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Doctoral Thesis

A systematic review of the concept of self-disgust, and an empirical examination of its role in post-traumatic stress difficulties

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Thesis Abstract

This thesis is comprised of a systematic literature review, a research paper, and a critical appraisal. The literature review assesses the clinical utility of self-disgust in understanding mental health difficulties. Specifically, the review examined whether there is a shared conceptual definition of self-disgust, the construct and face validity of quantitative measures of self-disgust, and the predictive validity of self-disgust in understanding mental distress. Thirty-one studies (three qualitative, twenty-seven quantitative, one mixed) were included in the review. Findings suggested that, although qualitative research indicates that self-disgust is a meaningful phenomenon experienced in a consistent way, measurement of self-disgust across studies has varied and particular measures (e.g. visual analogue scales) may only capture an aspect of the concept. Quantitative research indicates strong relationships between self-disgust and a range of mental health conditions, including depression, eating disorders, trauma-related difficulties, and self-harm. Experimental, longitudinal and retrospective designs very tentatively suggest that self-disgust precedes the development of these difficulties, thereby lending the concept a degree of predictive validity. However, the cross-sectional nature of the majority of the studies limit conclusions.

The empirical paper examined whether there was a relationship between self-disgust and post-traumatic stress difficulties following trauma-exposure, and if so whether this relationship was mediated by attachment anxiety or attachment avoidance. Eighty-five participants completed a battery of on-line questionnaires measuring the above concepts. Self-disgust significantly positively correlated with all post-traumatic stress symptoms. Self-disgust also fully mediated the relationship between the experience of sexual trauma and post-traumatic stress severity. The relationship between self-disgust and dissociation was partially

mediated by attachment anxiety. However, attachment avoidance did not relate to any of the symptom clusters. The implications of the results for research and practice are discussed.

Finally, the critical appraisal bounds the clinical implications of the findings within the strengths and weakness of the research paper.

Declaration

This thesis documents research submitted in May 2017 as partial fulfilment of the Lancaster University Doctorate in Clinical Psychology. The work presented here is my own, except where due reference has been made. This thesis has not been submitted for the award of a higher degree elsewhere.

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I would like to sincerely thank all the people who gave their time to take part in the research. I would also like to thank my supervisors, Dr Jane Simpson and Dr Filippo Varese, for their advice and guidance throughout the process.

Contents

Section One: Literature Review

A systematic review of the clinical utility of the concept of self-disgust

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Prepared for submission to Cognition and Emotion (see Appendix 1-1 for author guidelines)

Abstract

The potential clinical utility of mapping the influence of particular cognitive-emotional schema on mental distress is considerable. This systematic literature review examined the clinical utility of the cognitive-emotional schema of self-disgust in understanding mental distress. Specifically, the review assessed whether there is a shared conceptual definition of self-disgust which maps on to people's real life experiences, the face and construct validity of the quantitative assessment measures of self-disgust, and the predictive validity of self-disgust in formulating the development of a range of psychological difficulties. A systematic database search supplemented by manual searches of references and citations identified thirty-one relevant papers (27 quantitative, 3 qualitative, 1 mixed). Analysis of qualitative papers indicated a number of shared features in the definition of self-disgust, including a visceral and pervasive sense of self-elicited nausea accompanied by social withdrawal and attempts at cleansing or suppressing aspects of the self. Multi-item quantitative assessment measures appeared to capture these dimensions and evidenced good psychometric properties. However, many quantitative assessment tools used in the literature (e.g. visual analogue scales) are likely to only partially capture the self-disgust construct. Strong relationships were observed between self-disgust and a range of mental health presentations, in particular depression, body-image difficulties, and trauma-related difficulties. However, these relationships are smaller when the effects of other negative self-referential emotions are controlled for, and conclusions about the predictive validity of self-disgust are bound by the cross-sectional nature of many of the studies. The review concludes with directions for future research which could further inform the clinical utility of self-disgust.

Key-words: Self-disgust; mental health; validity; utility; review

1. Introduction

Theoretical advances in understanding the relationship between cognition and emotion have underpinned important developments in clinical practice. To illustrate, the specification of emotion generation in response to events via both an associative route and via appraisals derived from organizing cognitive structures (Power & Dalgleish, 2016) has driven advances in behavioural (Tyron, 2005) and cognitive therapy (Beck, 1979; Young, 1999; Young, Klosko, & Weishaar, 2006). Moreover, the development of more nuanced understandings of the cognition-emotion interactions underpinning more specific clinical presentations has improved how we assess, formulate and provide therapy for people with a range of psychological difficulties such as anxiety, post-traumatic stress disorder and obsessive-compulsive experiences (e.g. Clark & Wells, 1995; Ehlers & Clark, 2000; Wells, 1999; Salkovskis, Forrester & Richards, 1998). Mapping the cognitive-emotional sequelae of specific emotions has also yielded therapeutic improvements – recent work in deconstructing the phenomenology and consequences of self-criticism and shame has yielded the development of compassion-focused therapy (Gilbert & Proctor, 2006), which has evidenced considerable benefits for a range of difficulties in which shame is implicated (Leaviss & Uttley, 2016). Thus, clear clinical advantage has been demonstrated in differentiating and delineating the sequelae of different emotions.

One such emotion which has begun to receive such delineation and differentiation is that of self-disgust, in which the basic emotion of disgust becomes directed at a core and stable feature of the self (Powell, Simpson & Overton, 2015). As disgust is a visceral negative emotion driving behavioural responses of rejection and avoidance (Rozin, Haidt & McCauley, 2000), it would be predicted that having such an emotion directed at the self may lead to significant psychological difficulties. Indeed, several authors have begun to theorize on how such difficulties may develop. Powell et al. (2015) postulate that self-disgust

represents a distinct emotion schema (Izard, 2007, 2009). Specifically, an initial self-disgust reaction may be generated by cognitive appraisal processes, such as negatively evaluating one's features or actions, or by more associative processes, in which disgust initially generated by an external stimulus then becomes elicited by the part of the self associated with this stimulus. If this initial self-disgust reaction becomes elaborated on, for example, by rumination or disgust-centred feedback from others, then it may develop into an over-arching framework through which one views oneself, and may guide subsequent perception, attention, memory and cognitive processes in a manner consistent with the self-disgust schema; thus, the schema becomes self-perpetuating. Powell et al. (2015) further postulate that a self-disgust schema is likely developed in childhood in response to disgust-based criticism or abuse, with self-disgust in adulthood likely shaped by trauma or a change in the nature of how the self is experienced.

In order for such a construction of self-disgust to be theoretically valid, both the emotion schema of self-disgust and its sequelae should be distinguishable from other emotions, most notably from other negative self-referent emotions such as guilt, shame and self-hatred. Theoretically, emotions are considered to comprise a number of related sub-systems, including a cognitive appraisal system, a subjective feeling state, a physiological response, and a set of action urges or desired behavioural responses (Lang, 1988; Rachman & Hodgson, 1974). Thus, in order for self-disgust to be considered a theoretically distinct emotion, it should be distinguishable across these domains.

The centrality of the core emotion of disgust enables self-disgust to be differentiated from other negative self-referent emotions across appraisal content, subjective and physiological experiences, and associated behavioural repertoires. To illustrate, disgust or contamination-based appraisals are necessary to generate self-disgust, whereas guilt, shame and self-hatred can be generated in the absence of such appraisals – for example, the

appraisal “I’ve been made a fool of” may generate shame but not self-disgust. Conversely, disgust-specific appraisals, such as “I look rotten” or “I make other people feel sick”, can be considered to generate self-disgust but not necessarily guilt, shame or self-hatred (Powell et al., 2015). Furthermore, self-disgust is subject to generation via more associative processes, in which one feels oneself to be dirtied due to past contact with a contaminated object (Rachman, 2004), as may occur for example in sexual trauma; however, guilt, shame and self-hatred would appear to be less subject to such associative processes. The emotion of disgust also distinguishes the subjective and physiological experiences of self-disgust, guilt, shame and self-hatred. Self-disgust, as with more general disgust reactions, is characterised by a strong physical sense of revulsion and nausea that is not associated with shame or self-hatred (Keltner, 1996; Powell et al., 2015; Scherer & Wallbott, 1994; Robins & Schriber, 2009). Associated behavioural repertoires are also distinct – although self-disgust is sometimes conflated with self-hatred as an extreme form of self-attacking (e.g. Gilbert, Durrant and McEwan, 2006), self-disgust is likely to influence self-to-other as well as self-to-self relations, triggering behaviours such as social withdrawal which may not necessarily be present in self-hatred. Self-disgust is also likely to drive more contamination-driven behaviours not seen in the other self-referent emotions, such as extreme attempts to cleanse or remove the disgusting self. These assertions have been borne out in qualitative research examining the micro-sequelae of self-disgust (e.g. Espeset et al,. 2012; Powell et al., 2014).

The final existing construct from which self-disgust must be delimited is that of “mental contamination”, in which mental events generate an internal sense of dirtiness in the absence of a physical contaminant (Rachman, 2004). Although disgust would appear to be the central emotion here, mental contamination can be differentiated from self-disgust by the centrality of the self in both concepts – self-disgust requires disgust-based appraisals to be directed at a core and stable feature of the self; however, mental contamination can be

triggered by mental events which bear no relevance to the self (e.g. images of something dirty). Thus, disgust following mental contamination is much less self-focused and resultantly a more transient experience, as evidenced by the fact that mental contamination can be experimentally induced (e.g. Coughtrey, Shafran & Rachman, 2014; Millar, Salkovskis & Brown, 2016) whereas an enduring sense of self-disgust cannot (although the emotional component of self-disgust can be intensified experimentally in individuals hypothesised to already experience a self-disgust schema). Although a small minority of studies assess more permanent feelings of contamination generated by the self or body (specifically after trauma; Jung & Steil, 2012, 2013; Steil, Jung & Stangier, 2011), the vast majority of studies of this construct more broadly define mental contamination as a sense of dirtiness created by any internal event (e.g. Coughtrey, Shafran, Lee & Rachman, 2012; Rachman, 2004).

Thus, it appears that, at least theoretically, self-disgust represents a distinct cognitive-affective schema. However, whether self-disgust represents a clinically useful concept remains to be demonstrated. A number of criteria would speak to the clinical utility of self-disgust. In her review of the concept of apathy in people with Parkinson's disease, Bogart (2010) argued that in order to be clinically useful a concept must first have a shared definition of a real and meaningful experience that people encounter. Thus, theoretical definitions of self-disgust must map on to people's real-life accounts of the phenomenon. In addition to this, a concept must demonstrate adequate construct and face validity, in that its operationalization and measurement map on to this underlying meaningful conceptualization, and adequate predictive validity, in that measurement of this construct can provide useful information about a person's future and what kind of intervention they may be most responsive to.

Qualitative descriptions of self-disgust and studies assessing the psychometric properties of self-disgust scales can inform the conceptual definition and construct validity

criteria respectively. However, establishing the predictive validity of self-disgust is more difficult, and requires designs which can disentangle the precise relationship between self-disgust and various mental health difficulties. There are four potential mechanisms through which self-disgust may relate to psychopathology, with each mechanism having differing implications for the predictive (and thus clinical) utility of self-disgust. Firstly, as postulated by Powell et al. (2015), self-disgust may be a causal factor driving the development of a particular mental health presentation. This causal influence may occur through two pathways - self-disgust may represent a latent factor shaped by childhood experiences which when activated triggers a particular mental health presentation (for example, childhood sexual abuse may trigger the development of self-disgust which in turn predicts the development of borderline personality features in adulthood). Alternatively, self-disgust may be triggered by a severe change in how the self is experienced in adulthood, which in turn drives a particular mental health presentation (for example, experiencing incontinence in adulthood may create self-disgust which in turn may predict feelings of depression and social withdrawal). Such a causal relationship would highlight the need for early intervention to target the cognitive, emotional and behavioural underpinnings of self-disgust. Secondly, self-disgust may be a consequence of a mental health difficulty (for example, if one becomes depressed, and evaluates one's subsequent behavioural inactivity as disgusting). Such a relationship would limit the predictive utility of self-disgust as a concept, although it may still retain some utility if it points to a potentially important target for later treatment once other issues are resolved. Thirdly, self-disgust may represent an unrelated correlate of a mental health difficulty – for example, involvement in armed conflict may cause the separate development of both self-disgust and post-traumatic stress disorder, with the two having little relation to each other. This would render self-disgust of little predictive utility in considering a specific mental health presentation, although if it contributes to general distress levels it may still be a useful

focus for treatment. Finally, self-disgust may be a correlate of other constructs (such as shame) which do explain the development of a mental health difficulty. For example, image-related bullying may create both feelings of shame and self-disgust, but only shame may contribute to the development of an eating disorder. Such a relationship would lend little clinical and predictive utility to the concept of self-disgust. Various types of evidence could support or refute each model. Particularly useful are prospective studies examining the relationship between self-disgust and mental health difficulties over time while controlling for related variables, and treatment outcome studies examining whether targeting and reducing self-disgust results in subsequent amelioration of symptoms of a mental health difficulty. Conceptual literature reviews (e.g. Black & Lobo, 2008; Bright, Kayes, Worrall & McPherson, 2015) which draw on such a diverse range of literature can offer a useful framework for addressing these issues.

This review therefore aims to evaluate the clinical utility of self-disgust according to these criteria. Specifically:

- In order to evaluate the meaningfulness of the conceptual definition of self-disgust, the review will examine qualitative research which has explored whether and how individuals experiencing mental distress experience disgust for the self.
- In order to evaluate the construct validity of the measurement of self-disgust, the review will examine how self-disgust is assessed in studies examining its relationship to mental health difficulties.
- In order to evaluate the predictive validity of self-disgust, the review will examine research linking self-disgust to mental health difficulties and evaluate this research according to the four competing models described above.#

The review will subsequently draw conclusions about the clinical utility of self-disgust as a concept in understanding mental health difficulties.

2. Method

2.1 Search Strategy

The electronic databases PsycINFO, PubMed, CINAHL and Web of Science were searched to retrieve empirical studies published up to March 2017. Each database was searched separately using the following search string: “disgust” OR “self-disgust” OR “mental contamination” OR “mental pollution”. All searches were also limited to papers published in peer-reviewed academic journals. The citation and reference lists of all included papers were also checked for relevant papers. Papers were screened according to the eligibility criteria below. Figure 1 presents a flow diagram documenting this search strategy.

