant inadvertently endorsing the "OCD" label. Unfortunately, the dominance of this medicalised approach to assessing and categorising mental health difficulties is hard to avoid entirely; no suitable alternative appears to be presently available. Ideally, research would allow time and resources to offer all participants a psychological assessment; this would provide a person-centred account of the clinical significance of their OCE.

3. Implications of Findings

The results from my empirical paper highlighted the potential for affective variables to predict the degree to which individuals engaged with certain compulsive-behaviours, as self-disgust was evidenced to significantly predict the degree of hoarding behaviours in

people with OCE. This finding emphasises the need to consider emotional variables when assessing, formulating, and supporting mental health difficulties such as OCE. At present, clinical guidelines appear to recommend predominantly interventions that focus on cognitive, behavioural, and neurochemical mechanisms (Koran & Simpson, 2013; NICE, 2017). While these can be beneficial for some, evidence shows that these approaches are not effective for all (Johnsen & Friborg, 2015; Kellner, 2010). Rather, approaches such as compassion-focused therapy, (Gilbert, 2009), emotion-focused cognitive therapy (Power, 2010), and emotion-focused therapy (Greenberg, 2015) may be better equipped to support affected individuals in understanding and regulating the emotions that may be driving their OCE. Most importantly however, interventions must be based on collaborative formulations which entail both broad and in-depth considerations of the factors contributing to individual presentations; this should comprise mindful awareness of the roles of particular emotions in certain OCE. An integrated approach, which balances considerations of early life experiences, cognitions, emotions, neuropsychology, and contextual factors may be the most effective approach towards helping those accessing services.

Along with broader clinical implications, the findings of this study also carry implications for my own clinical practice. First, when working with individuals with OCE, I will be sure to consider the specific compulsion they are feeling compelled to carry out; I now understand that this may offer an insight into how the individual may be feeling or thinking about either themselves or the world around them. This will allow for a more bespoke and person-centred formulation which goes deeper than the general assumptions regarding OCE. Second, I will continue to use an eclectic approach to help clients make sense of their presentations, not just those with OCE. However, I will begin to allow more time and space to explore underlying emotions. This will facilitate collaborative formulations of core emotions, which may be influencing their various mental health

difficulties. Of course, the links between cognitions, behaviours, and emotions will not be overlooked, however I will be sure to protect more time for exploring the impact of their emotional experiences.

Finally, I will also ensure that any use of routine outcome measures, or any application of theoretical knowledge I have of certain presentations, does not distract me from the importance of my clients' own stories, and the way they have made sense of their experiences. Choosing not to promote the medical model does not only mean refraining from applying diagnostic labels, it also requires psychologists to engage with the lived experiences of clients. This means collaboratively formulating in an individually-tailored way which draws upon their rich narratives and considers the wider context in which they live. I will now ensure that such holistic practice includes consideration of intersubjective and media-related influences.

4. Reflections on the Process

While completing this piece of work, I encountered multiple challenges and obstacles. This included long delays attaining ethical approval and the difficulty of balancing my time between the competing demands of the literature review and the research paper. The literature review, in particular, consumed the majority of my time, due to the great deal of information that it generated. Consideration of the different designs, analyses, variables, findings, and reporting qualities of 23 studies was indeed a strength of the review, as it captured a breadth of information that was not specific to any one empirical approach. However, this also meant that findings were very difficult to organise and summarise in a concise manner. From this experience, I have learned the importance of developing a specific and manageable research question from the outset of any investigation. Further, identifying the most relevant results to report, and doing so succinctly, may assist me in future reviews.

The process of writing a quantitative thesis also led me to question my epistemological approach to research. I have often placed increased value on the generation of quantitative research due to its capacity to utilise robust and replicable methodologies and generate valid and reliable findings. The value of quantitative data also appeals to me in terms of the numbers of participants who are able to contribute and the resulting generalisability that results and clinical implications can carry. Further, I feel that the objectivity of quantitative research reduces the power, influence, and subjectivity of the researcher's interpretations, reducing this potential source of bias. In all, I am pleased with the quantitative design of my thesis and hope that the findings and conclusions can make a valuable contribution to the existing empirical evidence-base.

However, in considering individual experiences of obsessions and compulsions, I have been drawn to blogs, documentaries, books, and social media accounts of individuals with OCE. This has included the Channel 5 documentary "Me and My Mental Illness" (Trotter, 2016) and the biography "Life in Rewind" (Murphy, Jenike, & Zine, 2009). These personal accounts are powerful means through which to learn about OCE. However, I found it difficult to use these personal accounts to evidence decisions I made about the project's design, or inferences I made about the data. Instead, I continued to draw upon the empirical evidence-base to justify my choices and conclusions; this mainly involved other quantitative studies. This approach felt more robust and defensible, despite my appreciation for the rich data that can be drawn from personal insights. My critical realist approach to this piece of research made it difficult to incorporate more subjective evidence from individual accounts.

My exploration of individual OCE led me to consider the limitations of separately considering the subscales of the OCI-R. By investigating mean scores across the sample on different subscales, data were lost pertaining to the nature of each participant's individual presentation. From the way the data were analysed, it was not possible to tell whether

participants who scored highly on the washing subscale presented with a predominantly washing-based OCE, as their score on one or more other subscales may have been equally high, or even higher. Similarly, the measure was not able to capture how long participants spent engaging in rituals, the impact on their daily functioning, or how distressing their OCE were for them. Despite having a dataset of responses from 149 people, the data could neither capture nor express the lived experiences of those individuals.

The advantages and disadvantages of quantitative and qualitative health research have been previously recognised and discussed (e.g. Carr, 1994) and I continue to the see the advantages in the methods and analyses I chose to investigate my research question. However, future research may greatly benefit from talking to people with OCE and trying to understand how they make sense of their presentations, be this from a psychological or medical perspective. While research of this nature has been conducted previously (Murphy & Perera-Delcourt, 2014), further exploration of how individuals with hoarding OCE experience emotions such as self-disgust may be of additional use. Furthermore, a mixed-model of analysis may add a richness to future quantitative data which cannot be matched by analysing individual responses to standardised measures.

5. Conclusions

The aim of my empirical investigation was to explore whether self-disgust could predict specific obsessive-compulsive presentations in a clinical sample. Through the development and dissemination of an online questionnaire, which comprised six relevant validated measures, I collected responses from 149 anonymous participants, all of whom provided informed consent to participate. Correlation analyses, followed by a hierarchical multiple regression analysis, allowed the research question to be investigated with scientific rigour. Results from the regression analysis revealed that self-disgust was a significant independent predictor for only one of the obsessive-compulsive subtypes; this was hoarding.

This finding was considered and explained in terms of a potential bi-directional relationship between feelings of self-disgust and hoarding behaviours. Regarding clinical implications, a case for more emotionally-mindful formulations and person-centred clinical interventions has been made.

The experience of completing this piece of research has led me to question critically some aspects of the research process. First, the difficulty in engaging with quantitative research designs without endorsing the use of diagnostic language and labels. Second, the distance the critical realist or positivist approach, often required by quantitative research and academic writing, places between the researcher and the subjective lived experiences of the participants. Future research may benefit from both qualitative and quantitative components, which allow for robust and reliable methodologies and results, without losing the rich insights that come from engaging with individual stories.

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Running head: Ethics documentation

Section IV: Ethics

Accompanying ethical documentation for the study: "Does self-disgust predict compulsive behaviours?"

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Doctorate in Clinical Psychology

Word count: 4, 788 words excluding references and appendices

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NHS Research Ethics Form

IRAS Project Filter

The integrated dataset required for your project will be created from the answers you give to the following questions. The system will generate only those questions and sections which (a) apply to your study type and (b) are required by the bodies reviewing your study. Please ensure you answer all the questions before proceeding with your applications.

Please complete the questions in order. If you change the response to a question, please select 'Save' and review all the questions as your change may have affected subsequent questions.

Please enter a short title for this project (maximum 70 characters)
Self-disgust and Obsessive Compulsive Disorder

1. Is your project research?

(●) Yes ( ) No

2. Select one category from the list below:

( ) Clinical trial of an investigational medicinal product

( ) Clinical investigation or other study of a medical device

( ) Combined trial of an investigational medicinal product and an investigational medical device

( ) Other clinical trial to study a novel intervention or randomised clinical trial to compare interventions in clinical practice

( ) Basic science study involving procedures with human participants

(●) Study administering questionnaires/interviews for quantitative analysis, or using mixed quantitative/qualitative methodology

( ) Study involving qualitative methods only

( ) Study limited to working with human tissue samples (or other human biological samples) and data (specific project only)

( ) Study limited to working with data (specific project only)

( ) Research tissue bank

( ) Research database

If your work does not fit any of these categories, select the option below:

( ) Other study

2a. Please answer the following question(s):

a) Does the study involve the use of any ionising radiation?	( ) Yes	(●) No
b) Will you be taking new human tissue samples (or other human biological samples)?	( ) Yes	(●) No
c) Will you be using existing human tissue samples (or other human biological samples)?	( ) Yes	(●) No

3. In which countries of the UK will the research sites be located? *(Tick all that apply)*

[x] England
[ ] Scotland

☐ Wales
☐ Northern Ireland

3a. In which country of the UK will the lead NHS R&D office be located:

○ England
○ Scotland
○ Wales
○ Northern Ireland
◉ This study does not involve the NHS

4. Which applications do you require?

☑ IRAS Form
☐ Confidentiality Advisory Group (CAG)
☐ National Offender Management Service (NOMS) (Prisons & Probation)

For NHS/HSC R&D Offices in Northern Ireland, Scotland and Wales the CI must create NHS/HSC Site Specific Information forms, for each site, in addition to the study wide forms, and transfer them to the PIs or local collaborators.

For participating NHS organisations in England different arrangements apply for the provision of site specific information. Refer to IRAS Help for more information.

Most research projects require review by a REC within the UK Health Departments' Research Ethics Service. Is your study exempt from REC review?

○ Yes ◉ No

5. Will any research sites in this study be NHS organisations?

○ Yes ◉ No

6. Do you plan to include any participants who are children?

○ Yes ◉ No

7. Do you plan at any stage of the project to undertake intrusive research involving adults lacking capacity to consent for themselves?

○ Yes ◉ No

Answer Yes if you plan to recruit living participants aged 16 or over who lack capacity, or to retain them in the study following loss of capacity. Intrusive research means any research with the living requiring consent in law. This includes use of identifiable tissue samples or personal information, except where application is being made to the Confidentiality Advisory Group to set aside the common law duty of confidentiality in England and Wales. Please consult the guidance notes for further information on the legal frameworks for research involving adults lacking capacity in the UK.

8. Do you plan to include any participants who are prisoners or young offenders in the custody of HM Prison Service or who are offenders supervised by the probation service in England or Wales?

○ Yes ◉ No

9. Is the study or any part of it being undertaken as an educational project?

(●) Yes ( ) No

Please describe briefly the involvement of the student(s):
Doctorate of Clinical Psychology thesis project

9a. Is the project being undertaken in part fulfilment of a PhD or other doctorate?

(●) Yes ( ) No

10. Will this research be financially supported by the United States Department of Health and Human Services or any of its divisions, agencies or programs?

( ) Yes (●) No

11. Will identifiable patient data be accessed outside the care team without prior consent at any stage of the project (including identification of potential participants)?

( ) Yes (●) No

Integrated Research Application System
Application Form for Research administering questionnaires/interviews for quantitative analysis or mixed methodology study

IRAS Form (project information)

Please refer to the E-Submission and Checklist tabs for instructions on submitting this application.

The Chief Investigator should complete this form. Guidance on the questions is available wherever you see this symbol displayed. We recommend reading the guidance first. The complete guidance and a glossary are available by selecting Help.

Please define any terms or acronyms that might not be familar to lay reviewers of the application.

Short title and version number: (maximum 70 characters - this will be inserted as header on all forms)
Self-disgust and Obsessive Compulsive Disorder

Please complete these details after you have booked the REC application for review.

REC Name:
East of England

REC Reference Number:
16/EE/0441

Submission date:
22/09/2016

PART A: Core study information

1. ADMINISTRATIVE DETAILS

A1. Full title of the research:

Is self-disgust a predictor of compulsive behaviours in individuals who report obsessive-compulsive experiences?

A2-1. Educational projects

Name and contact details of student(s):

Student 1

	Title Forename/Initials Surname
	Miss Lucy Rathbone
Address	Division of Health Research
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Telephone	07791730949
Fax	

Give details of the educational course or degree for which this research is being undertaken:

Name and level of course/ degree:

Doctorate of Clinical Psychology

Name of educational establishment:
Lancaster University

Name and contact details of academic supervisor(s):

Academic supervisor 1

	Title Forename/Initials Surname
	Dr Jane Simpson
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Fax	

Academic supervisor 2

	Title Forename/Initials Surname
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Telephone	01524 592754
Fax	

Please state which academic supervisor(s) has responsibility for which student(s):
Please click "Save now" before completing this table. This will ensure that all of the student and academic supervisor details are shown correctly.

Student(s)	**Academic supervisor(s)**
Student 1 Miss Lucy Rathbone	☑ Dr Jane Simpson ☑ Dr Pete Greasley

A copy of a current CV for the student and the academic supervisor (maximum 2 pages of A4) must be submitted with the application.

A2-2. Who will act as Chief Investigator for this study?