2.1.1 Eligibility Criteria

Inclusion criteria Papers were considered eligible for inclusion in the review if they:

- Specifically and predominantly examined feelings of disgust towards the self, as assessed via:
    - The use of an established self-disgust scale
    - The use of a visual analogue scale specifically measuring self-disgust
    - The use of an established disgust measure as used in relation to some core feature of the self
    - Qualitative exploration specifically of feelings of disgust towards the self
    - The use of a scale which measured feelings of dirtiness or contamination specifically elicited by a core feature of the self (as opposed to elicited by transient mental events unrelated to the self). The only scales which met this

criterion were the Feeling of Being Contaminated Scale (Jung & Steil, 2011), which evaluates feelings of disgust and contamination elicited by one's own body following sexual assault, and the Sexual Assault Related Appraisals: Mental Contamination Scale (SARA; Fairbrother & Rachman, 2004), which assesses feelings of contamination elicited by whole-self evaluations following sexual assault (e.g. "I feel contaminated by my sexual assault/rape, no matter how much I wash")

- Were published in a peer-reviewed academic journal.
- Were available in the English language.
- Included a validated measure of mental distress or have sampled a population who have already been assessed as presenting with considerable psychological distress (for example, individuals with a diagnosis of post-traumatic stress disorder).

Exclusion criteria Studies were excluded from the review if they:

- Measured disgust in a manner which does not relate to a core feature of the self
- Did not predominantly measure self-disgust but rather a related construct, such as guilt, shame or self-loathing.
- Operationalised mental contamination predominantly in a way which does not relate to a core feature of the self (e.g. as intrusive mental images) – for example, via the Vancouver Obsessive Compulsive Inventory – Mental Contamination Scale (Radomsky, Rachman, Coughtrey and Shafran, 2014) or the Mental Pollution Questionnaire (Fairbrother & Rachman, 2004).

- Measured the experimental manipulation of a construct (e.g. inducing mental contamination).
- Were theoretical rather than empirical.
- Examined the relationship between self-disgust and a construct which has yet to demonstrate a robust connection with mental distress (e.g. flow, sense of superiority; Hirao & Kobayashi, 2013; Satoh, 2001; Kodaira, 2002).

[INSERT FIGURE 1 HERE]

2.2 Risk of bias assessment

Risk of bias in the included studies was assessed using a tool adapted for assessing bias in observational research from the Agency for Healthcare Research and Quality (Taylor, Hutton & Wood, 2015; Williams, Plassman, Burke & Benjamin, 2010). This tool specifies nine areas of relevance to the research question posed in this review, enabling methodologically diverse research papers to be compared within a coherent framework. To illustrate, no matter the methodology employed, it is important to determine whether or not self-disgust has been assessed in a valid way, whether the analyses conducted are appropriate, and whether potential confounds influencing the predictive validity of self-disgust have been controlled for. This tool has been used in previous reviews which included methodologically heterogeneous studies (Cherry, Taylor, Brown, Rigby & Sellwood, 2017). Risk of bias was evaluated in relation to the specific research questions posed in the review, as opposed to an attempt to make general claims about bias in the studies included.

2.3 Data synthesis

Data relevant to the study's aims were extracted from all studies and collated into a table. Themes and data from qualitative self-disgust papers were examined and areas of

convergence and divergence extracted. Effect sizes from quantitative papers were extracted and converted to a common metric (Pearson's *r*) to enable comparison, and findings were narratively synthesised. Methodological heterogeneity precluded meta-analytic integration of the findings.

3. Results

3.1 Result of assessment of risk of bias

The results of the risk of bias assessment are presented in Table 1. The most pertinent methodological biases pertained to the selection of participants, the assessment of self-disgust, and control for confounding variables. Specifically, studies tend to over-rely on samples of undergraduate students who complete various measures of psychological distress; it is difficult to generalise conclusions based on research in a relatively high-functioning sample to more acutely distressed samples. Conversely, when studies have recruited clinical samples, they tend to recruit participants based on membership of broad diagnostic categories with questionable validity (e.g. borderline personality disorder). This makes the specificity of the relationship between self-disgust and psychopathology difficult to disentangle. Furthermore, there is considerable variability in how self-disgust is assessed across studies, ranging from validated broad measures of self-disgust to visual analogue scales. Different measures likely capture different aspects of self-disgust. Control for confounding variables is typically partial and involves other measures of disgust (e.g. disgust propensity) or more general measures of well-being (e.g. anxiety). Studies rarely controlled for the confounding impact of other negative self-referent emotions such as shame. The implications of these biases are discussed throughout the results section.

[INSERT TABLE 1 HERE]

3.2 Study characteristics

Thirty-one papers (twenty-seven quantitative, three qualitative, one mixed) were included in the review. The context of the mental health difficulties in which self-disgust was studied tended to be highly variable – the mental health difficulties studied in each paper, as well as the methodology (quantitative or qualitative) employed, are broken down in Table 2 below. Specific difficulties examined included trauma-related difficulties, depression and anxiety, eating disorders or body-image related difficulties, self-harm, borderline personality disorder, and obsessive-compulsive difficulties. One paper (Overton et al., 2008) additionally assessed the psychometric properties of a self-disgust scale. As the relationship between self-disgust and psychopathology may vary according to the particular clinical presentation, these difficulties are considered separately below. Table 3 provides a detailed breakdown of the characteristics of included studies.

[INSERT TABLE 2 HERE]

[INSERT TABLE 3 HERE]

3.3 Conceptualisation of self-disgust

Qualitative examinations of people's experiences of self-disgust can inform whether the theoretical construction of self-disgust maps on to people's real-life experiences, and thus whether the concept captures a meaningful real-world phenomenon. Such research can delimit the boundaries of the concept, and indicate the aspects of experience that are captured within it. Thus, it can contribute to the definition of a meaningful concept and suggest how best quantitative measures can capture its breadth and depth. Qualitative studies have explored self-disgust in the context of depression (Powell et al., 2014), eating disorders

(Espeset et al., 2012), physical health problems (Jones et al., 2008), and sexual trauma (Jung & Steil, 2012).

Similar themes have emerged across these papers, although there are also areas of divergence. In perhaps the most comprehensive qualitative exploration of self-disgust, Powell et al. (2014) highlighted the importance of the visceral nature of self-disgust, underscored by diffuse feelings of nausea which are triggered by a range of self-related cues. Participants also reported experiencing a pervasive and constant background sense of self-disgust which became more intense when presented with specific triggers (e.g. having to focus on an aspect of the self), as well as severe psychological and behavioural reactions to self-disgust – this included a desire to literally cut away or cleanse the disgusted part of the self, dissociating the "disgusting" self from the rest of one's identity, and withdrawing from other people due to a belief that the self was toxic. A phenomenologically similar experience has been described in the other studies (Espeset et al., 2012; Jones et al., 2008; Jung & Steil, 2012), with particular commonalities including a physical sense of revulsion and nausea, social withdrawal, extreme attempts at cleansing (Jung & Steil, 2012) and a degree of dissociation and cognitive avoidance from the "disgusting" part of the self (Espeset et al., 2012). However, whereas in the Powell et al. (2014) study feelings of self-disgust were elicited by whole-self evaluations which were driven by diffuse causal pathways, elicitors of self-disgust in the other studies were more specific – that is, a diseased (Jones et al., 2008) or trauma-affected (Jung & Steil, 2012) body part or the body itself (Espeset et al., 2012) – and typically had a clearer causal pathway. Nonetheless, the overall phenomenological experience appears very similar.

Thus, self-disgust appears to represent a real and meaningful experience for people with significant psychological and behavioural consequences, which encompasses both an enduring and stable cognitive-affective component and a more intense and transient self-

disgust emotional reaction. It can be elicited by whole-self diffuse evaluations, or by more specific evaluations, such as evaluations of behaviour. Therefore, a clear and meaningful definition of self-disgust can be derived and mapped on to personal accounts of the experience – such a clear construct definition is an essential first step in establishing construct validity (Schwab, 1980).

3.4 Measurement of self-disgust

Examination of the measurement of self-disgust can inform how well a quantitative assessment of self-disgust maps on to this conceptual definition.

Considerable heterogeneity exists in how self-disgust has been operationalised within the literature. Psychometric measures designed specifically to assess self-disgust (e.g. Overton et al., 2008; Schienle, Ille, Sommer & Arendasy, 2014) have only recently been developed. In the absence of standardized self-disgust scales, the most frequently employed measures of self-disgust simply involve utilizing visual analogue scales asking individuals to rate the intensity with which they experience self-disgust (e.g. Abdul-Hamid et al., 2014; Badour et al., 2012; Badour et al., 2014; Dyer et al., 2015). Such single-item measures are unlikely to capture the full complexity of a self-disgust cognitive-affective schema, and may instead capture a more transient but intense self-disgust emotional reaction. Perhaps resultantly, such measures have not been subject to any rigorous psychometric tests of reliability over time, and validity has only been established relative to more general measures of disgust rather than relative to other negative self-referential emotions. Additional brief measures of feelings of disgust towards the self have also been developed specifically in relation to sexual trauma, including the Feeling of Being Contaminated Scale (Jung & Steil, 2012,2013; Steil et al., 2011) and three items from the Sexual Assault and Rape Appraisals (SARA; Fairbrother & Rachman, 2004). Again however, such scales appear to focus on a

specific aspect of self-disgust (disgust towards trauma-affected body parts, generated by more associative processes following links with a real contaminant), and have yet to be subject to rigorous psychometric testing.

Two multi-item measures of self-disgust have been developed and validated in the literature. The Self-Disgust Scale (Overton et al., 2008), developed and validated in a UK convenience sample (largely comprising female undergraduate students), comprises two factors, a "disgusting self" scale, in which disgust becomes targeted at stable, context-independent aspects of one's appearance or personality, and a "disgusting ways" scale, in which disgust is directed at one's behaviour. The SDS has evidenced strong internal consistency (Cronbach's alpha = .91), suggesting that it measures a coherent underlying construct, and strong test-retest reliability, suggesting the scale is measuring a construct which is relatively stable over time. Moderate correlations with more general measures of disgust (r = .25) suggests that the scale is measuring a construct which centres on the core emotion of disgust. However, correlations between the SDS and measures of other negative self-relevant emotions were not described, thus limiting conclusions around the convergent and discriminant validity of the SDS. The Questionnaire for the Assessment of Self-Disgust (Schienle, Ille, Sommer & Arendasy, 2014) appears to have a similar factor structure to the SDS, producing "personal " and "behavioural" disgust subscales. Unfortunately, the study validating the QASD is not available in the English language. However, subsequent studies (e.g. Schienle et al., 2015) using the QASD report strong internal consistency ($\alpha = 0.85$) and test-retest reliability.

Differing measures of self-disgust are likely to capture different elements of this construct, with visual analogue scales perhaps measuring a transient emotional reaction and multi-item scales like the SDS and QASD better capturing the underlying construct suggested

by qualitative research, including its cognitive and behavioural elements. Thus, in considering the relationship between self-disgust and mental distress, it is crucial to consider which element of self-disgust is likely being assessed by a particular measure. Although the SDS and QASD are more likely to fully capture the construct of self-disgust, their development and validation within predominantly student, largely female, non-clinical samples, may render them less sensitive to detecting different manifestations of self-disgust in other populations. To illustrate, the specific body-part elicitors of self-disgust evidenced in the Jones et al. (2008) and Jung & Steil (2011) studies may be less likely to be picked up by the more whole-body evaluation items on the SDS and QASD. Thus, the likely sensitivity and specificity of the measure in detecting self-disgust in a particular population should also be considered when evaluating the relationship between self-disgust and mental distress. Therefore, although measures exist which appear to adequately capture the construct of self-disgust as evidenced in the qualitative literature, these assessments may be less sensitive to capturing manifestations of self-disgust in specific populations. Furthermore, much of the self-disgust literature has employed a measure of self-disgust which have yet to establish adequate construct validity and are likely to only partially capture the concept of self-disgust. These issues will be given careful consideration in considering the literature examining the relationship between self-disgust and mental distress.

3.5 The relationship between self-disgust and mental distress

This literature pertains to the predictive validity of self-disgust in determining clinical outcomes. Throughout this section of the review, the relationship between self-disgust and mental health difficulties will be considered according to how well it fits with the four models outlined in the introduction, each of which has different implications for the predictive, and thus clinical, utility of self-disgust.

3.5.1 Self-disgust and mood difficulties

Six papers have examined the relationship between self-disgust and depression or anxiety (see tables 4 and 5 below). These studies have employed broad multi-item measures of self-disgust, indicating that they are likely capturing the full cognitive-affective schema. Effect sizes tend to be moderate to large when examining the relationship between self-disgust and depression, although beta values are weaker after other negative self-referential emotions are controlled for. Where anxiety has been measured, effect sizes tend to be small to moderate, and beta values are further reduced when other variables are controlled. Behavioural self-disgust appears to have a stronger predictive effect on anxiety than physical self-disgust. Many of these studies position self-disgust as a mediating variable which attempts to explain the relationship between various life events (e.g. illness) or dispositions (e.g. dysfunctional attitudes or biases) and the subsequent development of depression or anxiety. Five of these studies have employed a cross-sectional survey design in order to test these hypotheses, with one employing a longitudinal design.

To illustrate, two cross-sectional studies conducted in community samples (Overton et al., 2008; Simpson et al., 2010) demonstrated that the relationship between dysfunctional attitudes (for example, perfectionistic tendencies) and depression was partially mediated by the effect of depression on self-disgust, with the mediating effect of self-disgust remaining significant independent of the mediating effect of low self-esteem (Simpson et al., 2010). A longitudinal study (Powell et al., 2013) lends further support to the conceptualisation of self-disgust as a concept which mediates the relationship between dysfunctional attitudes and depression. Specifically, over a 12-month period in a non-clinical sample, self-disgust levels at baseline significantly predicted depressive symptoms six months ($\beta = 0.30$) and 12 months ($\beta = 0.26$) later when controlling for baseline depressive symptoms. However, when

controlling for baseline levels of self-disgust, baseline depressive symptoms did not significantly predict levels of self-disgust at six months ($\beta = 0.10$) or 12 months ($\beta = 0.03$). Furthermore, the impact of baseline levels of dysfunctional attitudes on depressive symptoms was mediated by self-disgust at 6 months, $\beta = 0.13$, suggesting that at least some of the impact of cognitive biases on depressive symptoms is mediated by its impact on self-disgust. However, there was also a significant impact of 6-month self-disgust on 12-month dysfunctional attitudes, suggesting that perhaps a bi-directional relationship in which self-disgust, once established, functions to perpetuate cognitive biases. Two studies (Azlan et al., 2017; Powell et al., 2016) which examine the predictive role of self-disgust on the development of depression in the context of a (disgust-related) physical health stressor lend further tentative support to the conceptualization of self-disgust as a contributor to the aetiology of mood difficulties. Powell et al. (2016), in their cross-sectional examination of the role of self-disgust in the development of depression in cancer patients, found that self-disgust mediated the relationship between disgust-related cancer side effects and depressive symptomatology in patients high in disgust-sensitivity but not in patients low in disgust-sensitivity, with both physical and behavioural self-disgust exhibiting significant direct effects on depression. Similarly, Azlan et al. (2017) reported that physical self-disgust was strongly predictive of depression in cancer patients. However, another cross-sectional study (Laffan et al., 2015) found no relationship between levels of self-disgust and depression in a sample of older adult living in residential care, although it should be noted that overall levels of self-disgust were very low within this sample.

Overall the evidence converges to support the conceptualisation of self-disgust as a latent factor with a significant aetiological role in the development of depression, thus lending most support to the first of our potential relationship models. The evidence further appears to suggest that once the link between self-disgust and depression is established, self-

disgust then subsequently influences other depression-maintaining processes, such as cognitive biases. This would give the concept of self-disgust significant predictive and clinical utility in understanding depression. However, the relevance of self-disgust to anxiety appears to be much weaker. Moreover, conclusions are bounded by a number of caveats, most notably an over-reliance on community samples in which overall levels of distress are relatively low and a failure to control for potential confounding variables such as shame or self-hatred. It is therefore difficult to rule out model 4, in which self-disgust only relates to psychopathology through its relationship to other negative self-referent emotions.

[INSERT TABLE 4 HERE]

[INSERT TABLE 5 HERE]

3.5.2 Self-disgust and trauma-related difficulties

Ten studies have examined the relationship between self-disgust and the development of trauma-related difficulties (see Table 6 below). Effect sizes have been quite variable (ranging from non-existent to large) depending on how self-disgust and trauma-related difficulties have been operationalised. In particular, studies which have examined the role of peri-traumatic self-disgust (Badour et al., 2012, 2013, 2014) have evidenced much weaker effect sizes than studies which have measured a more enduring self-disgust reaction (e.g. Brake et al., 2017; Dyer et al., 2015, Ille et al., 2014 Rusch et al., 2011). All of these studies have employed cross-sectional, case-control, or retrospective designs, and therefore are

limited in their ability to inform the predictive validity of self-disgust. However, a number of treatment outcome studies (Jung & Steil, 2012, 2013; Jung, Steil & Stangier, 2013) evaluating the efficacy of self-disgust based interventions on post-traumatic symptoms enable us to evaluate this further.

To illustrate, peri-traumatic self-disgust has been demonstrated to have no effect on post-traumatic stress symptoms once other variables are controlled for (Badour et al., 2012), although it has been demonstrated to significantly predict mental contamination following trauma (Badour et al., 2014), which in turn significantly predicted post-traumatic stress symptom severity (Badour et al., 2013). However, significantly higher rates of body-focused self-disgust have been observed in victims of childhood sexual abuse who have a diagnosis of PTSD symptoms compared to a healthy control group (Dyer et al., 2015), and women with a diagnosis of PTSD who had experienced childhood sexual abuse were significantly more likely to associate themselves with disgust than with anxiety in an implicit association test (Rusch et al., 2011). Moreover, self-disgust has been demonstrated to mediate the relationship between post-traumatic stress severity and suicide risk (Brake et al., 2017).

A coherent framework is needed in order to integrate these divergent findings. It is possible, for example, that a peri-traumatic self-disgust response only results in development of post-traumatic symptoms when it is elaborated in to an over-arching self-disgust framework. Further, peri-traumatic self-disgust may promote vulnerabilities such as mental contamination which enable this elaboration. However, the retrospective and cross-sectional nature of these studies prohibits clear conclusions and thus restrict our ability to evaluate the predictive validity of self-disgust.

Nonetheless, a small number of treatment outcome studies enable further evaluation of this relationship. A case study (Bowyer et al., 2014) describing the integration of

compassion-focused techniques to target self-disgust within an overall trauma-focused CBT intervention evidenced considerable reductions in post-traumatic stress symptoms. Similarly, a 2-session intervention specifically targeting contamination-based appraisals and imagery has evidenced significant reductions in PTSD symptoms in a case study (Jung & Steil, 2012), a small scale intervention study (Jung, Steil & Stangier, 2011) and a randomized controlled trial (Jung & Steil, 2013). Demonstrating that reductions in self-disgust results in subsequent reductions in post-traumatic symptoms indicates that self-disgust at least plays a significant role in the maintenance, if not the development, of these symptoms.

Thus, overall empirical research on self-disgust and trauma is suggestive of a causal role for self-disgust, thus lending support to the first of our proposed relationship models. However, results are confounded by the considerable heterogeneity in the operationalisation of self-disgust, and like the depression literature, by a reliance on retrospective cross-sectional studies and a failure to control for other negative self-referential processes. Thus, it is also difficult to rule out the fourth potential relationship model, in which self-disgust only relates to post-traumatic difficulties due to its relationship with other variables such as shame.

[INSERT TABLE 6 HERE]

3.5.3 Self-disgust and difficulties with body-image

Five quantitative studies have examined the relationship between self-disgust and problems associated with disordered eating or body image (see table 7 below). Effect sizes are moderate to large when the zero-order correlations are considered, although beta values are much smaller when other negative self-referential emotions such as shame are controlled. All studies employed a cross-sectional or case-control design, and measurement of self-disgust has varied across studies. An additional qualitative study (Espeset et al., 2012) linked

self-disgust to specific eating disordered behaviours, in particular social withdrawal, food restriction, and dissociation from the body.

To illustrate, individuals with body-image related difficulties (eating disorders, body dysmorphic disorder) self-report significantly higher levels of disgust relative to controls both when focusing on their own bodies (Bornholt et al., 2005; Neziroglu et al., 2010) and in multi-item measures of self-disgust (Ille et al., 2014). In addition to significantly predicting overall eating difficulties, self-disgust also significantly moderated the relationship between eating disorder symptoms and suicidal ideation, such that eating disorder symptoms predicted suicidal ideation in those high in self-disgust but not in those low in self-disgust (Chu et al., 2015). This finding may suggest that self-disgust underpins a more severe and enduring manifestation of eating difficulties, which may in turn predict suicidal ideation. Moreover, self-disgust uniquely predicted bulimia independently of the effects of shame (Olatunji et al., 2015), and significantly mediated the relationship between shame and bulimia ($z = 2.25$, $p = .02$). However, the relationship between self-disgust and bulimia became weaker (although still significant) when shared variance was attributed to shame, suggesting that failure to consider the broader emotion of shame may result in over-estimation of the specific effects of self-disgust.

Although the above findings suggest a role for self-disgust in body-image difficulties, albeit a more modest one when shame is also considered, they are bounded by their cross-sectional nature, as well as their use of a convenience rather than a clinical sample – these methodological difficulties limit the specificity of conclusions regarding precisely how self-disgust relates to eating pathology across the spectrum of eating disorder severity. Although the qualitative paper (Espeset et al., 2012) suggest that self-disgust precipitates and drives

eating disordered behaviours such as food restriction and avoidance of body awareness, these causal inferences are similarly limited and require empirical testing.

Thus, the research on self-disgust in the context of body-image difficulties is inconclusive with regard to which of the four potential relationship models it best fits. However, given suggestions in the qualitative literature that self-disgust drives eating disordered behaviour (rather than vice versa), the significant (albeit much weaker) contribution of self-disgust to these difficulties independent of the effects of shame, and the moderating impact of self-disgust on suicidal ideation in the context of these difficulties, some very tentative support is lent to the first predictive model, which posits that self-disgust is causally related to the development of body-image difficulties.

[INSERT TABLE 7 HERE]

3.5.4 Self-disgust and self-harm

Three papers explicitly examined the relationship between self-disgust and self-harm (see table 8). Effect sizes were reported for only one of these studies (Bachtelle & Pepper, 2015), and are in the moderate to large range. Self-disgust was operationalised differently across studies, with two studies (Bachtelle & Pepper, 2015; Smith et al., 2015) employing a broad multi-item measure of self-disgust, and one (Abdul-Hamid et al., 2014) employing a visual analogue measure. Two employed cross-sectional designs (Bachtelle & Pepper, 2015; Smith et al., 2015) and one (Abdul-Hamid et al., 2014) employed an experimental design, with studies indicating a bi-directional relationship between self-disgust and self-harm.

To illustrate, Bachtelle & Pepper (2015) report strong positive correlations between self-disgust and shame linked to self-injury related scars, and moderate negative correlations between self-disgust and the ability to experience personal transformation or growth following self-injury, suggesting that self-disgust may inhibit recovery from self-harm.

Similarly, self-disgust significantly mediated both the relationship between depression and non-suicidal self-injury and the relationship between childhood sexual abuse and lifetime self-injury status (Smith et al., 2015), suggesting both that adverse life events exert their influence on self-injury partially through their effects on self-disgust and that self-disgust in turn increases the risk of depression following self-injury. Abdul-Hamid et al.'s (2014) experimental study lends further support to the complexity of this relationship. Specifically, when participants reflected on negative aspects of the personality and then their body (by writing a 3-minute free-narrative on this) and rated both changes in their disgust levels and changes in their self-harm urges subsequently, more frequent references to disgust terms in participant narratives was significantly related to an increase in urge to self-harm.

Overall, these findings tentatively suggest a reciprocal relationship between self-disgust and self-harm urges, with self-disgust both predicting subsequent self-harm and generated as a response to self-harm. Thus, these findings are supportive of both model 1, in which self-disgust has a causal influence on engagement in self-harm, and model 2, in which engagement in self-harm predicts subsequent self-disgust.

[INSERT TABLE 8 HERE]

3.5.5 Self-disgust and obsessive-compulsive symptoms

Three papers (see table 9) examined the relationship between self-disgust and obsessive compulsive difficulties, two of which have already been discussed in relation to post-traumatic difficulties (Badour et al., 2012) and eating disorders (Olatunji et al., 2015). Effect sizes are moderate, although beta values reduce when other variables are controlled for. One of these studies (Badour et al., 2012) assessed peri-traumatic self-disgust and its subsequent impact on the development of obsessive-compulsive difficulties. The other

studies assessed self-disgust using the multi-item Self-Disgust Scale. Two of these studies are cross-sectional (Badour et al., 2012; Olatunji et al., 2015) and one employs an experimental design. Results tentatively indicate that self-disgust drives obsessive-compulsive behaviours, rather than vice versa, and that self-disgust makes a unique contribution to this process independent of other negative self-referential emotions.

To illustrate, peri-traumatic self-disgust made a unique but small contribution to obsessive-compulsive difficulties independent of the effects of depression, disgust-sensitivity and post-traumatic cognitions (Badour et al., 2012), and general self-disgust made a small but significant independent contribution to obsessive-compulsive symptoms independent of the effects of shame (Olatunji et al., 2015). Experimentally-manipulated excessive engagement in health-related behaviours had no impact on self-disgust (Olatunji et al., 2014), suggesting that these behaviours are a consequence rather than a cause of self-disgust.

Thus, the evidence on self-disgust and obsessive-compulsive difficulties is very weakly suggestive of the first causal model. However, such conclusions are very tentative. Olatunji et al. (2014) employed a community sample who were not experiencing obsessive-compulsive symptoms and manipulated only a small range of behaviours which may be encompassed within obsessive-compulsive difficulties. It is therefore possible that when such behaviours occur in the context of significant psychological distress, they do drive further self-disgust. It is also probable that particular obsessive-compulsive symptoms not captured in that study (such as intrusive thoughts) drive further self-disgust. Thus, we cannot rule out model two, in which self-disgust is a consequence of obsessive-compulsive difficulties, or a reciprocal relationship between models one and two.

[INSERT TABLE 9 HERE]

3.5.6. Self-disgust and a diagnosis of borderline personality disorder

Four studies (see table 10) have reported on the relationship between self-disgust and a diagnosis of borderline personality disorder. Effect sizes, where reported, are in the large range. All four studies (Dudas et al., 2017; Ille et al., 2014; Schienle et al., 2013; Schienle et al., 2015) employed a case-controlled design and utilised multi-item measures of self-disgust (the QASD). Three of these studies (Dudas et al., 2017; Schienle et al., 2013; Schienle et al., 2015) also demonstrated differential patterns of activation in the amygdala brain regions in the client group relative to a control group, and an increased sensitivity to facial expressions of disgust in others. Schienle et al. (2015) postulated that the latter findings may be due to life experiences which have shaped predictions of rejection, thus sensitising participants to expressions of disgust from others.

Although these studies are indicative of elevated levels of self-disgust in this group of individuals, a number of methodological limitations preclude us from drawing conclusions about the predictive relationship between self-disgust and such difficulties. The study designs do not enable conclusions around the direction of effects. Furthermore, the construct validity of borderline personality disorder is questionable, and is likely to encompass a highly heterogeneous group of people. Thus, findings that self-disgust is elevated in a very heterogeneous group of people does not enable conclusions about why this might be the case (i.e. the particular psychological processes that self-disgust might relate to in this group). Notwithstanding the heterogeneity within the category itself, participants in the above studies typically presented with numerous additional psychological difficulties. Thus, it is entirely possible that higher levels of self-disgust confer a more general risk for more severe manifestations of psychological distress, rather than the more specific difficulties associated with borderline personality disorder.

[INSERT TABLE 10 HERE]

4. Discussion and conclusions

Overall, the review supports the construct validity of the concept of self-disgust – qualitative explorations of the phenomenology of self-disgust appear to describe a meaningful and coherent experience, which is distinct from other negative self-referent emotions, and which is associated with significant negative outcomes. Quantitative measures of self-disgust would appear to map well on to these qualitative descriptions, although they may be less sensitive in populations for whom the elicitors of self-disgust are specific rather than diffuse. Psychometric testing of these measures further indicates a coherent underlying structure, which is stable over time, and which correlates appropriately (not so strongly that it is measuring the same construct, but not so weakly that it is completely unrelated to constructs it should theoretically relate to) with both other measures of disgust and measures of other negative self-referent emotions.

It is more difficult to determine the predictive validity of self-disgust, particularly over and above the predictive value of established constructs such as shame. The evidence does however tentatively suggest that self-disgust is implicated in the aetiology of a range of mental health difficulties, particularly in the areas of depression, trauma and eating disorders, with perhaps a more reciprocal relationship evident between self-disgust and self-harm. However, a number of caveats limit the strength of these conclusions. Firstly, a dearth of prospective studies means that conclusions about the direction of effects are based on a small number of papers, or based on inferences from studies in which self-disgust is most likely to have pre-dated the difficulty being examined (e.g. a physical health condition resulting in a change in the self, a trauma). Secondly, many studies did not control for the potentially confounding effects of other self-relevant emotions, in particular shame, and those that did reported a more modest (although still significant) unique contribution of self-disgust.