- ◉ Student
- ○ Academic supervisor
- ○ Other

A3-1. Chief Investigator:

	Title Forename/Initials Surname
	Miss Lucy Rathbone
Post	Trainee Clinical Psychologist
Qualifications	
Employer	Lancashire Care NHS Foundation Trust
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	Lancaster University
Post Code	LA1 4YG
Work E-mail	l.rathbone@lancaster.ac.uk
* Personal E-mail	
Work Telephone	
* Personal Telephone/Mobile	07791730949
Fax	

** This information is optional. It will not be placed in the public domain or disclosed to any other third party without prior consent.*
A copy of a current CV (maximum 2 pages of A4) for the Chief Investigator must be submitted with the application.

A4. Who is the contact on behalf of the sponsor for all correspondence relating to applications for this project?
This contact will receive copies of all correspondence from REC and HRA/R&D reviewers that is sent to the CI.

	Title Forename/Initials Surname
	Ms Diane Hopkins
Address	Research and Contracts Support Office
	B Floor, Bowland Main
	Lancaster University
Post Code	LA1 4YW
E-mail	ethics@lancaster.ac.uk
Telephone	01524 592838
Fax	

A5-1. Research reference numbers. *Please give any relevant references for your study:*

Applicant's/organisation's own reference number, e.g. R & D (if available):	
Sponsor's/protocol number:	
Protocol Version:	Version 1
Protocol Date:	01/06/2016
Funder's reference number:	
Project website:	

Additional reference number(s):

Ref.Number	Description	Reference Number

Registration of research studies is encouraged wherever possible. You may be able to register your study through your NHS organisation or a register run by a medical research charity, or publish your protocol through an open access publisher. If you have registered your study please give details in the "Additional reference number(s)" section.

A5-2. Is this application linked to a previous study or another current application?

(●) Yes ( ) No

Please give brief details and reference numbers.
This application was initially submitted to the Liverpool East NRES Committee on 28th July 2016; however, said submission received an unfavourable ethical opinion. The form was resubmitted on 29th September 2016; this time, it received a provision ethical opinion from the Essex NRES Committee. The current submission details my response to the recommendations of the latter committee. All areas of concern have now been addressed as documented in the attached covering letters. The letters documenting the earlier ethical opinions have also been attached.

REC reference (Liverpool):
16/NW/0613
IRAS project ID:
207166

REC reference (Essex):
16/EE/0441
IRAS project ID:
207166

2. OVERVIEW OF THE RESEARCH

To provide all the information required by review bodies and research information systems, we ask a number of specific questions. This section invites you to give an overview using language comprehensible to lay reviewers and members of the public. Please read the guidance notes for advice on this section.

A6-1. Summary of the study. *Please provide a brief summary of the research (maximum 300 words) using language easily understood by lay reviewers and members of the public. Where the research is reviewed by a REC within the UK Health Departments' Research Ethics Service, this summary will be published on the Health Research Authority (HRA) website following the ethical review. Please refer to the question specific guidance for this question.*

The study aims to investigate whether self-reported ratings of self-disgust can predict the type of compulsive behaviour (either washing or checking) with which individuals, who report a diagnosis of OCD or high levels of obsessive thoughts/ compulsive behaviours, present. Participants will complete a selection of online questionnaires which measure obsessive-compulsive presentations, self-disgust and other emotional factors known to differentiate between washing and checking compulsions. These include: guilt, shame, depression, anxiety sensitivity and disgust. The questionnaires will be disseminated online via charity websites, internet forums and social media sites. Potential participants will be invited to complete the questionnaire after ensuring that they meet the inclusion criteria. Personally identifiable information will not be collected, and all data will be stored securely in accordance with the Data Protection Act (1998). Data will be analysed using a regression analysis.

A6-2. Summary of main issues. *Please summarise the main ethical, legal, or management issues arising from your study and say how you have addressed them.*

Not all studies raise significant issues. Some studies may have straightforward ethical or other issues that can be identified and managed routinely. Others may present significant issues requiring further consideration by a REC, HRA, or other review body (as appropriate to the issue). Studies that present a minimal risk to participants may raise complex organisational or legal issues. You should try to consider all the types of issues that the different reviewers may need to consider.

Ethical Considerations

Informed Consent
All potential participants will be provided with full details of the study before deciding whether or not they would like to participate. Once fully informed about the study, participants will be required to explicitly consent to taking part before beginning the questionnaire. Participants will be able to take as long as they like to decide whether or not they participate; however the study will be closed once the desired sample size has been reached. Participation will not be possible after this point.

Right to Withdraw
Participants will be made aware of their right to withdraw their data at any point before the completion of the questionnaire. As all responses will be submitted anonymously it will not be possible to retrieve any participant's data following electronic submission. This will be made clear in the initial information about the study.

Confidentiality of Participation
No personally identifiable data will be routinely collected from participants. If participants wish to contact the research team for any reason, and share identifiable information in doing so, then their identity will be kept confidential and will not be linked to their responses. Any personal information or contact details shared by the participant, should they choose to contact the research team, will be kept securely within a password protected space on the secure university server. Collected data will be stored securely (see data storage). The only exception to participants' confidentiality is if a participant discloses information to the research team which indicates that they, or another, may be at risk of serious harm. In this instance, it may be necessary to breach confidentiality in order to ensure the safety of the participant. This may involve passing on their details to the emergency services or a family member. Where possible and safe to do so, the decision to breach confidentiality will be shared with and explained to the participant. This will be made clear on the participant information sheet and consent form.

Access to Support
As the study asks participants to think about potentially distressing topics, such as different emotions and OCD, it is possible that participation in this study may lead to feelings of distress. Awareness of this potential risk will be raised in the initial information that proceeds the study.

Should a participant become distressed during the study, they will be able to cease participation immediately by exiting

and directs the participant to the resource information; they are able to select this option at any time, should they experience distress during participation. The resource information includes details of supportive services, for example Samaritans and Sane Line, and will be made readily available to all participants, should they wish to discuss any distress experienced. Contact details necessary to access support from the charities OCD UK and OCD Action will also be provided. It may also be appropriate for participants to discuss their distress with their general practitioner/ medical professional, and this will also be highlighted as a potential way of accessing support. All participants will be provided with debriefing information following their participation in the study.

As participants will complete the questionnaire anonymously, the research team will not be able to offer any direct support to participants based on their responses (for example, if a participant was to score highly on the measure for depression). Should a participant choose to contact the research team directly (by phone or email) to report high levels of distress, then an appropriate response and course of action will be discussed with the research supervisors. Depending on the nature of the disclosure, this may involve encouraging the participant to actively seek support, or breaching confidentiality in order to pass the participant's details on to someone who can provide them with more urgent support,

for example the emergency services. Where possible and safe to do so, the decision to breach confidentiality will be shared with the participant. Participants will be made aware of this possibility in the information sheet. confidentiality in the event that someone is deemed to be at risk of serious or immediate harm.

AMENDMENTS FOLLOWING UNFAVOURABLE ETHICAL OPINION (For full details, please see attached covering letter.)

1) Debriefing information and research protocol amended to ensure equipoise.
2) Measures taken to prevent the questionnaire from being abused, for example being completed by people who do not meet the inclusion criteria or being taken by the same person more than once.
3) Clarification provided around the desired sample size.
4) Clarification provided around how any disclosures of distress will be managed and how participants will be encouraged to access support independently.

AMENDMENTS FOLLOWING PROVISIONAL OPINION (For full details, please see covering letter.)

1) All recruitment will now be done online.
2) Further clarification provided regarding the safeguards in place to prevent multiple submissions.
3) A more detailed peer review letter has been attached.
4) 4) Updated CV's from the research team have been submitted. 5) Further clarification has been provided regarding the procedure that will be actioned should a client disclose distress to the research team; this has also been made more clear on the participant information sheet and the consent form.
6) Literacy requirements of the study have been recognised and will be considered as limitations in the discussion section of the research paper.

7) A statement alerting participants that the Qualtrics questionnaire uses cookies has been added to the information sheet.
8) A capcha system has been added to the online questionnaire.
9) Participant information has been expanded to inform participants that other parties that offer support, e.g. charities, may also have to breach confidentiality under certain circumstances (increased risk to self or other).

Management Issues

Expenses
Participants will not be offered a financial incentive or reward for taking part in the study. Some cost may arise in developing the survey or accessing one of the questionnaires, however this is not presently anticipated.

Data Storage
Data will be stored safely and securely in compliance with the Data Protection Act (UK Parliament, 1998). The Qualtrics Software Survey offers the "highest levels of data security" (Qualtrics, 2015). The SPSS (22.0) database storing the data will be held within my password protected filespace on the University server, which only I have access to. Any written work pertaining to the confidential data will also be stored in this way. I will have custodianship of all the study data; this will be handed over to the DClinPsy Research Director on my completion of the training programme (August 2017). All stored data will be deleted 10 years after the completion of the study, and no information will be used in future research.

3. PURPOSE AND DESIGN OF THE RESEARCH

A7. Select the appropriate methodology description for this research. *Please tick all that apply*:

- ☐ Case series/ case note review
- ☐ Case control
- ☐ Cohort observation
- ☐ Controlled trial without randomisation
- ☐ Cross-sectional study
- ☐ Database analysis
- ☐ Epidemiology
- ☐ Feasibility/ pilot study
- ☐ Laboratory study
- ☐ Metanalysis
- ☐ Qualitative research
- ☑ Questionnaire, interview or observation study
- ☐ Randomised controlled trial
- ☐ Other (please specify)

A10. What is the principal research question/objective? *Please put this in language comprehensible to a lay person.*

Can self-disgust predict whether an individual will present with washing or checking compulsive behaviours?

A11. What are the secondary research questions/objectives if applicable? *Please put this in language comprehensible to a lay person.*

N/A

A12. What is the scientific justification for the research? *Please put this in language comprehensible to a lay person.*

Existing research around OCD and disgust has found mixed results. As a relatively novel research area, research which considers a potential relationship between self-disgust and OCD is yet to be completed. With evidence

suggesting a relationship between OCD and disgust, and an acknowledged relationship between disgust and self-disgust, it is reasonable to consider the possibility of a potential relationship between OCD and self-disgust. Further, it is reasonable to suggest that self-disgust may have an underlying role in obsessive-compulsive experiences pertaining to fears of contamination and resultant washing behaviours, as individuals engaging in self-cleansing behaviours may be experiencing a degree of disgust directed inwards towards the self.

Research in this field may contribute towards improved understanding and support of the disorder, which is known to cause considerable distress to many of those affected. Consideration of self-disgust alongside different compulsion types (for example washing and checking) may help to develop a better understanding of how to best meet the individual needs of people presenting with different compulsion behaviours.

A13. Please summarise your design and methodology. *It should be clear exactly what will happen to the research participant, how many times and in what order. Please complete this section in language comprehensible to the lay person. Do not simply reproduce or refer to the protocol. Further guidance is available in the guidance notes.*

The study requires participants to complete an online questionnaire. Participants will be recruited by advertising the study online, for example through OCD charities, online forums and social media. Specifically, professional Twitter and Facebook accounts will be used to disseminate the link to the online survey. No personal social media accounts of the main researcher will be used.

Participants choosing to take part in the study will be given information about what it will entail and asked to provide informed consent before participating. They will be welcome to cease participation at any time, but will not be able to withdraw data once they have completed the questionnaire and submitted their responses. This is because the data will be completely anonymous so it will not be possible to identify and remove an individual's data. Participants will be made aware of this.

Participants will complete an online questionnaire which asks about their demographic information. It will also measure constructs of guilt, shame, disgust, depression, anxiety, stress, anxiety sensitivity, and self-disgust. Additionally, it will measure OCD severity and compulsion type.

On completing the study participants will be provided with debrief information including ways in which to access support should participation in the study lead to any feelings of distress. Contact details will be provided so that participants will be able to contact the research team should they have any further questions about the study.

A14-1. In which aspects of the research process have you actively involved, or will you involve, patients, service users, and/or their carers, or members of the public?

- [x] Design of the research
- [ ] Management of the research
- [ ] Undertaking the research
- [ ] Analysis of results
- [x] Dissemination of findings
- [ ] None of the above

Give details of involvement, or if none please justify the absence of involvement.
I am hoping to involve either service users, individuals with experiences of OCD, members of the public, or professionals who work within the field in the design of the research and the dissemination of the findings. I have already made contact with staff at two UK-based OCD charities - OCD UK and OCD Action. I have also received input about the length of the questionnaire and the anticipated duration of the study from an individual who previously experienced obsessive-compulsive difficulties. This individual has also reviewed the advertisement, participant information sheet, consent form, and debrief information.

4. RISKS AND ETHICAL ISSUES

RESEARCH PARTICIPANTS

A15. What is the sample group or cohort to be studied in this research?

Select all that apply:

- [ ] Blood
- [ ] Cancer
- [ ] Cardiovascular
- [ ] Congenital Disorders
- [ ] Dementias and Neurodegenerative Diseases
- [ ] Diabetes
- [ ] Ear
- [ ] Eye
- [ ] Generic Health Relevance
- [ ] Infection
- [ ] Inflammatory and Immune System
- [ ] Injuries and Accidents
- [x] Mental Health
- [ ] Metabolic and Endocrine
- [ ] Musculoskeletal
- [ ] Neurological
- [ ] Oral and Gastrointestinal
- [ ] Paediatrics
- [ ] Renal and Urogenital
- [ ] Reproductive Health and Childbirth
- [ ] Respiratory
- [ ] Skin
- [ ] Stroke

Gender:	Male and female participants
Lower age limit: 18	Years
Upper age limit:	No upper age limit

A17-1. Please list the principal inclusion criteria (list the most important, max 5000 characters).

Participants will be included in the research project if they:
• Are aged 18 or over.
• Are English speaking or able to answer the questionnaire in English.
• Provide informed consent to participate.
• Are able to access and complete the questionnaire.
• Report a formal diagnosis of OCD given by a medical professional
OR
• report high levels of OCD-related presentations and score 21 or more on the OCI-R (Foa et al., 2002).

A17-2. Please list the principal exclusion criteria (list the most important, max 5000 characters).

Participants will not be included in the research project if they:
• Are under the age of 18.
• Are unable to complete the questionnaire in English.
• Are unable to provide informed consent to participate.
• Are unable to access and complete the questionnaire.
• Neither report a formal diagnosis of OCD given by a medical professional

NOR
• report high levels of OCD-related presentations and score 21 or more on the OCI-R (Foa et al., 2002).

RESEARCH PROCEDURES, RISKS AND BENEFITS

A18. Give details of all non-clinical intervention(s) or procedure(s) that will be received by participants as part of the research protocol. *These include seeking consent, interviews, non-clinical observations and use of questionnaires.*

Please complete the columns for each intervention/procedure as follows:

1. Total number of interventions/procedures to be received by each participant as part of the research protocol.
2. If this intervention/procedure would be routinely given to participants as part of their care outside the research, how many of the total would be routine?
3. Average time taken per intervention/procedure (minutes, hours or days)
4. Details of who will conduct the intervention/procedure, and where it will take place.

Intervention or procedure	1	2	3	4
Reading the participant information.	1	1	5	Participants will read information about the research. This will allow them to make an informed decision about whether or not they would like to participate.
Providing informed consent.	1	1	5	Participants will be provided with a consent form to complete should they wish to participate in the study.
Completing questionnaire.	1	1	20	Participants will complete the questionnaire themselves.
Reading debriefing information.	1	1	5	Participants will read the debriefing information themselves following the study.

A21. How long do you expect each participant to be in the study in total?

Participants will be actively involved in the study for approximately 35 minutes, including reading the information, completing the consent form and questionnaires, and reviewing the debrief information. An individual who has previously experienced obsessive-compulsive difficulties completed all of the questionnaires in under eight minutes, suggesting that 35 minutes should be ample time for the majority of participants.

A22. What are the potential risks and burdens for research participants and how will you minimise them?

For all studies, describe any potential adverse effects, pain, discomfort, distress, intrusion, inconvenience or changes to lifestyle. Only describe risks or burdens that could occur as a result of participation in the research. Say what steps would be taken to minimise risks and burdens as far as possible.

Detailed personal and sensitive information will not be collected during this study, which will be asking participants to complete closed questionnaires. However, as the study asks participants to think about potentially distressing topics, such as different emotions and OCD, it is possible that participation in the study may lead to feelings of distress. Awareness of this potential risk will be raised in the initial information that proceeds the study.

Should a participant become distressed during the study, they will be able to cease participation immediately by exiting the questionnaire. Every page of questions in the study will have a link which ends the questionnaire immediately and directs the participant to the resource information; they are able to select this option at any time, should they experience distress during participation. The resource information includes details of supportive services, for example Samaritans and Sane Line, and will be made readily available to all participants, should they wish to discuss any distress experienced. Contact details necessary to access support from the charities OCD UK and OCD Action will also be provided. It may also be appropriate for participants to discuss their distress with their general practitioner/ medical professional, and this will also be highlighted as a potential way of accessing support. All participants will be provided with debriefing information following their participation in the study.

As participants will complete the questionnaire anonymously, the research team will not be able to offer any direct support to participants based on their responses (for example, if a participant was to score highly on the measure for depression). Should a participant choose to contact the research team directly (by phone or email) to report high

levels of distress, then an appropriate response and course of action will be discussed with the research supervisors. A decision will then be made regarding how best to ascertain the safety of the individual. Depending on the nature of the disclosure, this may involve encouraging the participant to actively seek support, or breaching confidentiality in order to pass the participant's details on to someone who can provide them with more urgent support, for example the emergency services. Where possible and safe to do so, the decision to breach confidentiality will be shared with the participant. Participants will be made aware of this possibility in the information sheet. It will also be pointed out that the parties on the resource sheet, for example OCD charities, may also have to breach confidentiality in the event that someone is deemed to be at risk of serious or immediate harm.

The study may be inconvenient for some participants to complete due to its length. Participants will be made aware of the anticipated time of completion prior to taking part.

A23. Will interviews/ questionnaires or group discussions include topics that might be sensitive, embarrassing or upsetting, or is it possible that criminal or other disclosures requiring action could occur during the study?

(●) Yes ( ) No

If Yes, please give details of procedures in place to deal with these issues:

Detailed personal and sensitive information will not be collected during this study, which will be asking participants to complete closed questionnaires. However, as the study asks participants to think about potentially distressing topics, such as self-disgust and OCD, it is possible that participation in the study may lead to feelings of distress. Awareness of this potential risk will be raised in the initial information that precedes the study. Should a participant become distressed during the study, they will be able to cease participation immediately by exiting the questionnaire. Details of supportive services, for example Samaritans and Sane Line, will be made available to all participants, should they wish to discuss any distress experienced. Contact details necessary to access support from the charities OCD UK and OCD Action will also be provided. It may also be appropriate for participants to discuss their distress with their general practitioner, and this will also be highlighted as a potential way of accessing support. All participants will be provided with debriefing information following their participation in the study.

As participants will complete the questionnaire anonymously, the research team will not be able to offer any direct support to participants based on their responses (for example, if a participant was to score highly on the measure for depression). Should a participant choose to contact the research team directly to report high levels of distress, then the appropriate response and course of action will be discussed with the research supervisors. Information regarding how to seek appropriate support will be provided to the participant. Confidentiality may have to be breached if this is deemed to be in the best interest and safety of the client or others. Participants will be informed of this on the participant information sheet and consent form.

A24. What is the potential for benefit to research participants?

There are many recognised benefits of taking part in research, for example gaining a sense of satisfaction after contributing to a worthwhile project. Participants may also benefit from feeling represented in the resultant research paper. Furthermore, participants may develop a greater insight into themselves after completing the various measures, and some participants may find this interesting.

A26. What are the potential risks for the researchers themselves? *(if any)*

None anticipated.

RECRUITMENT AND INFORMED CONSENT

In this section we ask you to describe the recruitment procedures for the study. Please give separate details for different study groups where appropriate.

A27-1. How will potential participants, records or samples be identified? Who will carry this out and what resources will be used?*For example, identification may involve a disease register, computerised search of GP records, or review of medical records. Indicate whether this will be done by the direct healthcare team or by researchers acting under arrangements with the responsible care organisation(s).*

Potential participants will be self-selected. Participants who learn about the study will volunteer to take part if they

wish to participate and meet the inclusion criteria.

A27-2. Will the identification of potential participants involve reviewing or screening the identifiable personal information of patients, service users or any other person?

○ Yes ◉ No

Please give details below:

A28. Will any participants be recruited by publicity through posters, leaflets, adverts or websites?

◉ Yes ○ No

If Yes, please give details of how and where publicity will be conducted, and enclose copy of all advertising material (with version numbers and dates).

The study will be advertised online, for example on the websites of OCD UK and OCD Action, and on social media, including professional Twitter and Facebook accounts.

A29. How and by whom will potential participants first be approached?

Participants will not be approached directly. Information of the study will be disseminated in the hope that the target audience will become aware of the project. Potential participants will then choose whether or not they would like to opt in to the study.

A30-1. Will you obtain informed consent from or on behalf of research participants?

◉ Yes ○ No

If you will be obtaining consent from adult participants, please give details of who will take consent and how it will be done, with details of any steps to provide information (a written information sheet, videos, or interactive material). Arrangements for adults unable to consent for themselves should be described separately in Part B Section 6, and for children in Part B Section 7.

If you plan to seek informed consent from vulnerable groups, say how you will ensure that consent is voluntary and fully informed.

Participants will be given full written information about the study before they begin the questionnaire. They will then record informed consent, if they chose to, by ticking a box in the initial part of the online questionnaire which will serve as a consent form.

If you are not obtaining consent, please explain why not.

Please enclose a copy of the information sheet(s) and consent form(s).

A30-2. Will you record informed consent (or advice from consultees) in writing?

◉ Yes ○ No

A31. How long will you allow potential participants to decide whether or not to take part?

Potential participants will have as much time as they require to decide whether or not they would like to take part in the study. However, the study will have an end date, after which participants will no longer be able to participate. Potential participants will be able to complete the study at any time prior to this date. Participants will be able to access the information about the study at any time.

A33-1. What arrangements have been made for persons who might not adequately understand verbal explanations or written information given in English, or who have special communication needs?*(e.g. translation, use of interpreters)*

Participants are welcome to source their own interpreters or supporters in order to complete the study. Unfortunately, these services will not be provided by the researchers due to limited resources. This may mean some individuals, for example those with limited literacy skills or computer access, may not be able to participate in the study. This will be reflected upon as a limitation of the study during the write-up.

A35. What steps would you take if a participant, who has given informed consent, loses capacity to consent during the study? *Tick one option only.*

- ○ The participant and all identifiable data or tissue collected would be withdrawn from the study. Data or tissue which is not identifiable to the research team may be retained.
- ○ The participant would be withdrawn from the study. Identifiable data or tissue already collected with consent would be retained and used in the study. No further data or tissue would be collected or any other research procedures carried out on or in relation to the participant.
- ○ The participant would continue to be included in the study.
- ○ Not applicable – informed consent will not be sought from any participants in this research.
- ◉ Not applicable – it is not practicable for the research team to monitor capacity and continued capacity will be assumed.

Further details:

The study will only last for around 35 minutes so changes in capacity during this time are not anticipated. Once data is submitted it will be unidentifable and it will not be possible to retract the data. Participants will be self-reporting whether or not they consent to be part in the study; capacity will be assumed rather than being assessed directly as in line with BPS recommendations (BPS, 2005). All participants will be adults.

CONFIDENTIALITY

In this section, personal data means any data relating to a participant who could potentially be identified. It includes pseudonymised data capable of being linked to a participant through a unique code number.

Storage and use of personal data during the study

A36. Will you be undertaking any of the following activities at any stage (including in the identification of potential participants)? *(Tick as appropriate)*

- ☐ Access to medical records by those outside the direct healthcare team
- ☐ Access to social care records by those outside the direct social care team
- ☑ Electronic transfer by magnetic or optical media, email or computer networks
- ☐ Sharing of personal data with other organisations
- ☐ Export of personal data outside the EEA
- ☐ Use of personal addresses, postcodes, faxes, emails or telephone numbers
- ☐ Publication of direct quotations from respondents
- ☐ Publication of data that might allow identification of individuals
- ☐ Use of audio/visual recording devices
- ☑ Storage of personal data on any of the following:
  - ☐ Manual files (includes paper or film)
  - ☐ NHS computers
  - ☐ Social Care Service computers
  - ☐ Home or other personal computers
  - ☑ University computers

☐ Private company computers

☐ Laptop computers

Further details:
Data will be transferred from the survey software to the university computers where it will be stored securely on the protected filespace.

A37. Please describe the physical security arrangements for storage of personal data during the study?

No identifiable data will be routinely recorded so all data will be anonymous. Should any participants choose to share identifiable data with the research team, for example by contacting them directly over email, then this personal information will be stored securely in a password protected area on a secure university server. Any identifiable data received will not be linked to the individual's questionnaire responses.

Data will be stored safely and securely in compliance with the Data Protection Act (UK Parliament, 1998). The Qualtrics Software Survey offers the "highest levels of data security" (Qualtrics, 2015). The SPSS (22.0) database storing the data will be held within my password protected filespace on the University server, which only I have access to. Any written work pertaining to the confidential data will also be stored in this way.

I will have custodianship of all the study data; this will be handed over to the DClinPsy Research Director on my completion of the training programme (August 2017). All stored data will be deleted 10 years after the completion of the study, and no information will be used in future research.

A38. How will you ensure the confidentiality of personal data?*Please provide a general statement of the policy and procedures for ensuring confidentiality, e.g. anonymisation or pseudonymisation of data.*

No personally identifiable data will be collected from participants. If participants wish to contact the research team for any reason then this will be at their discretion. Their identity will be kept confidential (unless confidentiality needs to be breached due to concerns about safety - see section A6-2) by the research team and correspondence will be stored securely on the protected University server (see data storage). Participants will be welcome to contact the research team anonymously if they wish (for example by not giving their name or using an anonymous email address). If participants do contact the research team in order to discuss the study, and share their identity in this process, then their identity will not be linked to their responses on the questionnaire.

A40. Who will have access to participants' personal data during the study? *Where access is by individuals outside the direct care team, please justify and say whether consent will be sought.*

It will not be mandatory for any personal information to be shared by the participants.

The research team will have access to the questionnaire data. The Chief Investigator will have access to any personal data which participants wish to share by contacting the research team- this will not be linked to the questionnaire responses.

Storage and use of data after the end of the study

A41. Where will the data generated by the study be analysed and by whom?

The data will be analysed at Lancaster University by the Chief Investigator with assistance and support from the research team.

A42. Who will have control of and act as the custodian for the data generated by the study?

	Title Forename/Initials Surname
	Miss Lucy Rathbone
Post	Trainee Clinical Psychologist

Qualifications
Work Address Division of Health Research
Lancaster University

Post Code LA1 4YG
Work Email l.rathbone@lancaster.ac.uk
Work Telephone 07791730949
Fax

A43. How long will personal data be stored or accessed after the study has ended?