Thirdly, many of the measures used to assess self-disgust, particularly in the area of trauma, may only capture a small part of the construct and may result in an over or under estimation of the strength of the relationship between self-disgust and mental health, particularly post-traumatic, difficulties. Fourthly, there is also an over-reliance on convenience rather than clinical samples, particularly in the research on depression and obsessive-compulsive difficulties; it is possible that the relationship between self-disgust and these difficulties is different when more severe manifestations of these difficulties are more prevalent in the sample. Finally, there is an over-reliance on between-group comparisons based on diagnostic categories which are considerably heterogeneous, or on examining the relationship between self-disgust and symptoms of a particular diagnostic category; this makes it difficult to infer the specific process through which self-disgust contributes to a particular mental health difficulty, and difficult to disentangle a causal influence of self-disgust from self-disgust simply being part of the phenomenology of the mental health difficulty. Research examining the relationship between self-disgust and specific symptoms, or more tightly related clusters of symptoms, may address this difficulty. To illustrate, it would be much more useful to know whether self-disgust predicts greater difficulty relating to other people than to know that self-disgust is higher in people with a diagnosis of borderline personality disorder. Research focused on identifying the unique processes which mediate the relationship between self-disgust and particular mental health difficulties would also add to this understanding.

Given the limitations outlined above, the clinical implications of this review should be interpreted with caution. However, the findings do suggest that self-disgust is a meaningful and distinct phenomenon with severe behavioural and psychological consequences, which is implicated in the development and maintenance of a range of mental health conditions. Thus, it should be taken into consideration in therapeutic practice. For example, the possibility that self-disgust is influencing an individual's presentation could inform the generation of

additional early hypotheses which could subsequently further inform important areas for assessment, particularly in the conditions discussed above. Assessing for the physiological, behavioural, cognitive and subjective emotion states identified as key to self-disgust can subsequently inform formulation and targets for treatment. Given the sensitive nature of this topic, assessing self-disgust will need to be approached carefully, and qualitative research could usefully inform how clients would prefer this topic to be broached. Nonetheless, research on assessment of other sensitive topics, such as abuse or shame (e.g. Gilbert & Proctor, 2006; Larkin & Morrison, 2006), can inform this process. Moreover, the review has highlighted the potential benefits of specific therapeutic programmes which target (e.g. Jung & Steil, 2012) self-disgust, albeit a more focused and contained aspect of self-disgust. New treatment programmes could build on this work by developing and adapting techniques which focus on the more diffuse aspects of self-disgust.

The review indicates several avenues for future research in order to further inform the clinical utility of self-disgust. As noted above, qualitative research exploring how clients experience assessment and intervention with self-disgust in therapy can inform how the concept can be most helpfully integrated into practice, as can treatment outcome studies which examine the efficacy of therapeutic strategies aimed at ameliorating self-disgust. Furthermore, there is a need for more prospective studies which examine the relationship between self-disgust and various mental health conditions over time, studies which examine the unique contribution of self-disgust to these difficulties as distinct from the contributions of shame and guilt, and studies which examine the processes through which self-disgust exerts its effects on mental health difficulties.

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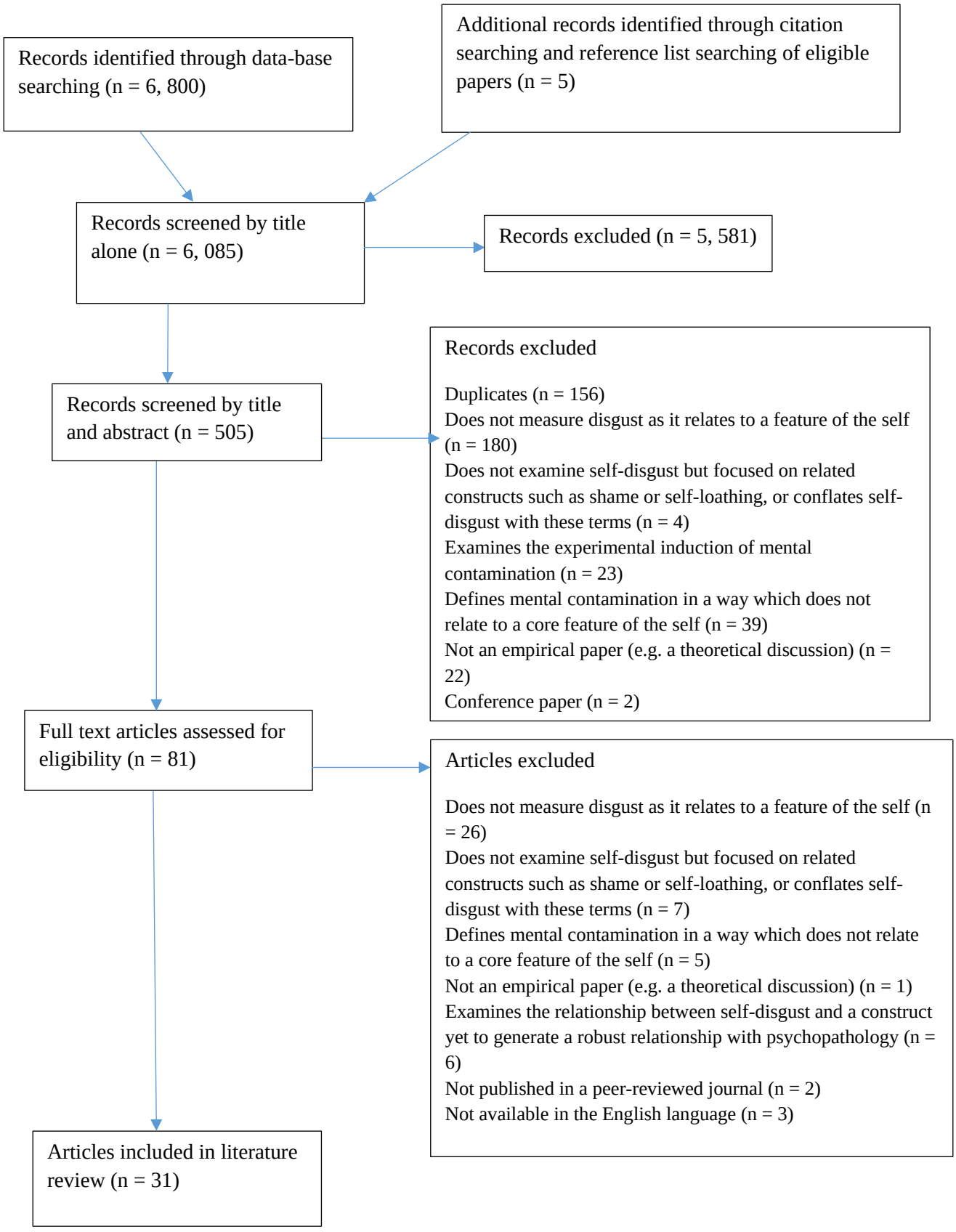

Figure 1. Flow diagram documenting search strategy

Table 1. Assessment of risk of bias

Authors	Unbiased selection of cohort?	Sample size calculation ?	Adequate description of cohort?	Validated method for assessing self-disgust?	Validated method for assessing mental health difficulty?	Outcome assessors blind to predictor variables?	Missing data minimal?	Confounders controlled for?	Appropriate analyses?
Abdul-Hamid, Denman & Dudas (2014)	Partial	No	Yes	Partial	Partial	n/s	Yes	Partial	Yes
Azlan, Overton, Simpson & Powell (2017)	Yes	No	Yes	Yes	Yes	n/s	n/s	Yes	Yes
Bachtelle & Pepper (2015)	Yes	No	Yes	Yes	Partial	n/s	n/s	No	Partial
Badour, Bown, Adams, Bunaciu, Feldner (2012)	n/s	No	Yes	Partial	Yes	n/a	n/s	Partial	Yes
Badour, Feldner, Blumenthal & Bujarski (2013)	n/s	No	Yes	Partial	Yes	n/s	n/s	Partial	Yes
Badour, Ojserkis, McKay & Feldner (2014)	n/s	No	Yes	Partial	Yes	n/s	n/s	Partial	Yes
Bornholt, Brake et al. (2005)	n/s	No	Yes	Partial	Partial	n/s	n/s	Partial	Yes
Bowyer, Wallace & Lee (2014)	No	n/a	Yes	Partial	Yes	No	n/a	No	Yes
Brake, Rojas, Badour, Dutton & Feldner (2017)	Yes	No	Yes	Yes	Yes	n/s	n/s	Partial	Yes
Chu, Bodell, Ribeiro & Joiner (2015)	Partial	Yes	Yes	Yes	Yes	n/s	Yes	Partial	Yes
Dudas et al. (2017)	Partial	No	Partial	Yes	Partial	No	n/s	Partial	Yes
Dyer, Feldman & Borgmann (2015)	Partial	No	Partial	Partial	Partial	No	n/s	No	Yes
Espeset, Gulliksen, Nordbo, Skarderud & Holte (2012)	Yes	n/a	Yes	Yes	Yes	n/a	n/a	n/a	Yes
Ille et al. (2014)	Partial	No	Partial	Yes	Yes	n/s	n/s	Partial	Yes
Jones et al. (2008)	Yes	No	Yes	Yes	Yes	n/a	n/a	n/a	Partial

Jung & Steil (2013)	No	Yes	Yes	Partial	Yes	n/s	Yes	No	Yes
Jung & Steil (2012)	No	n/a	Yes	Partial	Yes	n/s	Yes	No	Yes
Laffan, Millar, Salkovskis & Whitby (2015)	Yes	Yes	Yes	Yes	Yes	n/s	n/s	No	Yes
Olatunji (2015)	Partial	Yes	Partial	Yes	Partial	No	n/s	Partial	Yes
Olatunji, Cox & Kim (2015)	Partial	No	Yes	Yes	Yes	n/s	No	Yes	Yes
Overton, Markland, Simpson, Taggart & Bagshaw (2008)	Partial	Yes	Partial	Yes	Yes	n/s	n/s	Partial	Yes
Powell, Azlan, Simpson & Overton (2016)	Yes	No	Yes	Yes	Yes	n/s	Yes	Partial	Yes
Powell, Overton & Simpson (2014)	No	n/a	Yes	Yes	Yes	n/a	n/a	n/a	Yes
Powell, Simpson & Overton (2013)	Partial	No	Yes	Yes	Yes	n/s	Yes	Partial	Yes
Nexiroglu, Hickey & McKay (2010)	Partial	No	Partial	Partial	Partial	n/s	Yes	No	Yes
Rusch et al. (2011)	Partial	No	Yes	Partial	Partial	n/s	n/s	Partial	Yes
Schienle, Leutgeb & Wabnegger (2015)	Partial	No	Partial	Yes	Partial	n/s	n/s	No	Yes
Schienle, Haas-Krammer, Schoggle & Ille (2013)	Partial	No	Yes	Yes	Partial	n/s	n/s	No	Yes
Simpson, Hillman, Crawford & Overton (2010)	Partial	Yes	Yes	Yes	Yes	n/s	n/s	Yes	Yes
Smith, Steil, Weitzman, Trueba & Meuret (2015)	Partial	No	Yes	Yes	Yes	n/s	n/s	Partial	Yes
Steil, Jung & Stangier (2011)	Partial	No	Yes	Partial	Yes	n/s	Yes	No	Yes

n/s – not specified
n/a – not applicable

Table 2. Overview of included papers according to mental health difficulty considered

Mental health difficulty	Study	Methodology (Quant/Qual)
Post-traumatic stress difficulties	Badour et al. (2012)	Quantitative
	Badour et al. (2013)	Quantitative
	Bowyer, Wallace & Lee (2013)	Quantitative
	Brake et al. (2017)	Quantitative
	Rusch et al. (2011)	Quantitative
	Jung & Steil (2012)	*Mixed*
	Jung & Steil (2013)	Quantitative
	Steil, Jung & Stangier (2011)	Quantitative
Eating disorder or body image difficulties	Bornholt et al., 2005	Quantitative
	Chu et al., 2015	Quantitative
	Espeset et al., 2012	*Qualitative*
	Olatunji et al., 2015	Quantitative
	Neziroglu et al., 2010	Quantitative
Anxiety or depression	Azlan et al. (2017)	Quantitative
	Jones et al. (2008)	*Qualitative*
	Laffan et al. (2015)	Quantitative
	Overton et al. (2008)	Quantitative
	Powell et al. (2013)	Quantitative
	Powell et al. (2014)	*Qualitative*
	Powell et al. (2016)	Quantitative
	Simpson et al. (2010)	Quantitative
Self-harm	Abdul-Hamid et al. (2014)	Quantitative
	Bachtelle & Pepper (2015)	Quantitative
	Smith et al. (2015)	Quantitative
Diagnosis of borderline personality disorder	Dudas et al. (2017)	Quantitative
	Schienle et al. (2013)	Quantitative
	Schienle et al. (2015)	Quantitative
Obsessive-compulsive difficulties	Badour et al., 2012	Quantitative
	Olatunji et al., 2015	Quantitative
Obsessional cleaning and health-related behaviours	Olatunji et al., 2015	Quantitative
Multiple	Ille et al., 2014	Quantitative

Table 3. Characteristics of Included Studies

Authors	Research question	Design	Sample	Key measures	Analytic strategy	Key findings
Abdul-Hamid, Denman & Dudas (2014)	Examined Self-Relevant Disgust and Self-Harm Urges in Patients with Borderline Personality Disorder and Depression. Predicted that overall disgust levels would be higher in BPD group, and that increases in self-disgust would predict increases in self-harm urges.	Quasi-experimental between groups design, in which self-harm urges were measured across groups following task to induce self-disgust.	17 BPD patients, 27 MDD patients, 25 healthy controls All women	- Task – write a 3-minute narrative focused on negative aspects of the self, then a 3-minute narrative on negative aspects of the body - Visual analogue measures of disgust taken before and after both the person and body focused tasks - Changes in self-harm urges after both tasks - Narratives coded for the label of emotions	Krushkav-Wallis and Mann-Whitney U	The BPD group had higher levels of post-task disgust in the PERSON task (writing a piece focused on their own personality) than healthy volunteers. The BPD group had higher levels of post-task disgust in the BODY task (writing a piece on their emotions towards their body) than both the MDD group and the healthy controls. Changes in self-harm levels were associated with disgust narrative labels on a whole sample level. Changes in disgust levels in people with MDD in the PERSON task was associated with increased urges to self-harm.
Azlan, Overton, Simpson & Powell (2017)	Are levels of self-disgust higher in people with cancer compared to matched controls? Do higher levels of self-disgust in both cancer patients and controls predict higher levels of depression and anxiety?	Cross-sectional correlational	107 cancer patients with heterogeneous cancer dx (72 % women), compared to 107 controls matched on age and gender	- Self-disgust scale (Overton et al., 2008) - Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983)	Logistic regression categorising people in to cancer vs non-cancer categories based on disgust scores Multiple regression to examine relationships between self-disgust and depression/anxiety	Cancer patients were 1.13 times as likely to exhibit higher physical self-disgust than control patients. Both physical and behaviour self-disgust significantly correlated with anxiety and depression. Multiple regression analysis indicated that physical and behavioural self-disgust significantly predicted anxiety in cancer patients, but only behavioural self-disgust significantly predicted anxiety in controls. Physical (but not behavioural) self-disgust significantly predicted depression in both cancer patients and controls Behavioural self-disgust had only weak relationships to depression in both groups.
Bachtelle & Pepper (2015)	What emotions influence scar-related growth or shame in individuals who engage in non-suicidal self-injury (NSSI)?	Cross-sectional correlational	49 college students (73% female) with scars from NSSI , recruited from a broader sample	Deliberate Self-Harm Inventory (DSHI; Gratz, 2001), with an additional qst about future likelihood of self-harm. Self-Disgust Scale (Overton et al., 2008) Differential Emotions Scale IV (DES-IV-A; Izard et al., 1993)	Correlational analysis	Self-disgust was significantly negatively correlated with post-traumatic growth. Self-disgust was also significantly positively correlated with scar-related shame.
Badour, Bown,	Peri-traumatic fear, self and	Cross-sectional	Community	Rating of between 0 and 100 on the	Hierarchical multiple	Peritraumatic self-focused disgust significantly predicted