- ○ Less than 3 months
- ○ 3 – 6 months
- ○ 6 – 12 months
- ○ 12 months – 3 years
- ◉ Over 3 years

If longer than 12 months, please justify:
Data will be saved for 10 years in case it is required to be accessed in future.

A44. For how long will you store research data generated by the study?

Years: 10
Months: 0

A45. Please give details of the long term arrangements for storage of research data after the study has ended.*Say where data will be stored, who will have access and the arrangements to ensure security.*

Custodianship of all the study data will be handed over to the DClinPsy Research Director on my completion of the training programme (August 2017). All stored data will be deleted 10 years after the completion of the study.

INCENTIVES AND PAYMENTS

A46. Will research participants receive any payments, reimbursement of expenses or any other benefits or incentives for taking part in this research?

○ Yes ◉ No

A47. Will individual researchers receive any personal payment over and above normal salary, or any other benefits or incentives, for taking part in this research?

○ Yes ◉ No

A48. Does the Chief Investigator or any other investigator/collaborator have any direct personal involvement (e.g. financial, share holding, personal relationship etc.) in the organisations sponsoring or funding the research that may give rise to a possible conflict of interest?

○ Yes ◉ No

NOTIFICATION OF OTHER PROFESSIONALS

A49-1. Will you inform the participants' General Practitioners (and/or any other health or care professional responsible for their care) that they are taking part in the study?

○ Yes ◉ No

If Yes, please enclose a copy of the information sheet/letter for the GP/health professional with a version number and date.

PUBLICATION AND DISSEMINATION

A50. Will the research be registered on a public database?

○ Yes ◉ No

Please give details, or justify if not registering the research.

Registration of research studies is encouraged wherever possible.
You may be able to register your study through your NHS organisation or a register run by a medical research charity, or publish your protocol through an open access publisher. If you are aware of a suitable register or other method of publication, please give details. If not, you may indicate that no suitable register exists. Please ensure that you have entered registry reference number(s) in question A5-1.

A51. How do you intend to report and disseminate the results of the study? *Tick as appropriate:*

- ☑ Peer reviewed scientific journals
- ☑ Internal report
- ☑ Conference presentation
- ☐ Publication on website
- ☐ Other publication
- ☐ Submission to regulatory authorities
- ☐ Access to raw data and right to publish freely by all investigators in study or by Independent Steering Committee on behalf of all investigators
- ☐ No plans to report or disseminate the results
- ☐ Other (please specify)

A52. If you will be using identifiable personal data, how will you ensure that anonymity will be maintained when publishing the results?

Personal data will not be used.

A53. Will you inform participants of the results?

◉ Yes ○ No

Please give details of how you will inform participants or justify if not doing so.
All organisations which helped to disseminate the questionnaire will be given copies of a summary report to share where possible. Participants will be able to access this if they choose. They will be made aware of this potential opportunity to see the results of the study. Participants will be provided with the email address of the Chief Investigator and will be able to directly request copies of the results if they wish. Participants will be made aware that, in the event that the research is published, it will appear on the ResearchGate account of the main researcher.

5. Scientific and Statistical Review

A54. How has the scientific quality of the research been assessed? *Tick as appropriate:*

- ☐ Independent external review
- ☐ Review within a company
- ☐ Review within a multi−centre research group
- ☑ Review within the Chief Investigator's institution or host organisation
- ☑ Review within the research team
- ☑ Review by educational supervisor
- ☐ Other

Justify and describe the review process and outcome. If the review has been undertaken but not seen by the researcher, give details of the body which has undertaken the review:
The proposed research project has been anonymously peer reviewed. A letter confirming this process has been attached. The project has also been reviewed by all members of the research team as well as the research support officer from the research ethics department of Lancaster University's Faculty of Health and Medicine.

For all studies except non-doctoral student research, please enclose a copy of any available scientific critique reports, together with any related correspondence.

For non-doctoral student research, please enclose a copy of the assessment from your educational supervisor/ institution.

A56. How have the statistical aspects of the research been reviewed? *Tick as appropriate:*

- ☐ Review by independent statistician commissioned by funder or sponsor
- ☐ Other review by independent statistician
- ☐ Review by company statistician
- ☐ Review by a statistician within the Chief Investigator's institution
- ☐ Review by a statistician within the research team or multi−centre group
- ☑ Review by educational supervisor
- ☐ Other review by individual with relevant statistical expertise
- ☐ No review necessary as only frequencies and associations will be assessed – details of statistical input not required

In all cases please give details below of the individual responsible for reviewing the statistical aspects. If advice has been provided in confidence, give details of the department and institution concerned.

	Title Forename/Initials Surname
	Dr Jane Simpson
Department	Division of Health Research
Institution	Lancaster University
Work Address	Furness College
	Bailrigg
	Lancaster
Post Code	LA1 4YG
Telephone	01524592754
Fax	
Mobile	
E-mail	j.simpson2@lancaster.ac.uk

Please enclose a copy of any available comments or reports from a statistician.

A57. What is the primary outcome measure for the study?

The study intends to look at differences in scores pertaining to washing and checking OCD presentations. Therefore, it requires a measure which breaks down OCD into the different compulsion-types. The OCI-R measure (Foa et al., 2002) generates a score for each of the seven most commonly encountered OCD presentations. These are washing, checking, doubting, ordering, obsessing, hoarding, and mental neutralizing (Foa, Kozak, Salkovskis, Coles, & Amir, 1998). The OCI-R has been chosen due to its relative brevity (when compared to similar measures), high internal validity and previous use in similar studies (Abramowitz & Deacon, 2006; Raines et al., 2014).

A58. What are the secondary outcome measures?*(if any)*

N/A

A59. What is the sample size for the research? *How many participants/samples/data records do you plan to study in total? If there is more than one group, please give further details below.*

Total UK sample size:

Total international sample size (including UK): 108

Total in European Economic Area:

Further details:
A minimum of 108 participants will be sought in order to generate adequate statistical power should a multivariate multiple regression be used to analyse the data.

This will also ensure that there is sufficient statistical power to complete a logistic regression, should this be seen as a more suitable method of analysis. A power calculation (see below) has suggested that 67 participants will be required to conduct a meaningful logistic regression analysis, so recruiting 108 participants will ensure that both potential methods of analysis will be eligible to take place.

A60. How was the sample size decided upon? *If a formal sample size calculation was used, indicate how this was done, giving sufficient information to justify and reproduce the calculation.*

The power calculation for the logistic regression was completed using the G*Power 3.1 software programme. This power calculation considered a two-tailed logistic regression analysis with an Odds ratio of 2.33 (determined by calculations completed within the software programme), a power value of 0.8 and an alpha value of 0.05. Due to the limited existing research in this area the Odds ratio was not able to be derived from previous research. The required sample size for this method of analysis is 67.

The power calculation for the multivariate multiple regression was completed using an online calculator (http://www.danielsoper.com/statcalc/calculator.aspx?id=1). The calculation estimated an anticipated effect size of 0.15, a desired power level of 0.8, a probability level of 0.05 and eight predictors. The required sample size for this method of analysis is 108.

A61. Will participants be allocated to groups at random?

○ Yes ◉ No

A62. Please describe the methods of analysis (statistical or other appropriate methods, e.g. for qualitative research) by which the data will be evaluated to meet the study objectives.

A regression analysis will be used to analyse the data. The specific analysis will be decided following collection and consideration of the data. Once all responses have been collected, the data will be reviewed by the research team in order to identify how the data best lends itself to regression analysis. Both a logistic regression analysis and a multivariate regression analysis will be applied to the data, in order to ascertain which will be the most suitable method for analysis to be used in the write-up of the study.

If it is suitable to categorise the data into “washer” and “checker” groups, then a logistic regression will be used with

compulsion type as the outcome variable and self-disgust as a predictor, along with other variables previously found to have differentiated between compulsion types (McKay et al., 2004).

If the data lends itself to being categorised meaningfully in this way, then we will decide a priori a cut-off for converting the continuous variables into categorical variables. This cut-off will aim to be justified and both theoretically and clinically meaningful. Alternatively, it may be necessary to impose arbitrary categorisation-rules using the spread of the data, for example using median or mean splits in combination with the standard deviation. Again, this decision will need to be made following review of the data.

If it is not suitable to categorise scores into "washer" and "checker" categories, then scores within these domains on the Obsessive Compulsive Inventory- Revised (OCI-R; Foa et al., 2002) will be left as continuous variables. In this instance, a multivariate multiple regression will be used to analyse the data and compare the strength of the regression slopes of self-disgust, predicting either washing or checking symptoms.

6. MANAGEMENT OF THE RESEARCH

A63. Other key investigators/collaborators. *Please include all grant co−applicants, protocol co−authors and other key members of the Chief Investigator's team, including non-doctoral student researchers.*

	Title Forename/Initials Surname
	Dr Jane Simpson
Post Qualifications	Education Director for the Division of Clinical Psychology
Employer	Lancaster University
Work Address	Division of Clinical Psychology Faculty of Health and Medicine Furness College, Lancaster University
Post Code	LA1 4YG
Telephone	01524 592858
Fax	
Mobile	
Work Email	j.simpson2@lancaster.ac.uk

	Title Forename/Initials Surname
	Dr Philip Powell
Post Qualifications	
Employer	University of Sheffield
Work Address	InstEAD, Dept. of Economics University of Sheffield Sheffield
Post Code	S1 4DT
Telephone	01142 229657
Fax	
Mobile	
Work Email	p.a.powell@sheffield.ac.uk

	Title Forename/Initials Surname
	Dr Pete Greasley
Post Qualifications	

Employer	Lancaster University
Work Address	Division of Clinical Psychology
	Faculty of Health and Medicine
	Furness College, Lancaster University
Post Code	LA1 4YG
Telephone	01524 592858
Fax	
Mobile	
Work Email	p.greasley@lancaster.ac.uk

A64. Details of research sponsor(s)

A64-1. Sponsor

Lead Sponsor

Status:
- ○ NHS or HSC care organisation
- ◉ Academic
- ○ Pharmaceutical industry
- ○ Medical device industry
- ○ Local Authority
- ○ Other social care provider (including voluntary sector or private organisation)
- ○ Other

Commercial status: Non-Commercial

If Other, please specify: Lancaster University

Contact person

Name of organisation	Lancaster University Research Support Office
Given name	Diane
Family name	Hopkins
Address	Research and Contracts Support Office, B Floor, Bowland Main, Lancaster University
Town/city	Lancaster
Post code	LA1 4YW
Country	UNITED KINGDOM
Telephone	01524 592838
Fax	
E-mail	ethics@lancaster.ac.uk

Is the sponsor based outside the UK?

○ Yes ◉ No

Under the Research Governance Framework for Health and Social Care, a sponsor outside the UK must appoint a legal representative established in the UK. Please consult the guidance notes.

A65. Has external funding for the research been secured?

- [ ] Funding secured from one or more funders
- [ ] External funding application to one or more funders in progress
- [x] No application for external funding will be made

What type of research project is this?

- (•) Standalone project
- ( ) Project that is part of a programme grant
- ( ) Project that is part of a Centre grant
- ( ) Project that is part of a fellowship/ personal award/ research training award
- ( ) Other

Other – please state:

A66. Has responsibility for any specific research activities or procedures been delegated to a subcontractor (other than a co-sponsor listed in A64-1) ? *Please give details of subcontractors if applicable.*

( ) Yes (•) No

A67. Has this or a similar application been previously rejected by a Research Ethics Committee in the UK or another country?

(•) Yes ( ) No

If Yes, please give details of each rejected application:

Name of Research Ethics Committee or ethics authority: Liverpool East NRES Committee
Decision and date taken: Unethical Favourable Opinion 18/08/2016
Research ethics committee reference number: 16/NW/0613

Name of Research Ethics Committee or ethics authority: Essex NRES Committee
Decision and date taken: Provisional Opinion 13/10/2016
Research ethics committee reference number: 16/EE/0441

Please provide a copy of the unfavourable opinion letter(s). You should explain in your answer to question A6-2 how the reasons for the unfavourable opinion have been addressed in this application.

A69-1. How long do you expect the study to last in the UK?

Planned start date: 24/10/2016
Planned end date: 31/05/2017
Total duration:
Years: 0 Months: 7 Days: 8

A71-1. Is this study?

(•) Single centre
( ) Multicentre

A71-2. Where will the research take place? *(Tick as appropriate)*

- [x] England
- [ ] Scotland
- [ ] Wales
- [ ] Northern Ireland
- [ ] Other countries in European Economic Area

Total UK sites in study 1

Does this trial involve countries outside the EU?

( ) Yes (•) No

A72. Which organisations in the UK will host the research? *Please indicate the type of organisation by ticking the box and give approximate numbers if known:*

[ ] NHS organisations in England	
[ ] NHS organisations in Wales	
[ ] NHS organisations in Scotland	
[ ] HSC organisations in Northern Ireland	
[ ] GP practices in England	
[ ] GP practices in Wales	
[ ] GP practices in Scotland	
[ ] GP practices in Northern Ireland	
[ ] Joint health and social care agencies (eg community mental health teams)	
[ ] Local authorities	
[ ] Phase 1 trial units	
[ ] Prison establishments	
[ ] Probation areas	
[ ] Independent (private or voluntary sector) organisations	
[x] Educational establishments	1
[ ] Independent research units	
[ ] Other (give details)	

Total UK sites in study: 1

A73-1. Will potential participants be identified through any organisations other than the research sites listed above?

(•) Yes ( ) No

A73-2. If yes, will any of these organisations be NHS organisations?

( ) Yes (•) No

If yes, details should be given in Part C.