Adams, Bunaciu, Feldner (2012)	other-focused disgust in predicting development of PTSD or contamination-based OCD	correlational	sample of 49 adult women with a history of interpersonal traumatic victimization (27 sexual assault, 22 physical assault).	experience of peri-traumatic self-focused disgust, perpetrator-focused disgust and fear. Obsessive–Compulsive Inventory-Revised (OCI-R; Foa et al., 2002). Clinician-Administered PTSD Scale (CAPS; Blake et al., 1995)	regression	contamination-based OCD but not PTSD. Peritraumatic fear and other-focused discussed significantly predicted PTSD
Badour, Feldner, Blumenthal & Bujarski (2013)	Is the relationship between disgust sensitivity and PTSD following sexual trauma mediated by mental contamination?	Cross-sectional correlational	Community sample of 38 women with a history of at least one traumatic sexual assault, recruited from a broader study	Disgust Propensity and Sensitivity Scale-Revised (DPSS-R; van Overveld et al., 2006) Sexual Assault-Related Mental Contamination scale (Fairbrother and Rachman 2004) Clinician-Administered PTSD Scale (CAPS; Blake et al. 1995),	PROCESS (based on linear regression models and Sobel's test of the indirect effect)	Both disgust-sensitivity and sexual assault related mental contamination were significantly correlated with post-traumatic stress symptom severity. Disgust sensitivity predicted post-traumatic stress through its relationship with mental contamination.
Badour, Ojserkis, McKay & Feldner (2014)	Evaluated the degree to which self-focused and perpetrator-focused disgust were predictive of mental contamination following sexual trauma	Cross-sectional correlational	72 women recruited from the community with a history of sexual trauma	Rating of between 0 and 100 on the experience of peri-traumatic self-focused disgust, perpetrator-focused disgust and fear. Vancouver Obsessional Compulsive Inventory-Mental Contamination Scale (VOCI-MC; Rachman, 2005).	Hierarchical regression analysis.	Peri-traumatic self-focused disgust, but not peri-traumatic perpetrator-focused disgust or fear, was significantly associated with mental contamination following sexual trauma.
Bornholt, Brake et al. (2005)	What self-concepts are employed by adolescent girls to evaluate their bodies?	Cross-sectional	141 adolescent girls from across the weight range, including 28 girls currently hospitalized with anorexia.	Specially designed task in which participants visualised their bodies and circled the emotions they felt.	T-tests	Comparison of the anorexic group with a low-BMI control group drawn from the schoolgirl sample indicated that anorexic girls felt significantly more disgust towards their own bodies.
Bowyer, Wallace & Lee (2014)	Case study examining the efficacy of a compassion-focused approach to reduce feelings of self-disgust in enhancing trauma-focused CBT	Single-case repeated measures	A 17 year old girl who had suffered a sexual assault 5 years previously and was undergoing TF-CBT	Post Traumatic Diagnostic Scale (Foa, 1995) The Beck Depression Inventory (BDI-II; Beck, Steer and Brown, 1996) The Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (FSCRS; Gilbert, Clark, Hempel, Miles and Irons, 2004)	Descriptive comparison of pre and post test measures and client feedback.	PTSD symptom severity changed from severe to mild. Depression levels declined from moderate-severe to normal. Clinically significant decreases in how much the client expressed shame and disgust towards herself.
Brake, Rojas, Badour, Dutton & Feldner (2017)	Is the relationship between PTSD and suicide risk mediated by self-disgust? Is a different mediating relationship present for individual PTSD symptom clusters?	Cross-sectional	347 young adults (66% female) who have experienced at least 1 traumatic event as defined by DSM-V criteria	Self-Disgust Scale (SDS; Overton et al., 2008) PHQ-9 (Kroenke et al., 2001) Suicide Behaviours Questionnaire- Revised (Osman, 2001) Post-Traumatic Checklist for DSM-V (Weathers, Litz et al., 2013) Life Events Checklist (LEC-5; Weathers et	Multiple regression with boot-strapped confidence intervals	The relationship between total PTSD symptoms and suicide risk was mediated by the "disgusting self" scale of the SDS. Alt hough PTSD symptoms significantly predicted the "disgusting ways" scale, this scale in turn did not predict suicide risk. The "disgusting self" scale also mediated the relationship between the re-experiencing, negative mood/cognitions, and

				al., 2013)		avoidance PTSD symptom clusters and suicide risk. However, there was no relationship between alterations in arousal and the "disgusting self" scale, although there was a relationship to the "disgusting ways" scale.
Chu, Bodell, Ribeiro & Joiner (2015)	Does disgust moderate the relationship between eating disorders and suicidal ideation?	Cross-sectional correlational	341 young adults (66% women), recruited from a university	Eating disorder inventory (Garner, Olmstead, & Polivy, 1983). Disgust with life scale (Ribeiro, Bodell, & Joiner, 2012). Disgust propensity and sensitivity scale-revised (Fergus & Valentiner, 2009) Beck scale for suicide ideation (Beck & Steer, 1991).	Multi-variate linear regression analysis	Eating disorder symptoms and body dissatisfaction were associated with suicidal ideation at high levels of disgust towards the self and the world, but were not related at low levels of disgust at self/world.
Dudas et al. (2017)	Do patients with BPD self-report more self-disgust than controls? Is this connected with differential connectivity in emotion processing neural regions?	Case control	14 women with a BPD diagnosis and 14 female controls	Self-Disgust Scale (Overton et al., 2008) Neuro-imaging techniques	T-test	BPD subjects compared to controls scored significantly higher on the Self-disgust Scale (BPD 62.36 [10.4]; NC: 21.67 [7.4] $p < 0.001$). BPD showed abnormal patterns of activation, habituation and connectivity in regions linked to emotion regulation.
Dyer, Feldman & Borgmann (2015)	What emotions are triggered by the body areas associated with sexual trauma? Do PTSD&BPD patients exhibit more negative body-related images than controls? Do PTSD patients rate trauma-associated parts of the body more aversively?	Between-groups design comparing Dx groups to healthy controls (PTSD&BPD; PTSD only; BPD only; healthy controls)	23 patients with PTSD after CSA 25 participants with BPD but not CSA 22 patients with PTSD after CSA & BPD 27 healthy controls All women.	Modified version of the Survey of Body Areas (SBA; Kleindienst et al., 2014) Disgust sensitivity scale (dss) (Schienle, Walt, Stark & Vaitl, 2002) Body image guilt and shame scale (bigss; Thompson, Dinnel, & Dill, 2003)	Non-parametric Kruskal-Wallis test Mann-Whitney U	All negative body-related emotions were significantly higher in the patient groups than in the control groups. Significantly more feelings of disgust were observed in the PTSD&BPD group than in the BPD group alone. Both PTSD groups reported significantly more trauma-associated body areas than any of the other groups. Trauma-associated areas were rated significantly more negatively than non-trauma associated areas.
Espeset, Gulliksen, Nordbo, Skarderud & Holte (2012)	Qualitative exploration of the link between negative emotions and eating disorder behaviour in people with anorexia – how do patients with Anorexia Nervosa manage negative emotions, and how do they link this to anorexic behaviours?	Qualitative interviewing	14 women, aged 19-39, diagnosed with anorexia	Focused interview strategy	Grounded theory	Participants exhibited high levels of self-disgust and fear of becoming fat. Disgust was managed predominantly by avoidance.
Ille et al. (2014)	Do participants with "mental disorders" have higher levels of self-disgust compared to "healthy" controls?	Case control	112 patients with various diagnoses (eating disorders, borderline	Questionnaire for the Assessment of Self-Disgust (QASD) (Schienle et al., in print) Brief Symptom Inventory (BSI: Derogatis,	ANOVA (for comparison across groups)	Self-disgust was elevated in the patient group. Personal disgust was significantly higher than behavioural disgust in the patient group but not in the control group.

	Are there any differences across patient groups in levels of self-disgust? Is self-disgust (personal and behavioural) related to particular psychological traits which confer vulnerability for "mental disorder"?		personality disorder, schizophrenia, depression, spider phobia) compared to 112 "healthy controls".	1993).	Stepwise multiple regression (for examination of relationship between self-disgust and specific symptoms).	Patients with BPD and eating disorders had the highest levels of self-disgust on both subscales. In the patient group, hostility and psychoticism significantly predicted personal disgust. Anxiety and interpersonal sensitivity significantly predicted personal disgust. Traumatic events during childhood were a significant risk factor for self-disgust.
Jones et al. (2008)	Impact of exudate and odour from chronic venous leg ulceration on anxiety and depression.	Hermeneutic interviewing (qualitative)	20 people (12 women, 8 men, aged 52 – 86, mean 68 years), recruited from a larger study, who had experienced chronic leg ulcerations	Hermeneutic (unstructured) interviews	Elements of Colazzi's (1978) framework (examining significant statements) and van Manen's (1990) structure (eliciting rich descriptions of lived experiences)	Three themes: *Emotional responses to odour* – disgust, revulsion, leading to shame, embarrassment and self-loathing *Limitation on social activities due to odour or fear of odour* - due to a fear that others would find them disgusting *Way in which odour and fears of odour were managed by nurses*
Jung & Steil (2013)	RCT evaluating the efficacy of Cognitive Restructuring and Imagery Modification (CRIM) in treating Feeling of Being Contaminated (FBC) in PTSD	Randomized controlled trial	34 women (mean age 37) with PTSD from CSA were randomly assigned to either CRIM or wait-list control	Ratings of the intensity, vividness and uncontrollability of and distress caused by the FBC, pre, mid and post treatment. Post-traumatic Diagnostic Scale (McCarthy, 2008) CAPS (Blake et al., 1995) Administered pre and post-treatment and at 4-week follow-up.	MANOVA	Improvements in intensity of the FBC were significantly larger in the CRIM group than in the FBC group. A significantly larger reduction in PTSD severity was also observed in the CRIM group relative to the wait-list group.
Jung & Steil (2012)	Feeling of being contaminated in adult survivors of CSA and it's treatment – a case study	Case study demonstrating effectiveness of 2-session treatment programme to reduce FBC in CSA-related PTSD.	2 women who experienced chronic CSA-related PTSD and FBC	CAPS (Blake et al., 1995) Feeling of Being Contaminated scale (4 questions assessing intensity, frequency, distress and duration of FBC)	Pre and post intervention comparison of means	Qualitative description of the feeling of being contaminated by participants Significant reductions in PTSD symptoms following treatment of the feeling of being contaminated
Laffan, Millar, Salkovskis & Whitby (2015)	Investigating perceptions of disgust in older adults in residential care homes.	Cross-sectional correlational	54 older adults (mean age 86) in care homes vs 21 older adults in the community (mean age 69)	Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, and Williams, 2001). Specifically developed 9-item measure of self-disgust and perceived-other disgust in relation to care activities.	Mann-Whitney U	Overall self-disgust and perceived-other disgust ratings were very low in both samples. No statistically significant relationships were found between self-disgust or perceived other-disgust and depression in either sample.
Olatunji (2015)	Does excessive engagement in health-related behaviours modulate stable disgust-related variables, including self-disgust?	Between-groups ABA design	60 undergraduate students (30 per group; 73% female in 1 group; 80% female in another)	Health behaviour checklist (HBC; Olatunji et al., 2011) Disgust scale-revised (DS-R; Haidt et al., 1994) SDS (Overton et al., 2008) Manipulation task: Participants in the	A 2x3 ANCOVA	A significant effect of time on disgust propensity was observed in the experimental condition but not in the control condition. There was no significant reductions in self-disgust in either the health-condition or control group over time.