A74. What arrangements are in place for monitoring and auditing the conduct of the research?

The Lancaster University research team will monitor and audit the conduct of the research through regular supervision of the project and the provision of multiple draft-reads.

A76. Insurance/ indemnity to meet potential legal liabilities

***Note:* in this question to NHS indemnity schemes include equivalent schemes provided by Health and Social Care (HSC) in Northern Ireland**

A76-1. What arrangements will be made for insurance and/or indemnity to meet the potential legal liability of the sponsor(s) for harm to participants arising from the management of the research? *Please tick box(es) as applicable.*

Note: Where a NHS organisation has agreed to act as sponsor or co-sponsor, indemnity is provided through NHS schemes. Indicate if this applies (there is no need to provide documentary evidence). For all other sponsors, please describe the arrangements and provide evidence.

☐ NHS indemnity scheme will apply (NHS sponsors only)

☑ Other insurance or indemnity arrangements will apply (give details below)

Lancaster University legal liability cover will apply.

Please enclose a copy of relevant documents.

A76-2. What arrangements will be made for insurance and/ or indemnity to meet the potential legal liability of the sponsor(s) or employer(s) for harm to participants arising from the design of the research? *Please tick box(es) as applicable.*

Note: Where researchers with substantive NHS employment contracts have designed the research, indemnity is provided through NHS schemes. Indicate if this applies (there is no need to provide documentary evidence). For other protocol authors (e.g. company employees, university members), please describe the arrangements and provide evidence.

☐ NHS indemnity scheme will apply (protocol authors with NHS contracts only)

☑ Other insurance or indemnity arrangements will apply (give details below)

Lancaster University legal liability cover will apply.

Please enclose a copy of relevant documents.

A76-3. What arrangements will be made for insurance and/ or indemnity to meet the potential legal liability of investigators/collaborators arising from harm to participants in the conduct of the research?

Note: Where the participants are NHS patients, indemnity is provided through the NHS schemes or through professional indemnity. Indicate if this applies to the whole study (there is no need to provide documentary evidence). Where non-NHS sites are to be included in the research, including private practices, please describe the arrangements which will be made at these sites and provide evidence.

☐ NHS indemnity scheme or professional indemnity will apply (participants recruited at NHS sites only)

☑ Research includes non-NHS sites (give details of insurance/ indemnity arrangements for these sites below)

Lancaster University legal liability cover will apply.

Please enclose a copy of relevant documents.

A78. Could the research lead to the development of a new product/process or the generation of intellectual property?

◯ Yes ◉ No ◯ Not sure

PART C: Overview of research sites

Please enter details of the host organisations (Local Authority, NHS or other) in the UK that will be responsible for the research sites. *For NHS sites, the host organisation is the Trust or Health Board. Where the research site is a primary care site, e.g. GP practice, please insert the host organisation (PCT or Health Board) in the Institution row and insert the research site (e.g. GP practice) in the Department row.*

Investigator identifier	Research site	Investigator Name

PART D: Declarations

D1. Declaration by Chief Investigator

1. The information in this form is accurate to the best of my knowledge and belief and I take full responsibility for it.

2. I undertake to abide by the ethical principles underlying the Declaration of Helsinki and good practice guidelines on the proper conduct of research.

3. If the research is approved I undertake to adhere to the study protocol, the terms of the full application as approved and any conditions set out by review bodies in giving approval.

4. I undertake to notify review bodies of substantial amendments to the protocol or the terms of the approved application, and to seek a favourable opinion from the main REC before implementing the amendment.

5. I undertake to submit annual progress reports setting out the progress of the research, as required by review bodies.

6. I am aware of my responsibility to be up to date and comply with the requirements of the law and relevant guidelines relating to security and confidentiality of patient or other personal data, including the need to register when necessary with the appropriate Data Protection Officer. I understand that I am not permitted to disclose identifiable data to third parties unless the disclosure has the consent of the data subject or, in the case of patient data in England and Wales, the disclosure is covered by the terms of an approval under Section 251 of the NHS Act 2006.

7. I understand that research records/data may be subject to inspection by review bodies for audit purposes if required.

8. I understand that any personal data in this application will be held by review bodies and their operational managers and that this will be managed according to the principles established in the Data Protection Act 1998.

9. I understand that the information contained in this application, any supporting documentation and all correspondence with review bodies or their operational managers relating to the application:

    - Will be held by the REC (where applicable) until at least 3 years after the end of the study; and by NHS R&D offices (where the research requires NHS management permission) in accordance with the NHS Code of Practice on Records Management.
    - May be disclosed to the operational managers of review bodies, or the appointing authority for the REC (where applicable), in order to check that the application has been processed correctly or to investigate any complaint.
    - May be seen by auditors appointed to undertake accreditation of RECs (where applicable).
    - Will be subject to the provisions of the Freedom of Information Acts and may be disclosed in response to requests made under the Acts except where statutory exemptions apply.
    - May be sent by email to REC members.

10. I understand that information relating to this research, including the contact details on this application, may be held on national research information systems, and that this will be managed according to the principles established in the Data Protection Act 1998.

11. Where the research is reviewed by a REC within the UK Health Departments Research Ethics Service, I understand that the summary of this study will be published on the website of the National Research Ethics Service (NRES), together with the contact point for enquiries named below. Publication will take place no earlier than 3 months after issue of the ethics committee's final opinion or the withdrawal of the application.

Contact point for publication*(Not applicable for R&D Forms)*

NRES would like to include a contact point with the published summary of the study for those wishing to seek further information. We would be grateful if you would indicate one of the contact points below.

◉ Chief Investigator

- ◯ Sponsor
- ◯ Study co-ordinator
- ◯ Student
- ◯ Other – please give details
- ◯ None

Access to application for training purposes *(Not applicable for R&D Forms)*
Optional – please tick as appropriate:

☐ I would be content for members of other RECs to have access to the information in the application in confidence for training purposes. All personal identifiers and references to sponsors, funders and research units would be removed.

Signature: .....

Print Name: Lucy Rathbone

Date: 06/09/2016 *(dd/mm/yyyy)*

D2. Declaration by the sponsor's representative

If there is more than one sponsor, this declaration should be signed on behalf of the co−sponsors by a representative of the lead sponsor named at A64-1.

I confirm that:

1. This research proposal has been discussed with the Chief Investigator and agreement in principle to sponsor the research is in place.

2. An appropriate process of scientific critique has demonstrated that this research proposal is worthwhile and of high scientific quality.

3. Any necessary indemnity or insurance arrangements, as described in question A76, will be in place before this research starts. Insurance or indemnity policies will be renewed for the duration of the study where necessary.

4. Arrangements will be in place before the study starts for the research team to access resources and support to deliver the research as proposed.

5. Arrangements to allocate responsibilities for the management, monitoring and reporting of the research will be in place before the research starts.

   Please note: *The declarations below do not form part of the application for approval above. They will not be considered by the Research Ethics Committee.*

6. Where the research is reviewed by a REC within the UK Health Departments Research Ethics Service, I understand that the summary of this study will be published on the website of the National Research Ethics Service (NRES), together with the contact point for enquiries named in this application. Publication will take place no earlier than 3 months after issue of the ethics committee's final opinion or the withdrawal of the application.

7. Specifically, for submissions to the Research Ethics Committees (RECs) I declare that any and all clinical trials approved by the HRA since 30th September 2013 (as defined on IRAS categories as clinical trials of medicines, devices, combination of medicines and devices or other clinical trials) have been registered on a publically accessible register in compliance with the HRA registration requirements for the UK, or that any deferral granted by the HRA still applies.

Signature: .....

Print Name: Diane Hopkins

Post: Research Integrity and Governance Officer

Organisation: Lancaster University

Date: 06/09/2016 *(dd/mm/yyyy)*

D3. Declaration for student projects by academic supervisor(s)

1. I have read and approved both the research proposal and this application. I am satisfied that the scientific content of the research is satisfactory for an educational qualification at this level.

2. I undertake to fulfil the responsibilities of the supervisor for this study as set out in the Research Governance Framework for Health and Social Care.

3. I take responsibility for ensuring that this study is conducted in accordance with the ethical principles underlying the Declaration of Helsinki and good practice guidelines on the proper conduct of research, in conjunction with clinical supervisors as appropriate.

4. I take responsibility for ensuring that the applicant is up to date and complies with the requirements of the law and relevant guidelines relating to security and confidentiality of patient and other personal data, in conjunction with clinical supervisors as appropriate.

Academic supervisor 1

Signature:	.....
Print Name:	Dr Jane Simpson
Post:	Director of Education
Organisation:	Lancaster University
Date:	06/09/2016 *(dd/mm/yyyy)*

Academic supervisor 2

Signature:	.....
Print Name:	Dr Pete Greasley
Post:	Teaching Fellow
Organisation:	Lancaster University
Date:	06/09/2016 *(dd/mm/yyyy)*

Appendix A

Peer Review Letter

Doctorate in Clinical Psychology | Lancaster University

Monday 11th July 2016

Dear Lucy

This letter is to confirm that your research proposal entitled:

Is self-disgust a predictor of compulsion behaviours in individuals who report obsessive-compulsive experiences?

has been anonymously peer reviewed by the research team within the Doctorate in Clinical Psychology programme, Lancaster University. The Research Director has agreed that the proposed study is suitable to proceed and submit for ethical review.

Yours sincerely

Professor Bill Sellwood
Programme and Research Director
Lancaster University Doctorate in Clinical Psychology
Faculty of Health and Medicine - Doctorate in Clinical Psychology
Division of Health Research, Furness College
Lancaster University, Lancaster, LA1 4YG

Appendix B

Lancaster University Sponsorship Letter

Applicant name: Lucy Rathbone
Division: DHR

21 September 2016

Dear Lucy,

Re: Is self-disgust a predictor of compulsive behaviours in individuals who report obsessive-compulsive experiences?

The University of Lancaster undertakes to perform the role of sponsor in the matter of the work described in the accompanying grant application. As sponsor we assume responsibility for monitoring and enforcement of research governance. As principal investigator you will confirm that the institution's obligations are met by ensuring that, before the research commences and during the full term of the grant, all the necessary legal and regulatory requirements are met in order to conduct the research, and all the necessary licenses and approvals have been obtained. The Institution has in place formal procedures for managing the process for obtaining any necessary or appropriate ethical approval for this grant. Full ethical approval must be in place before the research commences and should be reviewed at all relevant times during the grant.

Yours sincerely,

PP Professor Roger Pickup
Associate Dean for Research
Chair Faculty of Health and Medicine Research Ethics Committee.

CC Dr Diane Hopkins, Secretary to FHMREC

Appendix C

Unfavourable NHS REC Opinion

Health Research Authority

North West - Liverpool East Research Ethics Committee

Barlow House
3rd Floor
4 Minshull Street
Manchester
M1 3DZ

01 September 2016

Miss Lucy Rathbone
Division of Health Research
Lancaster University
LA1 4YG

Dear Miss Rathbone

Study title:	**Is self-disgust a predictor of compulsive behaviours in individuals who report obsessive-compulsive experiences?**
REC reference:	**16/NW/0613**
IRAS project ID:	**207166**

The Research Ethics Committee reviewed the above application at the meeting held on 18 August 2016. Thank you for attending to discuss the application.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. The expectation is that this information will be published for all studies that receive an ethical opinion but should you wish to provide a substitute contact point, wish to make a request to defer, or require further information, please contact the REC Manager Matt Rogerson, nrescommittee.northwest-liverpooleast@nhs.net. Under very limited circumstances (e.g. for student research which has received an unfavourable opinion), it may be possible to grant an exemption to the publication of the study.

Ethical opinion

The members of the Committee present decided to issue an unfavourable opinion for the following reasons:

1. The Committee felt that elements of the design of the study were flawed, and advise the researcher to reconsider the study with more input from their academic supervisors, with more emphasis on the study design from a participant's point of view, before resubmitting.

    a. The Committee felt that the lack of equipoise in the study question was not appropriate, and that the study should not be presented as though the researcher already knew what they expected the result to be. The Committee considered a study examining the relationship between self-disgust and compulsive behaviour to be more appropriate.

    b. The Committee felt that the online nature of the questionnaire was too open to potential abuses, such as the same respondents taking the questionnaire multiple times. The Committee felt that the researcher should pay closer attention to this and develop a management protocol to deal with it.

    c. The Committee requested that the researcher determine a single sample size, potentially the higher of the two described, and then carry out both sets of statistical analysis on the final data. The Committee felt the statistical analysis of the study to be fundamental to the study, and that it had not been adequately thought through by the researcher.

    d. The Committee noted that there were certain mechanisms inserted that could not be acted upon due to the study design affording complete anonymity to participants. The Committee felt that, were the researcher to pseudo anonymize data then they would be better placed to manage this.

2. The Committee felt that participant safety had not been properly addressed with regards to the ability of the researcher to raise concerns about responses received. The Committee stated that the researcher could not possibly act upon any alarming responses if they had no way of knowing who had left them.

I regret to inform you therefore that the application is not approved.

If you would find it helpful to discuss any of the matters raised above or seek further clarification from a member of the Committee, you are welcome to contact Matt Rogerson, REC Manager.

Options for further ethical review

You may submit a new application for ethical review, taking into account the Committee's concerns. You should enter details of this application on the application form and include a copy of this letter, together with a covering letter explaining what

changes have been made from the previous application.

The application should be booked through the Central Booking Service (CBS) and would be allocated for review in the normal way.