				experimental group monitored health behaviours for 1 week (A), then engage in excessive health-related behaviours (e.g. washing, checking temperature) for 1 week (B), then return to baseline and monitoring (A). Controls – stage A only.		
Olatunji, Cox & Kim (2015)	Self-disgust mediates the association between shame and symptoms of bulimia and OCD.	Cross-sectional correlational	403 undergraduates (67% women)	Other As Shamer (Goss, Gilbert, & Allan,1994) SDS (Overton et al., 2008) Disgust Scale-Revised (Haidt et al., 1994) Eating Attitudes Test—26 (EAT-26). (Garner, Olmsted, Bohr, & Garfinkel, 1982) Obsessive-Compulsive Inventory—Revised (OCI-R) (Foa et al., 2002) DASS-21 (Lovibond & Lovibond, 1993)	Preacher & Hayes (2008) – bootstrapping; linear regressions	Self-disgust mediated the relationship between shame and OCD symptoms, as well as the relationship between shame and bulimic symptoms.
Overton, Markland, Simpson, Taggart & Bagshaw (2008)	Validation of the self-disgust scale Is the relationship between dysfunctional attitudes and depressive symptomatology mediated by self-disgust?	Cross-sectional correlational	A convenience sample of 111 participants (81 females, 30 males) , largely comprising undergraduate students	The Self-Disgust Scale (SDS) (Overton et al., 2008) The Beck Depression Inventory II (BDI-II) (Beck, 1967) The DASS-21 (Lovibond & Lovibond, 1993) Dysfunctional Attitudes Scale – A (Weissman, 1980)	Factor analysis Series of linear regressions to conduct Baron & Kenny's (1986) test for mediation.	The SDS demonstrated good psychometric properties, and two underlying factors – disgusting "self" and disgusting "ways". Self-disgust partially mediated the relationship between dysfunctional attitudes and depressive symptoms
Powell, Azlan, Simpson & Overton (2016)	Is the relationship between disgust-related side effects and depression mediated by self-disgust in those high in disgust sensitivity but not low in disgust-sensitivity?	Cross-sectional correlational	132 volunteers who had been treated for cancer (83 women, mean age 57)	Disgust Propensity and Sensitivity Scale-Revised (DPSSR; van Overveld et al., 2006). SDS (Overton et al., 2008) Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983	Path analysis	Self-disgust mediated the relationship between disgust-related cancer side effects and depressive symptomatology in those high in disgust-sensitivity but not in those low in disgust-sensitivity.
Powell, Overton & Simpson (2014)	Qualitative exmploration of the phenomenological experience of self-disgust in depression	Semi-structured interviews (qualitative)	9 female participants (age 19 – 39, mean 24) recruited from a larger study who scored high in self-disgust (as measured by the SDS) and depression (as measured by the DASS-21)	Semi-structured interviews, in which participants were informed that the purpose of the interview was to examine disgust towards the self.	Interpretative Phenomenological Analysis	Four themes: *Subjective experience of self-disgust* – visceral, all-encompassing, can be experienced as an ever-present background sense of a more intense emotional reaction *Origins of the disgusting self* – disgust-based criticism or abuse in childhood or adolescence. *Consequences of self-disgust* – desire to cleanse the self, strategies to deal with self-disgust (avoidance, withdrawal) *Self-disgust and other emotional states* – hatred, anger, shame, sadness
Powell, Simpson & Overton (2013)	Self-disgust should predict depressive symptoms over time, but not the reverse; six-month self-disgust should mediate the relationship between dysfunctional	Repeated measures longitudinal design.	110 participants (final sample), 77% female	Self-disgust scale (Overton et al., 2008) Dysfunctional Attitudes Scale form A (DAS-A; Weissman, 1980). Depression, Anxiety and Stress Scale (DASS; Lovibond & Lovibond, 1993).	Structural equation modelling	Controlling for baseline depression, self-disgust at 6 months predicted depression at 12 months; however, depression at 6 months did not predict self-disgust at 12 months. The effect of baseline dysfunctional attitudes on depression at 12 months was mediated by 6-month self-disgust. 6-month self-disgust also significantly predicted 12-month

	cognitions at baselines and depression at 12 months					dysfunctional attitudes, suggesting a more circular relationship.
Nexiroglu, Hickey & McKay (2010)	The role of disgust in Body Dysmorphic Disorder	Repeated measures (mirror trial) x5) between groups (x2 – BDD vs control) design.	6 participants (5 male, 1 female) with BDD vs 8 (3 male, 1 female) controls	Disgust Scale-Revised (Haidt et al., 1994) Physiological measures Visual analogue scales. Task – participants were asked to look in the mirror and focus attention on a part of their face they disliked. Ps were asked to report on what they were focusing on. Ps then rated how much disgust and anxiety they felt whilst doing this task. This was repeated 5 times.	One-way repeated measures ANOVAS.	Significant decreases in disgust ratings over mirror trails in the BDD group but not in the control group (n2 = .49 vs n2 = .16) However, overall disgust ratings were much higher in the BDD group (e.g. average of between 40 and 55 out of 100 across trials, compared to average of between 0 and 10 across trials for controls.
Rusch et al. (2011)	Is there a stronger association between the self and disgust in those with BPD and PTSD then between the self and anxiety?	Between-groups (2 – control vs dx) design examining differences in responding to implicit association test.	20 women with BPD, 20 women with PTSD, 15 women with BPD and PTSD, 37 psychologically healthy women.	Implicit Association Test (IAT) , measuring response latencies when disgust or anxiety words were associated with self or other	ANOVA	Stronger relationship between disgust and the self than between anxiety and the self in those with PTSD and BPD.
Schienle, Leutgeb & Wabnegger (2015)	Are patients with BPD more sensitive to disgusted facial expressions in others? Are patients with BPD higher in self-disgust? Is this associated with abnormal activation in the amygdala?	Case control	25 women with a BPD diagnosis, and 25 healthy women of comparable age.	Borderline Symptom List (BSL-23; Bohus et al., 2009) Questionnaire for the Assessment of Self-Disgust (QASD) (Schienle et al., 2014) Questionnaire for the Assessment of Disgust Proneness (QADP; Schienle et al., 2002) T1 weighted brain scans (to enable voxel-based morphology analysis).	2-sample t-tests	Borderline symptom-severity was positively correlated with both personal and behavioural self-disgust (r = 0.59 and r = 0.53 respectively). The BPD group had significantly higher levels of self-disgust. Whole-brain analysis showed no significant between-group differences, although there was increased grey matter volume in the amygdala in the patient group.
Schienle, Haas-Krammer, Schoggle & Ille (2013)	Altered state and trait disgust in BPD	Case control	30 female patients with BPD compared with 30 healthy women.	Borderline Symptom List (BSL-23; Bohus et al., 2009) Questionnaire for the Assessment of Disgust Proneness (QADP; Schienle et al., 2002) Scale for the Assessment of Disgust Sensitivity (SADS; Schienle et al., 2010) Questionnaire for the Assessment of Self-Disgust (QASD)	Correlation matrix One-way ANOVA	Elevated levels of self-disgust were reported in the BPD group – significantly higher than in the control group. Significant correlations were observed between self-disgust and borderline symptom severity in the patient group (r = .67, personal disgust; r = .51, behavioural disgust).
Simpson, Hillman, Crawford & Overton (2010)	Does self-esteem and self-disgust independently mediate the relationship between dysfunctional cognitions and depression?	Cross-sectional correlational	Non-clinical sample of 110 participants (84 females, 36 males, mean age 21)	Self-Disgust Scale (Overton et al., 2008) BDI-II (Beck, 1967) DASS (Lovibond & Lovibond, 1993) DAS-A (Weissman, 1980). Rosenberg self-esteem	Baron & Kenny (1986) – series of linear regression models.	Both self-disgust and self-esteem independently partially mediated the relationship between dysfunctional attitudes and depression.
Smith, Steil, Weitzman,	Does self-disgust mediate the relationship between	Cross-sectional	549 undergraduate psychology	Inventory of Statements about Self-Injury (ISAS; Klonsky & Glenn,	Baron & Kenny (1986) – series of	Self-disgust fully mediated the relationship between depression and non-suicidal self-injury.

Trueba & Meuret (2015)	depression and Non-Suicidal Self-Injury (NSSI)? Does self-disgust mediate the relationship between Child Sexual Abuse and NSSI?		students	2009) Self-disgust scale (Overton et al., 2008) Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995) Painful and Provocative Events Scale (Bender, Gordon, Bresin et al., 2011).	linear regressions.	Self-disgust partially mediated the relationship between childhood sexual abuse and non-suicidal self-injury.
Steil, Jung & Stangier (2011)	Pilot study evaluating efficacy of specially developed intervention in treating FBC in PTSD	Single-group repeated measures design assessing outcomes before and after treatment and at follow-up.	9 women (age 28 – 57, mean age 43) suffering from chronic CSA-related PTSD plus the FBC.	Ratings of the intensity, vividness and uncontrollability of and distress caused by the FBC, pre, mid and post treatment. Post-traumatic Diagnostic Scale . CAPS (Blake et al., 1995)	Wilcoxon's test for post-hoc comparison between means.	Large reductions in FBC between t0 and t2 (d = 2.23) and in PDS scores (d = 0.99). Large reductions in PTSD symptoms.

Table 4. Effect sizes for the relationship between self-disgust and depression

Study	Zero-order correlation	Partial correlations/ Beta value
Azlan et al. (2017) Physical self-disgust Behavioural self-disgust Controlling for disgust sensitivity and disgust propensity: Physical self-disgust Behavioural self-disgust	 r = .64 r = .53	 β = .60 (cancer), β = .54 (control) β = .08 (cancer), β = .12 (control)
Overton et al. (2008) Controlling for dysfunctional cognitions	r = .66	 β = .61
Simpson et al. (2010) Unique contribution relative to low self-esteem	r = .47	 β = .45
Powell et al. (2013) Controlling for dysfunctional cognitions, unique contribution at 6 months Controlling for dysfunctional cognitions, unique contribution at 12 months	r = .51	 β = .30 β = .26
Powell et al. (2016) (physical, behavioural) Physical self-disgust Behavioural self-disgust	r = .72, r = .60	 β = .47 β = .26
Laffan et al. (2015) – no effect sizes reported for the relationship between self-disgust and depression.	non-significant	
Ille et al. (2014) Personal disgust Behavioural disgust	 r = .335 ns – not reported	

Table 5. Effect sizes for the relationship between self-disgust and anxiety

Study	Zero-order correlation	Partial correlations/ Beta value
Azlan et al. (2017) Physical self-disgust Behavioural self-disgust Controlling for disgust sensitivity and disgust propensity: Physical self-disgust Behavioural self-disgust	 r = .45 r = .47 	 β = .28 (cancer), β = .18 (control) β = .26 (cancer), β = .29 (control)
Powell et al. (2016) (physical, behavioural) Physical self-disgust Behavioural self-disgust	r = .60, r = .58 	 β = .27 β = .23
Laffan et al. (2015) – no effect sizes reported for the relationship between self-disgust and depression.	non-significant	
Ille et al. (2014) Personal disgust Behavioural disgust		 ns – not reported β = .300 (control sample), β = .529 (community sample)

Table 6. Effect sizes for the relationship between self-disgust and trauma-related difficulties

Study	Zero-order correlation	Partial corr/ Beta value
Badour et al. (2014) –relationship between self-disgust and mental contamination after trauma Controlling for post-traumatic cognitions, depression, physical contamination fears, PTSD dx	r = .48	 β = .34
Badour et al. (2012) – peri-traumatic self-disgust and PTSD symptoms Controlling for disgust sensitivity, obsessive-compulsive symptoms, anxiety sensitivity, negative affect.	r = .07	 β = -.07
Badour et al. (2013) – relationship between mental contamination following trauma and PTSD Controlling for disgust-sensitivity	r = .66	 β = .54
Brake et al. (2017) – reported unstandardized estimates only		
Dyer et al. (2015) – effect sizes not reported.		
Rusch et al. (2011) – compared the association between the self and disgust in PTSD&BPD women (0) and healthy controls (1)	r = -.34	
Bowyer et al. (2011) – case study; reduction in PTSD symptoms after a self-disgust based intervention – not reported		
Jung & Steil (2012) – case study examining reduction in PTSD symptoms after self-disgust focused intervention – no effect size reported		
Steil, Jung & Stangier (2011) – small scale pilot study examining reduction in PTSD symptoms after self-disgust focused intervention.	r = .44	
Jung & Steil (2013) – RCT examining reduction in PTSD symptoms after self-disgust focused intervention – effect size indicates difference in PTSD symptoms over time in treatment group as compared to the control group.	r = .42	

Table 7. Effect sizes for the relationship between self-disgust and body-image difficulties

Study	Zero-order correlation	Beta value
Bornholt et al. (2005) – comparison of disgust-related words circled in a body-focus task between anorexic girls and a control group – effect sizes not reported.		
Neziroglu et al. (2010) – comparison of people with BDD to controls on a visual analogue self-disgust after mirror task – effect sizes not reported, but raw between-group data suggest large differences [50/100 (BDD) compared to 10/100(controls)]		
Chu et al. (2015) – relationship between suicidality and self-disgust relationship between self-disgust and eating disorder symptoms Controlling for anxiety and depression: Relationship between self-disgust and suicidal ideation Relationship between self-disgust and bulimia Relationship between self-disgust and body dissatisfaction Relationship between self-disgust and drive for thinness Relationship between self-disgust*eating disorder and suicidal ideation Relationship between those eating disorder symptoms and suicidal ideation in those high in self-disgust	r = .34 r = .51	 β = 0.14 β = 0.06 β = 0.30 β = 0.25 β = 0.14 β = 0.23
Olatunji et al. (2015) – relationship between self-disgust and symptoms of bulimia Controlling for shame (unique contribution): Controlling for shame (added contribution)	r = .24	 β = .14 β = .02
Ille et al. (2014) – comparison of people with eating disorders compared to healthy controls on self-disgust Personal disgust: Behavioural disgust:	 r = .561 r = .548	

Table 8. Effect sizes for the relationship between self-disgust and self-harm

Study	Zero-order correlation	Partial correlations/ Beta value
Bachtelle & Pepper (2015) – scar-related shame and self-disgust Scar-related growth and self-disgust	r = .64 r = -.49	
Smith et al. (2015) – standardised effect sizes not reported		
Abdul-Hamid et al. (2014) – effect sizes not reported.		

Table 9. Effect sizes for the relationship between self-disgust and obsessive-compulsive difficulties

Study	Zero-order correlation	Partial correlation/ Beta value
Badour et al. (2012) – relationship between peritraumatic self-focused disgust and o/c symptoms Controlling for disgust sensitivity, anxiety sensitivity, post-traumatic symptoms, depression	r = .38	 β = 0.02
Olatunji et al. (2015) – relationship between self-disgust and o/c symptoms Controlling for shame	r = .30	 β = .12
Olatunji et al. (2014) – effect of engaging in excessive health-related behaviours on self-disgust – no significant effect		

Table 10. Effect sizes for the relationship between self-disgust and borderline personality issues

Study	Zero-order correlation	Partial correlations/ Beta value
Dudas et al. (2017) – no effect size reported		
Schienle et al. (2015) – relationship between "borderline symptoms" and personal self-disgust Relationship between "borderline symptoms" and behavioural self-disgust	r = .59 r = 0.53	
Schienle et al. (2013) - relationship between BPD, self-disgust and amygdala structure – no effect sizes reported		
Ille et al. (2014)	r = .637	

Appendix 1-1

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Section One: Literature Review

A systematic review of the clinical utility of the concept of self-disgust

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Abstract

The potential clinical utility of mapping the influence of particular cognitive-emotional schema on mental distress is considerable. This systematic literature review examined the clinical utility of the cognitive-emotional schema of self-disgust in understanding mental distress. Specifically, the review assessed whether there is a shared conceptual definition of self-disgust which maps on to people's real life experiences, the face and construct validity of the quantitative assessment measures of self-disgust, and the predictive validity of self-disgust in formulating the development of a range of psychological difficulties. A systematic database search supplemented by manual searches of references and citations identified thirty-one relevant papers (27 quantitative, 3 qualitative, 1 mixed). Analysis of qualitative papers indicated a number of shared features in the definition of self-disgust, including a visceral and pervasive sense of self-elicited nausea accompanied by social withdrawal and attempts at cleansing or suppressing aspects of the self. Multi-item quantitative assessment measures appeared to capture these dimensions and evidenced good psychometric properties. However, many quantitative assessment tools used in the literature (e.g. visual analogue scales) are likely to only partially capture the self-disgust construct. Strong relationships were observed between self-disgust and a range of mental health presentations, in particular depression, body-image difficulties, and trauma-related difficulties. However, these relationships are smaller when the effects of other negative self-referential emotions are controlled for, and conclusions about the predictive validity of self-disgust are bound by the cross-sectional nature of many of the studies. The review concludes with directions for future research which could further inform the clinical utility of self-disgust.

Key-words: Self-disgust; mental health; validity; utility; review

1. Introduction

Theoretical advances in understanding the relationship between cognition and emotion have underpinned important developments in clinical practice. To illustrate, the specification of emotion generation in response to events via both an associative route and via appraisals derived from organizing cognitive structures (Power & Dalgleish, 2016) has driven advances in behavioural (Tyron, 2005) and cognitive therapy (Beck, 1979; Young, 1999; Young, Klosko, & Weishaar, 2006). Moreover, the development of more nuanced understandings of the cognition-emotion interactions underpinning more specific clinical presentations has improved how we assess, formulate and provide therapy for people with a range of psychological difficulties such as anxiety, post-traumatic stress disorder and obsessive-compulsive experiences (e.g. Clark & Wells, 1995; Ehlers & Clark, 2000; Wells, 1999; Salkovskis, Forrester & Richards, 1998). Mapping the cognitive-emotional sequelae of specific emotions has also yielded therapeutic improvements – recent work in deconstructing the phenomenology and consequences of self-criticism and shame has yielded the development of compassion-focused therapy (Gilbert & Proctor, 2006), which has evidenced considerable benefits for a range of difficulties in which shame is implicated (Leaviss & Uttley, 2016). Thus, clear clinical advantage has been demonstrated in differentiating and delineating the sequelae of different emotions.

One such emotion which has begun to receive such delineation and differentiation is that of self-disgust, in which the basic emotion of disgust becomes directed at a core and stable feature of the self (Powell, Simpson & Overton, 2015). As disgust is a visceral negative emotion driving behavioural responses of rejection and avoidance (Rozin, Haidt & McCauley, 2000), it would be predicted that having such an emotion directed at the self may lead to significant psychological difficulties. Indeed, several authors have begun to theorize on how such difficulties may develop. Powell et al. (2015) postulate that self-disgust

represents a distinct emotion schema (Izard, 2007, 2009). Specifically, an initial self-disgust reaction may be generated by cognitive appraisal processes, such as negatively evaluating one's features or actions, or by more associative processes, in which disgust initially generated by an external stimulus then becomes elicited by the part of the self associated with this stimulus. If this initial self-disgust reaction becomes elaborated on, for example, by rumination or disgust-centred feedback from others, then it may develop into an over-arching framework through which one views oneself, and may guide subsequent perception, attention, memory and cognitive processes in a manner consistent with the self-disgust schema; thus, the schema becomes self-perpetuating. Powell et al. (2015) further postulate that a self-disgust schema is likely developed in childhood in response to disgust-based criticism or abuse, with self-disgust in adulthood likely shaped by trauma or a change in the nature of how the self is experienced.

In order for such a construction of self-disgust to be theoretically valid, both the emotion schema of self-disgust and its sequelae should be distinguishable from other emotions, most notably from other negative self-referent emotions such as guilt, shame and self-hatred. Theoretically, emotions are considered to comprise a number of related sub-systems, including a cognitive appraisal system, a subjective feeling state, a physiological response, and a set of action urges or desired behavioural responses (Lang, 1988; Rachman & Hodgson, 1974). Thus, in order for self-disgust to be considered a theoretically distinct emotion, it should be distinguishable across these domains.

The centrality of the core emotion of disgust enables self-disgust to be differentiated from other negative self-referent emotions across appraisal content, subjective and physiological experiences, and associated behavioural repertoires. To illustrate, disgust or contamination-based appraisals are necessary to generate self-disgust, whereas guilt, shame and self-hatred can be generated in the absence of such appraisals – for example, the

appraisal “I’ve been made a fool of” may generate shame but not self-disgust. Conversely, disgust-specific appraisals, such as “I look rotten” or “I make other people feel sick”, can be considered to generate self-disgust but not necessarily guilt, shame or self-hatred (Powell et al., 2015). Furthermore, self-disgust is subject to generation via more associative processes, in which one feels oneself to be dirtied due to past contact with a contaminated object (Rachman, 2004), as may occur for example in sexual trauma; however, guilt, shame and self-hatred would appear to be less subject to such associative processes. The emotion of disgust also distinguishes the subjective and physiological experiences of self-disgust, guilt, shame and self-hatred. Self-disgust, as with more general disgust reactions, is characterised by a strong physical sense of revulsion and nausea that is not associated with shame or self-hatred (Keltner, 1996; Powell et al., 2015; Scherer & Wallbott, 1994; Robins & Schriber, 2009). Associated behavioural repertoires are also distinct – although self-disgust is sometimes conflated with self-hatred as an extreme form of self-attacking (e.g. Gilbert, Durrant and McEwan, 2006), self-disgust is likely to influence self-to-other as well as self-to-self relations, triggering behaviours such as social withdrawal which may not necessarily be present in self-hatred. Self-disgust is also likely to drive more contamination-driven behaviours not seen in the other self-referent emotions, such as extreme attempts to cleanse or remove the disgusting self. These assertions have been borne out in qualitative research examining the micro-sequelae of self-disgust (e.g. Espeset et al,. 2012; Powell et al., 2014).

The final existing construct from which self-disgust must be delimited is that of “mental contamination”, in which mental events generate an internal sense of dirtiness in the absence of a physical contaminant (Rachman, 2004). Although disgust would appear to be the central emotion here, mental contamination can be differentiated from self-disgust by the centrality of the self in both concepts – self-disgust requires disgust-based appraisals to be directed at a core and stable feature of the self; however, mental contamination can be

triggered by mental events which bear no relevance to the self (e.g. images of something dirty). Thus, disgust following mental contamination is much less self-focused and resultantly a more transient experience, as evidenced by the fact that mental contamination can be experimentally induced (e.g. Coughtrey, Shafran & Rachman, 2014; Millar, Salkovskis & Brown, 2016) whereas an enduring sense of self-disgust cannot (although the emotional component of self-disgust can be intensified experimentally in individuals hypothesised to already experience a self-disgust schema). Although a small minority of studies assess more permanent feelings of contamination generated by the self or body (specifically after trauma; Jung & Steil, 2012, 2013; Steil, Jung & Stangier, 2011), the vast majority of studies of this construct more broadly define mental contamination as a sense of dirtiness created by any internal event (e.g. Coughtrey, Shafran, Lee & Rachman, 2012; Rachman, 2004).

Thus, it appears that, at least theoretically, self-disgust represents a distinct cognitive-affective schema. However, whether self-disgust represents a clinically useful concept remains to be demonstrated. A number of criteria would speak to the clinical utility of self-disgust. In her review of the concept of apathy in people with Parkinson's disease, Bogart (2010) argued that in order to be clinically useful a concept must first have a shared definition of a real and meaningful experience that people encounter. Thus, theoretical definitions of self-disgust must map on to people's real-life accounts of the phenomenon. In addition to this, a concept must demonstrate adequate construct and face validity, in that its operationalization and measurement map on to this underlying meaningful conceptualization, and adequate predictive validity, in that measurement of this construct can provide useful information about a person's future and what kind of intervention they may be most responsive to.

Qualitative descriptions of self-disgust and studies assessing the psychometric properties of self-disgust scales can inform the conceptual definition and construct validity

criteria respectively. However, establishing the predictive validity of self-disgust is more difficult, and requires designs which can disentangle the precise relationship between self-disgust and various mental health difficulties. There are four potential mechanisms through which self-disgust may relate to psychopathology, with each mechanism having differing implications for the predictive (and thus clinical) utility of self-disgust. Firstly, as postulated by Powell et al. (2015), self-disgust may be a causal factor driving the development of a particular mental health presentation. This causal influence may occur through two pathways - self-disgust may represent a latent factor shaped by childhood experiences which when activated triggers a particular mental health presentation (for example, childhood sexual abuse may trigger the development of self-disgust which in turn predicts the development of borderline personality features in adulthood). Alternatively, self-disgust may be triggered by a severe change in how the self is experienced in adulthood, which in turn drives a particular mental health presentation (for example, experiencing incontinence in adulthood may create self-disgust which in turn may predict feelings of depression and social withdrawal). Such a causal relationship would highlight the need for early intervention to target the cognitive, emotional and behavioural underpinnings of self-disgust. Secondly, self-disgust may be a consequence of a mental health difficulty (for example, if one becomes depressed, and evaluates one's subsequent behavioural inactivity as disgusting). Such a relationship would limit the predictive utility of self-disgust as a concept, although it may still retain some utility if it points to a potentially important target for later treatment once other issues are resolved. Thirdly, self-disgust may represent an unrelated correlate of a mental health difficulty – for example, involvement in armed conflict may cause the separate development of both self-disgust and post-traumatic stress disorder, with the two having little relation to each other. This would render self-disgust of little predictive utility in considering a specific mental health presentation, although if it contributes to general distress levels it may still be a useful

focus for treatment. Finally, self-disgust may be a correlate of other constructs (such as shame) which do explain the development of a mental health difficulty. For example, image-related bullying may create both feelings of shame and self-disgust, but only shame may contribute to the development of an eating disorder. Such a relationship would lend little clinical and predictive utility to the concept of self-disgust. Various types of evidence could support or refute each model. Particularly useful are prospective studies examining the relationship between self-disgust and mental health difficulties over time while controlling for related variables, and treatment outcome studies examining whether targeting and reducing self-disgust results in subsequent amelioration of symptoms of a mental health difficulty. Conceptual literature reviews (e.g. Black & Lobo, 2008; Bright, Kayes, Worrall & McPherson, 2015) which draw on such a diverse range of literature can offer a useful framework for addressing these issues.

This review therefore aims to evaluate the clinical utility of self-disgust according to these criteria. Specifically:

- In order to evaluate the meaningfulness of the conceptual definition of self-disgust, the review will examine qualitative research which has explored whether and how individuals experiencing mental distress experience disgust for the self.
- In order to evaluate the construct validity of the measurement of self-disgust, the review will examine how self-disgust is assessed in studies examining its relationship to mental health difficulties.
- In order to evaluate the predictive validity of self-disgust, the review will examine research linking self-disgust to mental health difficulties and evaluate this research according to the four competing models described above.#

The review will subsequently draw conclusions about the clinical utility of self-disgust as a concept in understanding mental health difficulties.

2. Method

2.1 Search Strategy

The electronic databases PsycINFO, PubMed, CINAHL and Web of Science were searched to retrieve empirical studies published up to March 2017. Each database was searched separately using the following search string: “disgust” OR “self-disgust” OR “mental contamination” OR “mental pollution”. All searches were also limited to papers published in peer-reviewed academic journals. The citation and reference lists of all included papers were also checked for relevant papers. Papers were screened according to the eligibility criteria below. Figure 1 presents a flow diagram documenting this search strategy.

2.1.1 Eligibility Criteria

Inclusion criteria Papers were considered eligible for inclusion in the review if they:

- Specifically and predominantly examined feelings of disgust towards the self, as assessed via:
    - The use of an established self-disgust scale
    - The use of a visual analogue scale specifically measuring self-disgust
    - The use of an established disgust measure as used in relation to some core feature of the self
    - Qualitative exploration specifically of feelings of disgust towards the self
    - The use of a scale which measured feelings of dirtiness or contamination specifically elicited by a core feature of the self (as opposed to elicited by transient mental events unrelated to the self). The only scales which met this

criterion were the Feeling of Being Contaminated Scale (Jung & Steil, 2011), which evaluates feelings of disgust and contamination elicited by one's own body following sexual assault, and the Sexual Assault Related Appraisals: Mental Contamination Scale (SARA; Fairbrother & Rachman, 2004), which assesses feelings of contamination elicited by whole-self evaluations following sexual assault (e.g. "I feel contaminated by my sexual assault/rape, no matter how much I wash")

- Were published in a peer-reviewed academic journal.
- Were available in the English language.
- Included a validated measure of mental distress or have sampled a population who have already been assessed as presenting with considerable psychological distress (for example, individuals with a diagnosis of post-traumatic stress disorder).

Exclusion criteria Studies were excluded from the review if they:

- Measured disgust in a manner which does not relate to a core feature of the self
- Did not predominantly measure self-disgust but rather a related construct, such as guilt, shame or self-loathing.
- Operationalised mental contamination predominantly in a way which does not relate to a core feature of the self (e.g. as intrusive mental images) – for example, via the Vancouver Obsessive Compulsive Inventory – Mental Contamination Scale (Radomsky, Rachman, Coughtrey and Shafran, 2014) or the Mental Pollution Questionnaire (Fairbrother & Rachman, 2004).

- Measured the experimental manipulation of a construct (e.g. inducing mental contamination).
- Were theoretical rather than empirical.
- Examined the relationship between self-disgust and a construct which has yet to demonstrate a robust connection with mental distress (e.g. flow, sense of superiority; Hirao & Kobayashi, 2013; Satoh, 2001; Kodaira, 2002).

[INSERT FIGURE 1 HERE]

2.2 Risk of bias assessment

Risk of bias in the included studies was assessed using a tool adapted for assessing bias in observational research from the Agency for Healthcare Research and Quality (Taylor, Hutton & Wood, 2015; Williams, Plassman, Burke & Benjamin, 2010). This tool specifies nine areas of relevance to the research question posed in this review, enabling methodologically diverse research papers to be compared within a coherent framework. To illustrate, no matter the methodology employed, it is important to determine whether or not self-disgust has been assessed in a valid way, whether the analyses conducted are appropriate, and whether potential confounds influencing the predictive validity of self-disgust have been controlled for. This tool has been used in previous reviews which included methodologically heterogeneous studies (Cherry, Taylor, Brown, Rigby & Sellwood, 2017). Risk of bias was evaluated in relation to the specific research questions posed in the review, as opposed to an attempt to make general claims about bias in the studies included.

2.3 Data synthesis

Data relevant to the study's aims were extracted from all studies and collated into a table. Themes and data from qualitative self-disgust papers were examined and areas of

convergence and divergence extracted. Effect sizes from quantitative papers were extracted and converted to a common metric (Pearson's *r*) to enable comparison, and findings were narratively synthesised. Methodological heterogeneity precluded meta-analytic integration of the findings.