Alternatively, you may appeal against the decision of the Committee by seeking a second opinion on this application from another Research Ethics Committee. The appeal would be based on the application form and supporting documentation reviewed by this Committee, without amendment. If you wish to appeal, you should notify the relevant Research Ethics Service manager (see below) in writing within 90 days of the date of this letter. If the appeal is allowed, another REC will be appointed to give a second opinion within 60 days and the second REC will be provided with a copy of the application, together with this letter and other relevant correspondence on the application. You will be notified of the arrangements for the meeting of the second REC and will be able to attend and/or make written representations if you wish to do so.

The contact point for appeals is:

Catherine Blewett
HRA Improvement & Liaison Manager
Health Research Authority

Email: hra.appeals@nhs.net

Summary of discussion at the meeting (if appropriate)

The Committee invited Lucy Rathbone into the meeting.

Social or scientific value; scientific design and conduct of the study

The Committee questioned the lack of equipoise in the hypothesis. The Committee would expect to see an open-ended question without already knowing what they expect the answer to be. The Committee drew reference to the study debrief sheet, which stated “We are hypothesising that individuals who score higher on the questionnaire which measures self-disgust will be more likely to engage in ‘washing-type’ compulsions than ‘checking-type’ compulsions.”

You confirmed that you had considered this, and thought it appropriate to suggest one direction, rather than stick to a non-directional hypothesis.

The Committee suggested that describing the study as “examining the relationship between” would be advisable.

The Committee asked you if the question was one that had already been answered.

You explained that self-disgust was a novel concept, and that while there is some indication of a link there was no set study precedent.

The Committee asked you to explain why you had posited two different sample sizes and forms of statistical analysis. The Committee explained they would expect to see one.

You explained that the data collected would determine the analysis that best fits it.

The Committee asked you when you would make that decision.

You explained that you would make the decision at the end, although you could potentially do so as you go along.

The Committee suggested it would be better to state the sample size as the higher number (108) and then carry out both statistical analysis methods.

You agreed to take this on board.

Recruitment arrangements and access to health information, and fair participant selection

The Committee asked how you intended to recruit to the study.
You clarified that you had contacted three OCD charities, who had agreed to receive and display the advert and participant information leaflet on their internet sites and social media – namely their Twitter accounts
.
You explained that you could potentially give hard copies to the charities as well, but would only do this as a second stage of recruitment if the first stage does not yield enough data.

The Committee asked how you would combat abuse of the online element – such as those without an appropriate diagnosis accessing.

You explained that the questionnaires used recommend a clinical cut off score of 21. You went on to clarify that those with a score below 21 would be filtered out by their answers to the preliminary questionnaire.

The Committee asked if this was in the study protocol.

You confirmed that this was listed in their exclusion criteria.

The Committee asked how you would combat persons taking the online questionnaire more than once. The Committee considered that, if persons exhibited compulsive behaviours they may feel the need to take the test multiple times.

You confirmed that you had not thought of this. You considered the option of identifying via IP address.

The Committee suggested that this might then limit, for instance, users of shared computer terminals (in libraries) or shared access WIFI.

The Committee suggested you might add a question to the test along the lines of "Have you previously completed this test".

You agreed to consider the suggestion.

Care and protection of research participants; respect for potential and enrolled participants' welfare and dignity

The Committee considered the potential for participant distress, and asked how you

planned to manage this.

You explained that you felt the Participant Information Leaflet gave potential participants a clear indication of what to expect. You further explained that the debrief sheet and resource list would be displayed prior to the start of the questionnaire, and that participants would be welcome to exit the questionnaire at any time. You confirmed that the debrief sheet and resource list would be displayed again at the end of the questionnaire.

The Committee asked how this information would be seen by participants.

You explained that it would be displayed as in the submitted documents – with onscreen text that participants would need to click past to reach the consent screen, then the questionnaire, then the debrief again.

The Committee suggested that you had not afforded participants enough time to read the patient information leaflet and give consent and complete the questionnaire (30 minutes in total).

You explained that you did not know how to predict the amount of time needed, but were willing to give participants as long as they wanted.

The Committee felt that, in stating that “The study should take around 20 minutes to complete.” In the Participant Information Sheets, you may be putting undue pressure on participants.

Informed consent process and the adequacy and completeness of participant information

The Committee noted that you had ticked “No” when asked on the IRAS form if you would record informed consent in writing. The Committee suggested that this may have been a mistake.

You confirmed that consent would be given via a tick box.

The Committee explained that this would constitute written consent.

The Committee noted that while the hard copy of the consent form featured a tick box next to each item, the online version did not.

You explained that you had been informed this was appropriate by your University Ethics department.

The Committee noted that item seven on the Consent Form stated:

“I understand that any information I give will remain strictly confidential and anonymous unless it is thought that there is a risk of harm to myself or others, in which case the principal investigator may need to share this information with her research supervisor.”

The Committee asked how you could act upon this if the study was anonymous.

You explained that your University had insisted you add this item to the Consent form.

The Committee considered this impossible to act upon.

You explained that you could share any alarming results with your supervisor.

The Committee pointed out that you would have no idea who had left the alarming responses, so would be unable to report or intervene.

You agreed that the statement could not be acted upon.

The Committee asked if participants would have an opportunity to ask questions of you.

You explained that you have provided an email address in the Participant Information Leaflet.

The Committee noted that this was only provided in the paper version, but not the online version. The Committee considered that it should be on both.

You explained that you would rather allow participants anonymity wherever possible. The Committee suggested that, were you to pseudo anonymise the participants' responses rather than completely anonymise, you may be able to act upon these issues.

Suitability of the applicant and supporting staff

The Committee asked you if your academic supervisor was unable to attend the meeting with you.

You explained that you had sent out an open invitation to your academic supervisors, but none had responded.

Documents reviewed

The documents reviewed at the meeting were:

Document	*Version*	*Date*
Confirmation of any other Regulatory Approvals (e.g. NIGB) and all correspondence [Peer Review Letter from Lancaster University]		
Contract/Study Agreement [Thesis Contract]	1	21 July 2016
Copies of advertisement materials for research participants [Recruitment Advert]	1	21 July 2016
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Sponsor's Insurance Certificate]	1	01 August 2015
IRAS Application Form [IRAS_Form_26072016]		26 July 2016
IRAS Application Form XML file [IRAS_Form_26072016]		26 July 2016
IRAS Checklist XML [Checklist_29072016]		29 July 2016
Letter from sponsor [Letter From Sponsor]		
Other [Debreif Information and Resource Sheet]	1	21 July 2016
Other [Sponsor's Insurance Policy Document 1]	1	20 July 2015

Other [Sponsor's Insurance Policy Document 2]	1	13 August 2015
Participant consent form [Consent Form - Hard Copy]	1	21 July 2016
Participant consent form [Consent Form - Online Version]	1	21 July 2016
Participant information sheet (PIS) [Participant Information - Hard Copy]	1	21 July 2016
Participant information sheet (PIS) [Participant Information - Online Version]	1	21 July 2016
Research protocol or project proposal [Research Protocol]	1	21 July 2016
Summary CV for Chief Investigator (CI) [Chief Investigator CV]	1	21 July 2016
Summary CV for supervisor (student research) [Academic Supervisor's CV]	1	21 July 2016
Summary CV for supervisor (student research) [Academic Supervisor's CV]	1	21 July 2016
Validated questionnaire [Anxiety Sensitivity Index - III]		
Validated questionnaire [Depression Anxiety Stress Scale - 21]		
Validated questionnaire [Disgust Propensity Sensitivity Scale]		
Validated questionnaire [Obsessive Compulsive Inventory - R]		
Validated questionnaire [Self Disgust Scale]		
Validated questionnaire [Test Of Self-Conscious Affect]		

Membership of the Committee

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:
http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

Yours sincerely

Signed on behalf of Mrs Glenys J Hunt Chair

Email: nrescommittee.northwest-liverpooleast@nhs.net

Enclosures: *List of names and professions of members who were present at the meeting and those who submitted written comments.*

Copy to: *Ms Diane Hopkins*

North West - Liverpool East Research Ethics Committee

Attendance at Committee meeting on 18 August 2016

Committee Members:

Name	*Profession*	*Present*	*Notes*
Mr John Bridson	Clinical Ethicist	No	
Mrs Sue Fitzpatrick	Director	Yes	
Mrs Elizabeth Gordon	Retired Magistrate	Yes	
Mrs Maureen Hendry	Pharmacist	No	
Mrs Glenys J Hunt	Solicitor	Yes	
Dr Supriya Kapas	Senior Clinical Pharmacist	Yes	
Mr Alan McGarrity	Retired Police Inspector	Yes	
Mrs Theresa Moorcroft	Paediatric Research Nurse Manager	No	
Mr Alex Newgrosh	Quality Assurance Manager	Yes	
Mr David Powell	Honorary Consultant Clinical Psychologist	No	
Miss Kimberley Saint	Clinical Scientist - Nuclear Medicine	No	
Mrs Julia Waddon	Advanced Nurse Practitioner	Yes	
Dr Peter Walton	Retired Lay Member	Yes	

Also in attendance:

Name	*Position (or reason for attending)*
Mr Matthew Rogerson	REC Manager

Appendix D

Provisional NHS REC Opinion

Health Research Authority
East of England - Essex Research Ethics Committee
The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

13 October 2016

Miss Lucy Rathbone
Lancashire Care NHS Foundation Trust
Division of Health Research
Lancaster University
LA1 4YG

Dear Miss Rathbone,

Study Title:	**Is self-disgust a predictor of compulsive behaviours in individuals who report obsessive-compulsive experiences?**
REC reference:	**16/EE/0441**
IRAS project ID:	**207166**

The Research Ethics Committee reviewed the above application at the meeting held on 06 October 2016. Thank you for being available via telephone to discuss the application.

Provisional opinion

The Committee is unable to give an ethical opinion on the basis of the information and documentation received so far. Before confirming its opinion, the Committee requests that you provide the further information set out below.

Authority to consider your response and to confirm the Committee's final opinion has been delegated to the Chair.

Further information or clarification required

1) The applicant is to consider removing the paper aspect of the questionnaire, which in turn would remove the issue of anonymity for participants. If, later in the study, it was thought a paper questionnaire would be better, an amendment was to be submitted to the REC

2) A method is advised to be put into place for a way to ensure multiple submissions will not be made for participants completing the online questionnaire.
3) A more detailed scientific review is to be submitted to the REC, to detail the degree of independence and expertise of the reviewers in the field of the research.
4) Updated CV's of the researchers are to be submitted. These should provide detail of any up to date research training conducted.
5) Ensure it has been clearly stated in the information sheet what steps would be taken if the participants became distressed and who could be called in the event of disclosure to a third party.

If you would find it helpful to discuss any of the matters raised above or seek further clarification from a member of the Committee, you are welcome to contact Rebecca Morledge, NRESCommittee.EastofEngland-Essex@nhs.net.

When submitting a response to the Committee, the requested information should be electronically submitted from IRAS. A step-by-step guide on submitting your response to the REC provisional opinion is available on the HRA website using the following link: http://www.hra.nhs.uk/nhs-research-ethics-committee-rec-submitting-response-provisional-opini on/

Please submit revised documentation where appropriate underlining or otherwise highlighting the changes which have been made and giving revised version numbers and dates. You do not have to make any changes to the REC application form unless you have been specifically requested to do so by the REC.

The Committee will confirm the final ethical opinion within a maximum of 60 days from the date of initial receipt of the application, excluding the time taken by you to respond fully to the above points. A response should be submitted by no later than 12 November 2016.

Summary of the discussion at the meeting

Social or scientific value; scientific design and conduct of the study

In private discussion, the committee questioned the anonymity of the paper based questionnaires and consent form. It was commented there had been no information included in the application as to how information would be collected or protected. Further discussion was required with the Chief Investigator as to how all paper based information was to be collected. The committee also discussed if a postal questionnaire could be provided which would then assume consent to take part.

The committee asked if face to face interviews were being conducted or if participants would be solely use the online version of questions.

You explained in the first instance you would hope to recruit online, however face to face interviews could be conducted if the online version did not work.

The committee commented that it would be better if you limited it to doing online in the first instance and collect paper versions at a later stage if needed by way of a substantial amendment to the REC, this would then remove many ethical

issues that had been raised.

You had agreed

Recruitment arrangements and access to health information, and fair participant selection

The committee questioned the safety aspect of self-selection of participants into the study.

You had explained participants would have to define if they were eligible to take part online, and if they were, they would continue with the questionnaire. It was said there was as much safeguarding in place as possible to ensure they would be eligible to take part.

It was asked if there would be a concern of excluding people with literacy or computer issues.

You clarified that by using an online questionnaire, it would be difficult to include those who had literacy skills.

The committee asked how multiple submissions would be managed and if 'cookies' was the best way to help prevent this.

You commented there was an option for the host to prevent the same PC allowing more than one submission.

The committee stated if 'cookies' were to be used, you would have to ensure it was told to the participants. The committee suggested the use of the 'capcha' system or similar to prevent automated multiple submissions.

You thanked the committee for the suggestion.

Informed consent process and the adequacy and completeness of participant information

The committee noted there was information included in the information sheet as to who to call should participants become upset. It was commented there should also be information to state that if the person that is called, felt disclosure was required to another party, for example 999, this would be done.

Suitability of the applicant and supporting staff

The committee noted none of the three CV's provided had listed any up to date research training. It was agreed an updated CV was to be submitted for all researchers.

Independent review

The committee noted the peer review letter submitted form the University was very brief and agreed a more detailed letter should be provided, confirming the review was independent and by suitably qualified and experienced reviewers.

Documents reviewed

The documents reviewed at the meeting were:

Document	*Version*	*Date*
Confirmation of any other Regulatory Approvals (e.g. NIGB) and all correspondence [Peer Review Letter from Lancaster University]		
Copies of advertisement materials for research participants [Recruitment Advert]	2	06 September 2016
Covering letter on headed paper [Covering Letter]		06 September 2016
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Sponsor's Insurance Certificate]		20 July 2016
IRAS Application Form [IRAS_Form_22092016]		22 September 2016
Letter from sponsor [Letter From Sponsor]		21 September 2016
Other [Debrief Information and Resource Sheet]	2	06 September 2016
Other [Sponsor's Insurance Policy Document 2]		01 August 2016
Other [Letter Of Unfavourable Ethical Opinion]		01 September 2016
Participant consent form [Consent Form - Hard Copy]	2	06 September 2016
Participant consent form [Consent Form - Online Version]	2	06 September 2016
Participant information sheet (PIS) [Participant Information - Hard Copy]	2	06 September 2016
Participant information sheet (PIS) [Participant Information - Online Version]	2	06 September 2016
Research protocol or project proposal [Research Protocol]	2	06 September 2016
Summary CV for Chief Investigator (CI) [Chief Investigator CV]	1	21 July 2016
Summary CV for supervisor (student research) [Academic Supervisor's CV]	1	21 July 2016
Summary CV for supervisor (student research) [Academic Supervisor's CV]	1	21 July 2016
Validated questionnaire [Anxiety Sensitivity Index - III]		
Validated questionnaire [Depression Anxiety Stress Scale - 21]		
Validated questionnaire [Disgust Propensity Sensitivity Scale]		
Validated questionnaire [Obsessive Compulsive Inventory - R]		
Validated questionnaire [Self Disgust Scale]		
Validated questionnaire [Test Of Self-Conscious Affect]		

Membership of the Committee

The members of the Committee who were present at the meeting are listed on the attached sheet

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

16/EE/0441	**Please quote this number on all correspondence**

Yours sincerely,

Dr Alan Lamont Chair

Email: NRESCommittee.EastofEngland-Essex@nhs.net

Enclosures: *List of names and professions of members who were present at the meeting and those who submitted written comments.*

Copy to: *Ms Diane Hopkins*

East of England - Essex Research Ethics Committee

Attendance at Committee meeting on 06 October 2016

Committee Members:

Name	*Profession*	*Present*	*Notes*
Ms Carol Alves	Research Quality Facilitator	Yes	
Dr Shahira Amr	Pharmacist	Yes	
Mr Tony Baker	Retired Consultant Head of Medical Physics	No	
Miss Stephanie Ellis	Former Civil Servant	Yes	
Dr Gerry Kamstra	Retired Solicitor	Yes	
Dr Alan Lamont	Consultant Oncologist	Yes	
Ms Julie Lockhart	PPI Representative	No	
Ms Sarah Starr	Senior Nurse	Yes	
Dr Andy Stevens	Media Consultant & Retired Principal Lecturer	Yes	
Mrs Jill Troup	Service Manager for Medicine	Yes	
Dr Nkiruka Umaru	Pharmacist	No	
Mrs Melanie Wakelin	Independent Statistical Consultant	Yes	

Also in attendance:

Name	*Position (or reason for attending)*
Miss Rebecca Morledge	REC Manager
Deborah Jane Pocock	Retired Anaesthetist

Written comments received from:

Name	*Position*
Dr Helen Brittain (Chair)	Clinical Psychologist Retired

Appendix E

Favourable NHS REC Opinion

East of England - Essex Research Ethics Committee
The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

Telephone: 0207 104 8115

Please note: This is the favourable opinion of the REC only and does not allow you to start your study at NHS sites in England until you receive HRA Approval

04 November 2016

Miss Lucy Rathbone
Trainee Clinical Psychologist
Lancashire Care NHS Foundation Trust
Division of Health Research
Lancaster University
LA1 4YG

Dear Miss Rathbone

Study title:	**Is self-disgust a predictor of compulsive behaviours in individuals who report obsessive-compulsive experiences?**
REC reference:	**16/EE/0441**
IRAS project ID:	**207166**

Thank you for your letter of 02 November 2016, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact the REC Manager, Helen Poole at NRESCommittee.EastofEngland-Essex@nhs.net

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for NHS permission for research is available in the Integrated Research Application System, www.hra.nhs.uk or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to contest the need for registration they should contact Catherine Blewett (catherineblewett@nhs.net), the HRA does not, however, expect exceptions to be made. Guidance on where to register is provided within IRAS.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Confirmation of any other Regulatory Approvals (e.g. NIGB) and all correspondence [Peer Review Letter from Lancaster University]		
Copies of advertisement materials for research participants [Recruitment Advert]	2	06 September 2016
Covering letter on headed paper [Covering Letter]		06 September 2016
Covering response letter on headed paper [Covering Letter]		14 October 2016
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Sponsor's Insurance Certificate]		20 July 2016
IRAS Application Form [IRAS_Form_22092016]		22 September 2016
Letter from sponsor [Letter From Sponsor]		21 September 2016
Other [Debrief Information and Resource Sheet]	2	06 September 2016
Other [Sponsor's Insurance Policy Document 2]		01 August 2016
Other [Letter Of Unfavourable Ethical Opinion]		01 September 2016
Other [Covering Letter following Liverpool REC Amendments]		06 September 2016
Participant consent form [Consent Form - Hard Copy]	2	06 September 2016
Participant consent form [Consent Form - Online Version]	3	28 October 2016
Participant information sheet (PIS) [Participant Information - Hard Copy]	2	06 September 2016
Participant information sheet (PIS) [Participant Information - Online Version]	3	28 October 2016
Referee's report or other scientific critique report [Letter of confirmation from Peer Reviewer - Lancaster University]		25 October 2016
Research protocol or project proposal [Research Protocol]	2	06 September 2016
Summary CV for Chief Investigator (CI) [Chief Investigator CV]	2	28 October 2016
Summary CV for supervisor (student research) [Academic Supervisor's CV]	2	28 October 2016
Summary CV for supervisor (student research) [Academic Supervisor's CV]	2	28 October 2016
Validated questionnaire [Anxiety Sensitivity Index - III]		
Validated questionnaire [Depression Anxiety Stress Scale - 21]		
Validated questionnaire [Disgust Propensity Sensitivity Scale]		
Validated questionnaire [Obsessive Compulsive Inventory - R]		
Validated questionnaire [Self Disgust Scale]		

Validated questionnaire [Test Of Self-Conscious Affect]		

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

16/EE/0441	**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project.

Yours sincerely

Dr Alan Lamont Chair

Email:NRESCommittee.EastofEngland-Essex@nhs.net

Enclosures: "After ethical review – guidance for researchers"
Copy to: *Ms Diane Hopkins*

Appendix F

Recruitment Advert

Doctorate in Clinical Psychology | Lancaster University

Do you experience obsessive-compulsive difficulties?

On behalf of the Lancaster University Clinical Psychology Doctorate programme, I am looking for participants to take part in a study examining the role of emotions in obsessive-compulsive experiences. Participation involves completing an online questionnaire which will take about 20 minutes to complete.

The study aims to develop a better understanding of the emotional factors that underlie individual experiences of obsessions and compulsions. This will inform more effective support for people with difficulties of this nature. Further information about the aims of the study will be provided once you have completed the questionnaire.

Before deciding to take part you will have the opportunity to read some more detailed information about the study and to check that you meet the criteria necessary to participate. You will then be asked to consent to taking part. Once you have given your consent the survey will begin and you will be asked to complete an online questionnaire; this will ask you to think about different emotions and obsessive-compulsive experiences. Your participation in the study will remain anonymous.

If you are thinking of taking part in this study, and would like to contact the researcher for any reason, please email l.rathbone@lancaster.ac.uk or telephone +441542 594083.

Appendix G

Participant Information

Doctorate in Clinical Psychology | Lancaster University

The role of emotional factors in obsessive-compulsive experiences

My name is Lucy Rathbone and I am a trainee clinical psychologist. I am conducting this research as a trainee from the Doctorate of Clinical Psychology programme at Lancaster University, United Kingdom.

What is the study about?

The purpose of this study is to explore the relationship between different emotions and obsessive-compulsive experiences. To do this, I will be collecting responses to different questionnaires, some which consider participants' emotions, like disgust and anxiety, and one which looks at participants' experiences of obsessive thoughts and compulsive behaviours. This information may help in understanding which emotions lead to which compulsive activities, for example washing or checking behaviours. A better understanding of these difficulties may support the development of more effective interventions.

Who can take part?

You are eligible to participate in this research study if you meet the following **inclusion criteria:**

- You are aged 18 or over.
- You are English speaking or able to answer the questionnaire in English.
- You are able to provide informed consent to participate.
- You are able to access and complete the questionnaire (and have not completed it before).
- You **either** have a formal diagnosis of OCD given by a medical professional **or** feel you have significant levels of obsessive thoughts (such as worries about hygiene or causing someone harm) and/ or compulsive behaviours (such as repetitive hand washing or checking that doors are locked).

What will I be asked to do if I decide to take part?

Firstly, you will be asked to read some information and then give your consent to participate in the study. Once you have provided your consent, you will be asked to complete some questionnaires. As mentioned above, some of the questionnaires ask about emotions and one questionnaire asks about obsessions and compulsions. The questionnaire is likely to take around 20 minutes to complete. You will only be able to complete this study once.

What will stop me from taking the questionnaire again?

To ensure the data we collect is accurate and reliable, it is important that participants only complete the questionnaire once. Therefore, after you have completed the questionnaire, the survey software will place a cookie on your browser. This setting is in place to prevent people from completing the study more than once.

Will others know that I have taken part?

You are free to talk about your involvement with whoever you wish, however your participation in the study will not be shared by the researcher. All participants can take part in this research

confidentially, as we will not ask for your name. If you wish to contact the research team for any reason, you are welcome to do this, and you can choose whether you wish to share any personal information with us. Any such correspondence will be stored securely to keep your identity and participation private, and your personal details will not be linked to your questionnaire responses

However, if , when contacting the research team, you share any information which leads us to worry about the safety of you or anyone else, then we may be required to share this information with someone who can help to ensure that everyone is kept safe. This may involve passing on your details to the emergency services or a family member. Where possible and safe to do so, the decision to breach confidentiality in this way will be shared with you.

Will my data be safe?
The information you provide will not be identifiable and will remain completely anonymous in all documents produced during the study. The data collected for this study will be stored securely and only the researchers conducting this study will have access to this data. Data will be deleted 10 years after the completion of the study.

What if I change my mind?
You are free to withdraw from the study at any time prior to completing the questionnaires and submitting your responses. After this time, you are no longer able to withdraw your data as it will be anonymous and I will not know which set of responses belongs to you.

What will happen to the results?
The results will be summarised and reported in a piece of academic work known as the Thesis. A briefer summary report will be circulated amongst the organisations which advertised the study once the study has been reviewed. The research may also be submitted for publication in an academic or professional journal. If published, the paper will be listed on the ResearchGate page of the main researcher, where you will be able to request a copy. Again, no participants will be identifiable in the research.

Are there any risks?
There are no risks anticipated with participating in this study. However, if you experience any distress after completing the questionnaires then you are encouraged to contact the resources provided on the list below. This list will be available to you throughout the questionnaire. Please be aware that if, when contacting one of the listed organisations, you share information which suggests you, or someone else, might be at risk of harm, then the organisation may be required to pass this information on to someone who can help directly, like the emergency services.

Are there any benefits to taking part?
Although there are no direct benefits to taking part, I hope you will find participating interesting and worthwhile. This study aims to improve our understanding of the nature of obsessive-compulsive experiences. A better understanding of this may inform the development of effective support for people with such difficulties. The study will not provide participants with any individual feedback.

Who has reviewed the project?
This study has been reviewed by the Research Ethics Committee of the National Health Service UK.

Where can I obtain further information about the study if I need it?
If you have any questions about the study please contact the main researcher:

Lucy Rathbone – Trainee Clinical Psychologist

Email: l.rathbone@lancaster.ac.uk
Address: Division of Health Research
Faculty of Health and Medicine
Furness College, Lancaster University
Lancaster, LA1 4YG, UK

Complaints
If you wish to make a complaint or raise concerns about any aspect of this study and do not want to speak to the researcher, you can contact:

Jane Simpson - Education Director for the Division of Health Research
Email: j.simpson2@lancaster.ac.uk Telephone: 01524 592858
Address: Division of Health Research
Faculty of Health and Medicine
Furness College, Lancaster University
Lancaster, LA1 4YG, UK

If you wish to speak to someone outside of the Clinical Psychology Doctorate Programme, you may also contact:

Professor Roger Pickup - Associate Dean for Research
Email: r.pickup@lancaster.ac.uk Telephone: 01524 593746
Address: Division of Biomedical and Life Science
Faculty of Health and Medicine, Lancaster University
Lancaster, LA1 4YG, UK

Appendix H

Participant Resource Sheet

Doctorate in Clinical Psychology | Lancaster University

The role of emotional factors in obsessive-compulsive experiences

Should your involvement in this research study have left you with any feelings of distress, the following organisations may be able to provide you with some support. Alternatively, you may wish to contact your GP to discuss further options for support.

Mind
Website: http://www.mind.org.uk/
Telephone: 0300 123 3393

Samaritans
Website: http://www.samaritans.org/
Telephone: 08457 90 90 90

SANE Mental Health Charity
Website: http://www.sane.org.uk
Helpline: 0845 767 8000

Turn2Me
Website: https://turn2me.org/
Online support

OCD Action
Website: http://www.ocdaction.org.uk/
Telephone: 0845 390 6232

OCD UK
Website: http://www.ocduk.org/how-ocduk-help
Telephone: 0845 120 3778

Appendix I

Participant Consent Form

The role of emotional factors in obsessive-compulsive experiences

We are asking if you would like to take part in a research project which aims to better understand the relationship between emotional factors and obsessive-compulsive related difficulties.

Before you consent to participating in the study we ask that you have read the participant information provided. We also ask that you read the following statements and click on the option below if you are happy to take part in the study.

1. I confirm that I have read the participant information and fully understand what is expected of me within this study.

2. I confirm that the contact details of the research team have been provided, and therefore I have had the opportunity to ask any questions and to have them answered.

3. I understand that my participation is voluntary and that I am free to withdraw at any time, for any reason, prior to submitting my responses.

4. I understand that once my data has been anonymised and incorporated into the data set it will not be possible to withdraw from the study.

5. I understand that the data from my questionnaire responses will be pooled with other participants' responses, anonymised and may be published.

6. I understand that the study will not ask for any personal or identifiable information. If I choose to contact the research team directly, I understand that any information I share will remain confidential. **However**, I am aware that if I share any information that suggests there may be a risk of harm to myself or others, the research team may need to share this information with someone who can provide me with direct support, for example, the emergency services. I also appreciate that the confidentiality offered by the organisations listed on the resource sheet may be bound by these same limits.

7. I consent to Lancaster University keeping the anonymised data from the study for 10 years after the study has finished.

8. I consent to take part in the above study.

PLEASE ONLY COMPLETE THIS SURVEY ONCE.

By selecting the statement below you confirm that:

1. you agree with all of the above statements,
2. you consent to taking part in this study,
3. you have not completed this study before,
4. you are ready to begin the questionnaire.

Please click **here** to consent to participating in the study.

Appendix J

Participant Debriefing Information

The role of emotional factors in obsessive-compulsive experiences

Thank you for participating in this study by completing the questionnaires. The aim of the study is to examine the relationship between underlying emotional factors and obsessive-compulsive difficulties. By better understanding the relationship between emotions and obsessive-compulsive experiences, it may be possible to develop more effective interventions.

All of the collected data will be entered into a secure database. A regression analysis will then be conducted; this is a calculation that allows us to explore the relationships between the factors we have measured. These include anxiety, depression, stress, anxiety sensitivity, disgust propensity, shame, guilt, self-disgust, obsessions and compulsions. Specifically, we are interested in investigating whether an individual's self-disgust score can predict the compulsive behaviours with which they present. We are hypothesising that individuals who score higher on the questionnaire which measures self-disgust will be more likely to engage in 'washing-type' compulsions than 'checking-type' compulsions.

Once I have collected and analysed all the data from the study, I will write it up as a report as part of my Doctorate in Clinical Psychology. I will also prepare a short summary of the research which will be disseminated to all parties which advertised the study. Both the full report and the summary will be completely anonymised, so your identity, and the identities of other participants, will be protected.

As discussed prior to the questionnaire, taking part may have involved consideration of some difficult information. If you are feeling at all distressed following your participation, then contacting one of the organisations on the following resource list may help. Alternatively, you may wish to visit your GP to access some more formal support.

Thank you again for your participation.

Appendix K

Measures

Appendix K1 - Anxiety Sensitivity Index 3

Anxiety Sensitivity Index 3

Please select the number that best corresponds to how much you agree with each item. If any items concern something that you have never experienced (e.g., fainting in public), then answer on the basis of how you think you might feel *if you had* such an experience. Otherwise, answer all items on the basis of your own experience. You may only select one number for each item and please answer all items.

	Very little	A little	Some	Much	Very much
1. It is important for me not to appear nervous.	0	1	2	3	4
2. When I cannot keep my mind on a task, I worry that I might be going crazy.	0	1	2	3	4
3. It scares me when my heart beats rapidly.	0	1	2	3	4
4. When my stomach is upset, I worry that I might be seriously ill.	0	1	2	3	4
5. It scares me when I am unable to keep my mind on a task.	0	1	2	3	4
6. When I tremble in the presence of others, I fear what people might think of me.	0	1	2	3	4
7. When my chest feels tight, I get scared that I won't be able to breathe properly.	0	1	2	3	4
8. When I feel pain in my chest, I worry that I'm going to have a heart attack.	0	1	2	3	4
9. I worry that other people will notice my anxiety.	0	1	2	3	4
10. When I feel "spacey" or spaced out I worry that I may be mentally ill.	0	1	2	3	4
11. It scares me when I blush in front of people.	0	1	2	3	4
12. When I notice my heart skipping a beat, I worry that there is something seriously wrong with me.	0	1	2	3	4
13. When I begin to sweat in a social situation, I fear people will think negatively of me.	0	1	2	3	4
14. When my thoughts seem to speed up, I worry that I might be going crazy.	0	1	2	3	4
15. When my throat feels tight, I worry that I could choke to death.	0	1	2	3	4
16. When I have trouble thinking clearly, I worry that there is something wrong with me.	0	1	2	3	4
17. I think it would be horrible for me to faint in public.	0	1	2	3	4
18. When my mind goes blank, I worry there is something terribly wrong with me.	0	1	2	3	4

Appendix K2 - Depression, Anxiety, and Stress Scale - 21

Depression, Anxiety and Stress Scale - 21

Please read each statement and select a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:
0 Did not apply to me at all - NEVER
1 Applied to me to some degree, or some of the time - SOMETIMES
2 Applied to me to a considerable degree, or a good part of time - OFTEN
3 Applied to me very much, or most of the time - ALMOST ALWAYS

	N S O AA
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 couldn't seem to experience any positive feeling at all	0 1 2 3
4 I experienced breathing difficulty (eg, 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 (eg, 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 wasn't 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 (eg, 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 K3 - Disgust Propensity and Sensitivity Scale- Revised

Disgust Propensity and Sensitivity Scale – Revised

Instructions: this questionnaire consists of 12 statements about disgust. Please read each statement and think how often it is true for you, then select the option that is closest to this.

	Never	**Rarely**	**Sometimes**	**Often**	**Always**
1. I avoid disgusting things					
2. When I feel disgusted, I worry that I might pass out					
3. It scares me when I feel nauseous.					
4. I feel repulsed.					
5. Disgusting things make my stomach turn.					
6. I screw up my face in disgust.					
7. When I notice that I feel nauseous, I worry about vomiting					
8. I experience disgust.					
9. It scares me when I feel faint.					
10. I find something disgusting.					
11. It embarrasses me when I feel disgusted.					
12. I think feeling disgust is bad for me.					

Appendix K4 - Obsessive Compulsive Inventory – Revised

Obsessive Compulsive Inventory – Revised

OCI-R

The following statements refer to experiences that many people have in their everyday lives.

Select 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:

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

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 when I know it has been touched by strangers or certain people.	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 K5 - Self-disgust Scale – Revised

Self-disgust Scale – Revised

This questionnaire is concerned with how you feel about yourself. When responding to the statements below, please select the appropriate number according to the following definitions:

1 = Strongly disagree; 2 = Very much disagree; 3 = Slightly disagree; 4 = Neither agree nor disagree; 5 = Slightly agree; 6 = Very much agree; 7 = Strongly agree.

	Strongly disagree						*Strongly agree*
1. I find myself repulsive.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2. I am proud of who I am.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3. I am sickened by the way I behave.*	**1**	**2**	**3**	**4**	**5**	**6**	**7**
4. Sometimes I feel tired.†	**1**	**2**	**3**	**4**	**5**	**6**	**7**
5. I can't stand being me.*	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6. I enjoy the company of others.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
7. I am revolting for many reasons.†	**1**	**2**	**3**	**4**	**5**	**6**	**7**
8. I consider myself attractive.*	**1**	**2**	**3**	**4**	**5**	**6**	**7**
9. People avoid me.*	**1**	**2**	**3**	**4**	**5**	**6**	**7**
10. I enjoy being outdoors.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
11. I feel good about the way I behave.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
12. I do not want to be seen.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
13. I am a sociable person.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
14. I often do things I find revolting.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
15. I avoid looking at my reflection.†	**1**	**2**	**3**	**4**	**5**	**6**	**7**
16. Sometimes I feel happy.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
17. I am an optimistic person.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
18. I behave as well as everyone else.†	**1**	**2**	**3**	**4**	**5**	**6**	**7**
19. It bothers me to look at myself.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
20. Sometimes I feel sad.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
21. I find the way I look nauseating.*	**1**	**2**	**3**	**4**	**5**	**6**	**7**
22. My behaviour repels people.	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Appendix K6 - Test of Self-Conscious Affect (version 3)

Test of Self-Conscious Affect (version 3)

Below are situations that people are likely to encounter in day-to-day life, followed by several common reactions to those situations.

As you read each scenario, try to imagine yourself in that situation. Then indicate how likely you would be to react in each of the ways described. We ask you to rate all responses because people may feel or react more than one way to the same situation, or they may react different ways at different times.

For example:
A. You wake up early one Saturday morning. It is cold and rainy outside.

a) You would telephone a friend to catch up on news. (1)---2---3---4---5
not likely very likely
b) You would take the extra time to read the paper. 1---2---3---4---(5)
not likely very likely
c) You would feel disappointed that it's raining. 1---2---(3)---4---5
not likely very likely
d) You would wonder why you woke up so early. 1---2---3---(4)---5
not likely very likely

In the above example, I've rated ALL of the answers by selecting a number.

I circled a "1" for answer (a) because I wouldn't want to wake up a friend very early on a Saturday morning – so it's not at all likely that I would do that. I circled a "5" for answer (b) because I almost always read the paper if I have time in the morning (very likely). I circled a "3" for answer (c) because for me it's about half and half. Sometimes I would be disappointed about the rain and sometimes I wouldn't -- it would depend on what I had planned. And I circled a "4" for answer (d) because I would probably wonder why I had awakened so early.
Please do not skip any items -- rate all responses.

1. You make plans to meet a friend for lunch. At five o'clock, you realize you have stood your friend up.

not likely very likely
a) You would think: "I'm inconsiderate." 1---2---3---4---5
b) You'd think you should make it up to your friend as soon as possible. 1---2---3---4---5
c) You would think: "My boss distracted me just before lunch." 1---2---3---4---5

2. You break something at work and then hide it.

not likely very likely
a) You would think: "This is making me anxious. I need to either fix it or get someone else to." 1---2---3---4---5
b) You would think about quitting. 1---2---3---4---5
c) You would think: "A lot of things aren't made very well

these days.” 1---2---3---4---5

3. At work, you wait until the last minute to plan a project, and it turns out badly.

	not likely	very likely
a) You would feel incompetent.	1---2---3---4---5	
b) You would think: “There are never enough hours in the day.”	1---2---3---4---5	
c) You would feel: “I deserve to be reprimanded for mismanaging the project.”	1---2---3---4---5	

4. You make a mistake at work and find out a co-worker is blamed for the error.

	not likely	very likely
a) You would think the company did not like the co-worker.	1---2---3---4---5	
b) You would keep quiet and avoid the co-worker.	1---2---3---4---5	
c) You would feel unhappy and eager to correct the situation.	1---2---3---4---5	

5. While playing around, you throw a ball, and it hits your friend in the face.

	not likely	very likely
a) You would feel inadequate that you can’t even throw a ball.	1---2---3---4---5	
b) You would think maybe your friend needs more practice at catching.	1---2---3---4---5	
c) You would apologize and make sure your friend feels better.	1---2---3---4---5	

6. You are driving down the road, and you hit a small animal.

	not likely	very likely
a) You would think the animal shouldn’t have been on the road.	1---2---3---4---5	
b) You would think: “I’m terrible.”	1---2---3---4---5	
c) You’d feel bad you hadn’t been more alert driving down the road.	1---2---3---4---5	

7. You walk out of an exam thinking you did extremely well, then you find out you did poorly.

	not likely	very likely
a) You would think: “The instructor doesn’t like me.”	1---2---3---4---5	
b) You would think: “I should have studied harder.”	1---2---3---4---5	
c) You would feel stupid.	1---2---3---4---5	

8. While out with a group of friends, you make fun of a friend who’s not there.

	not likely	very likely
a) You would feel small...like a rat.	1---2---3---4---5	
b) You would think that perhaps that friend should have been there to defend himself/herself.	1---2---3---4---5	
c) You would apologize and talk about that person’s good points.	1---2---3---4---5	

9. You make a big mistake on an important project at work. People were depending on you, and your boss criticizes you.

	not likely very likely
a) You would think your boss should have been more clear about what was expected of you.	1---2---3---4---5
b) You would feel as if you wanted to hide.	1---2---3---4---5
c) You would think: “I should have recognized the problem and done a better job.”	1---2---3---4---5

10. You are taking care of your friend’s dog while they are on vacation and the dog runs away.

	not likely very likely
a) You would think, “I am irresponsible and incompetent.”	1---2---3---4---5
b) You would think your friend must not take very good care of her dog or it wouldn’t have run away.	1---2---3---4---5
c) You would vow to be more careful next time.	1---2---3---4---5

11. You attend your co-worker’s housewarming party, and you spill red wine on a new cream colored carpet, but you think no one notices.

	not likely very likely
a) You would stay late to help clean up the stain after the party.	1---2---3---4---5
b) You would wish you were anywhere but at the party.	1---2---3---4---5
c) You would wonder why your co-worker chose to serve red wine with the new light carpet.	1---2---3---4---5