3. Results

3.1 Result of assessment of risk of bias

The results of the risk of bias assessment are presented in Table 1. The most pertinent methodological biases pertained to the selection of participants, the assessment of self-disgust, and control for confounding variables. Specifically, studies tend to over-rely on samples of undergraduate students who complete various measures of psychological distress; it is difficult to generalise conclusions based on research in a relatively high-functioning sample to more acutely distressed samples. Conversely, when studies have recruited clinical samples, they tend to recruit participants based on membership of broad diagnostic categories with questionable validity (e.g. borderline personality disorder). This makes the specificity of the relationship between self-disgust and psychopathology difficult to disentangle. Furthermore, there is considerable variability in how self-disgust is assessed across studies, ranging from validated broad measures of self-disgust to visual analogue scales. Different measures likely capture different aspects of self-disgust. Control for confounding variables is typically partial and involves other measures of disgust (e.g. disgust propensity) or more general measures of well-being (e.g. anxiety). Studies rarely controlled for the confounding impact of other negative self-referent emotions such as shame. The implications of these biases are discussed throughout the results section.

[INSERT TABLE 1 HERE]

3.2 Study characteristics

Thirty-one papers (twenty-seven quantitative, three qualitative, one mixed) were included in the review. The context of the mental health difficulties in which self-disgust was studied tended to be highly variable – the mental health difficulties studied in each paper, as well as the methodology (quantitative or qualitative) employed, are broken down in Table 2 below. Specific difficulties examined included trauma-related difficulties, depression and anxiety, eating disorders or body-image related difficulties, self-harm, borderline personality disorder, and obsessive-compulsive difficulties. One paper (Overton et al., 2008) additionally assessed the psychometric properties of a self-disgust scale. As the relationship between self-disgust and psychopathology may vary according to the particular clinical presentation, these difficulties are considered separately below. Table 3 provides a detailed breakdown of the characteristics of included studies.

[INSERT TABLE 2 HERE]

[INSERT TABLE 3 HERE]

3.3 Conceptualisation of self-disgust

Qualitative examinations of people's experiences of self-disgust can inform whether the theoretical construction of self-disgust maps on to people's real-life experiences, and thus whether the concept captures a meaningful real-world phenomenon. Such research can delimit the boundaries of the concept, and indicate the aspects of experience that are captured within it. Thus, it can contribute to the definition of a meaningful concept and suggest how best quantitative measures can capture its breadth and depth. Qualitative studies have explored self-disgust in the context of depression (Powell et al., 2014), eating disorders

(Espeset et al., 2012), physical health problems (Jones et al., 2008), and sexual trauma (Jung & Steil, 2012).

Similar themes have emerged across these papers, although there are also areas of divergence. In perhaps the most comprehensive qualitative exploration of self-disgust, Powell et al. (2014) highlighted the importance of the visceral nature of self-disgust, underscored by diffuse feelings of nausea which are triggered by a range of self-related cues. Participants also reported experiencing a pervasive and constant background sense of self-disgust which became more intense when presented with specific triggers (e.g. having to focus on an aspect of the self), as well as severe psychological and behavioural reactions to self-disgust – this included a desire to literally cut away or cleanse the disgusted part of the self, dissociating the "disgusting" self from the rest of one's identity, and withdrawing from other people due to a belief that the self was toxic. A phenomenologically similar experience has been described in the other studies (Espeset et al., 2012; Jones et al., 2008; Jung & Steil, 2012), with particular commonalities including a physical sense of revulsion and nausea, social withdrawal, extreme attempts at cleansing (Jung & Steil, 2012) and a degree of dissociation and cognitive avoidance from the "disgusting" part of the self (Espeset et al., 2012). However, whereas in the Powell et al. (2014) study feelings of self-disgust were elicited by whole-self evaluations which were driven by diffuse causal pathways, elicitors of self-disgust in the other studies were more specific – that is, a diseased (Jones et al., 2008) or trauma-affected (Jung & Steil, 2012) body part or the body itself (Espeset et al., 2012) – and typically had a clearer causal pathway. Nonetheless, the overall phenomenological experience appears very similar.

Thus, self-disgust appears to represent a real and meaningful experience for people with significant psychological and behavioural consequences, which encompasses both an enduring and stable cognitive-affective component and a more intense and transient self-

disgust emotional reaction. It can be elicited by whole-self diffuse evaluations, or by more specific evaluations, such as evaluations of behaviour. Therefore, a clear and meaningful definition of self-disgust can be derived and mapped on to personal accounts of the experience – such a clear construct definition is an essential first step in establishing construct validity (Schwab, 1980).

3.4 Measurement of self-disgust

Examination of the measurement of self-disgust can inform how well a quantitative assessment of self-disgust maps on to this conceptual definition.

Considerable heterogeneity exists in how self-disgust has been operationalised within the literature. Psychometric measures designed specifically to assess self-disgust (e.g. Overton et al., 2008; Schienle, Ille, Sommer & Arendasy, 2014) have only recently been developed. In the absence of standardized self-disgust scales, the most frequently employed measures of self-disgust simply involve utilizing visual analogue scales asking individuals to rate the intensity with which they experience self-disgust (e.g. Abdul-Hamid et al., 2014; Badour et al., 2012; Badour et al., 2014; Dyer et al., 2015). Such single-item measures are unlikely to capture the full complexity of a self-disgust cognitive-affective schema, and may instead capture a more transient but intense self-disgust emotional reaction. Perhaps resultantly, such measures have not been subject to any rigorous psychometric tests of reliability over time, and validity has only been established relative to more general measures of disgust rather than relative to other negative self-referential emotions. Additional brief measures of feelings of disgust towards the self have also been developed specifically in relation to sexual trauma, including the Feeling of Being Contaminated Scale (Jung & Steil, 2012,2013; Steil et al., 2011) and three items from the Sexual Assault and Rape Appraisals (SARA; Fairbrother & Rachman, 2004). Again however, such scales appear to focus on a

specific aspect of self-disgust (disgust towards trauma-affected body parts, generated by more associative processes following links with a real contaminant), and have yet to be subject to rigorous psychometric testing.

Two multi-item measures of self-disgust have been developed and validated in the literature. The Self-Disgust Scale (Overton et al., 2008), developed and validated in a UK convenience sample (largely comprising female undergraduate students), comprises two factors, a "disgusting self" scale, in which disgust becomes targeted at stable, context-independent aspects of one's appearance or personality, and a "disgusting ways" scale, in which disgust is directed at one's behaviour. The SDS has evidenced strong internal consistency (Cronbach's alpha = .91), suggesting that it measures a coherent underlying construct, and strong test-retest reliability, suggesting the scale is measuring a construct which is relatively stable over time. Moderate correlations with more general measures of disgust (r = .25) suggests that the scale is measuring a construct which centres on the core emotion of disgust. However, correlations between the SDS and measures of other negative self-relevant emotions were not described, thus limiting conclusions around the convergent and discriminant validity of the SDS. The Questionnaire for the Assessment of Self-Disgust (Schienle, Ille, Sommer & Arendasy, 2014) appears to have a similar factor structure to the SDS, producing "personal " and "behavioural" disgust subscales. Unfortunately, the study validating the QASD is not available in the English language. However, subsequent studies (e.g. Schienle et al., 2015) using the QASD report strong internal consistency ($\alpha = 0.85$) and test-retest reliability.

Differing measures of self-disgust are likely to capture different elements of this construct, with visual analogue scales perhaps measuring a transient emotional reaction and multi-item scales like the SDS and QASD better capturing the underlying construct suggested

by qualitative research, including its cognitive and behavioural elements. Thus, in considering the relationship between self-disgust and mental distress, it is crucial to consider which element of self-disgust is likely being assessed by a particular measure. Although the SDS and QASD are more likely to fully capture the construct of self-disgust, their development and validation within predominantly student, largely female, non-clinical samples, may render them less sensitive to detecting different manifestations of self-disgust in other populations. To illustrate, the specific body-part elicitors of self-disgust evidenced in the Jones et al. (2008) and Jung & Steil (2011) studies may be less likely to be picked up by the more whole-body evaluation items on the SDS and QASD. Thus, the likely sensitivity and specificity of the measure in detecting self-disgust in a particular population should also be considered when evaluating the relationship between self-disgust and mental distress. Therefore, although measures exist which appear to adequately capture the construct of self-disgust as evidenced in the qualitative literature, these assessments may be less sensitive to capturing manifestations of self-disgust in specific populations. Furthermore, much of the self-disgust literature has employed a measure of self-disgust which have yet to establish adequate construct validity and are likely to only partially capture the concept of self-disgust. These issues will be given careful consideration in considering the literature examining the relationship between self-disgust and mental distress.

3.5 The relationship between self-disgust and mental distress

This literature pertains to the predictive validity of self-disgust in determining clinical outcomes. Throughout this section of the review, the relationship between self-disgust and mental health difficulties will be considered according to how well it fits with the four models outlined in the introduction, each of which has different implications for the predictive, and thus clinical, utility of self-disgust.

3.5.1 Self-disgust and mood difficulties

Six papers have examined the relationship between self-disgust and depression or anxiety (see tables 4 and 5 below). These studies have employed broad multi-item measures of self-disgust, indicating that they are likely capturing the full cognitive-affective schema. Effect sizes tend to be moderate to large when examining the relationship between self-disgust and depression, although beta values are weaker after other negative self-referential emotions are controlled for. Where anxiety has been measured, effect sizes tend to be small to moderate, and beta values are further reduced when other variables are controlled. Behavioural self-disgust appears to have a stronger predictive effect on anxiety than physical self-disgust. Many of these studies position self-disgust as a mediating variable which attempts to explain the relationship between various life events (e.g. illness) or dispositions (e.g. dysfunctional attitudes or biases) and the subsequent development of depression or anxiety. Five of these studies have employed a cross-sectional survey design in order to test these hypotheses, with one employing a longitudinal design.

To illustrate, two cross-sectional studies conducted in community samples (Overton et al., 2008; Simpson et al., 2010) demonstrated that the relationship between dysfunctional attitudes (for example, perfectionistic tendencies) and depression was partially mediated by the effect of depression on self-disgust, with the mediating effect of self-disgust remaining significant independent of the mediating effect of low self-esteem (Simpson et al., 2010). A longitudinal study (Powell et al., 2013) lends further support to the conceptualisation of self-disgust as a concept which mediates the relationship between dysfunctional attitudes and depression. Specifically, over a 12-month period in a non-clinical sample, self-disgust levels at baseline significantly predicted depressive symptoms six months ($\beta = 0.30$) and 12 months ($\beta = 0.26$) later when controlling for baseline depressive symptoms. However, when

controlling for baseline levels of self-disgust, baseline depressive symptoms did not significantly predict levels of self-disgust at six months ($\beta = 0.10$) or 12 months ($\beta = 0.03$). Furthermore, the impact of baseline levels of dysfunctional attitudes on depressive symptoms was mediated by self-disgust at 6 months, $\beta = 0.13$, suggesting that at least some of the impact of cognitive biases on depressive symptoms is mediated by its impact on self-disgust. However, there was also a significant impact of 6-month self-disgust on 12-month dysfunctional attitudes, suggesting that perhaps a bi-directional relationship in which self-disgust, once established, functions to perpetuate cognitive biases. Two studies (Azlan et al., 2017; Powell et al., 2016) which examine the predictive role of self-disgust on the development of depression in the context of a (disgust-related) physical health stressor lend further tentative support to the conceptualization of self-disgust as a contributor to the aetiology of mood difficulties. Powell et al. (2016), in their cross-sectional examination of the role of self-disgust in the development of depression in cancer patients, found that self-disgust mediated the relationship between disgust-related cancer side effects and depressive symptomatology in patients high in disgust-sensitivity but not in patients low in disgust-sensitivity, with both physical and behavioural self-disgust exhibiting significant direct effects on depression. Similarly, Azlan et al. (2017) reported that physical self-disgust was strongly predictive of depression in cancer patients. However, another cross-sectional study (Laffan et al., 2015) found no relationship between levels of self-disgust and depression in a sample of older adult living in residential care, although it should be noted that overall levels of self-disgust were very low within this sample.

Overall the evidence converges to support the conceptualisation of self-disgust as a latent factor with a significant aetiological role in the development of depression, thus lending most support to the first of our potential relationship models. The evidence further appears to suggest that once the link between self-disgust and depression is established, self-

disgust then subsequently influences other depression-maintaining processes, such as cognitive biases. This would give the concept of self-disgust significant predictive and clinical utility in understanding depression. However, the relevance of self-disgust to anxiety appears to be much weaker. Moreover, conclusions are bounded by a number of caveats, most notably an over-reliance on community samples in which overall levels of distress are relatively low and a failure to control for potential confounding variables such as shame or self-hatred. It is therefore difficult to rule out model 4, in which self-disgust only relates to psychopathology through its relationship to other negative self-referent emotions.

[INSERT TABLE 4 HERE]

[INSERT TABLE 5 HERE]

3.5.2 Self-disgust and trauma-related difficulties

Ten studies have examined the relationship between self-disgust and the development of trauma-related difficulties (see Table 6 below). Effect sizes have been quite variable (ranging from non-existent to large) depending on how self-disgust and trauma-related difficulties have been operationalised. In particular, studies which have examined the role of peri-traumatic self-disgust (Badour et al., 2012, 2013, 2014) have evidenced much weaker effect sizes than studies which have measured a more enduring self-disgust reaction (e.g. Brake et al., 2017; Dyer et al., 2015, Ille et al., 2014 Rusch et al., 2011). All of these studies have employed cross-sectional, case-control, or retrospective designs, and therefore are

limited in their ability to inform the predictive validity of self-disgust. However, a number of treatment outcome studies (Jung & Steil, 2012, 2013; Jung, Steil & Stangier, 2013) evaluating the efficacy of self-disgust based interventions on post-traumatic symptoms enable us to evaluate this further.

To illustrate, peri-traumatic self-disgust has been demonstrated to have no effect on post-traumatic stress symptoms once other variables are controlled for (Badour et al., 2012), although it has been demonstrated to significantly predict mental contamination following trauma (Badour et al., 2014), which in turn significantly predicted post-traumatic stress symptom severity (Badour et al., 2013). However, significantly higher rates of body-focused self-disgust have been observed in victims of childhood sexual abuse who have a diagnosis of PTSD symptoms compared to a healthy control group (Dyer et al., 2015), and women with a diagnosis of PTSD who had experienced childhood sexual abuse were significantly more likely to associate themselves with disgust than with anxiety in an implicit association test (Rusch et al., 2011). Moreover, self-disgust has been demonstrated to mediate the relationship between post-traumatic stress severity and suicide risk (Brake et al., 2017).

A coherent framework is needed in order to integrate these divergent findings. It is possible, for example, that a peri-traumatic self-disgust response only results in development of post-traumatic symptoms when it is elaborated in to an over-arching self-disgust framework. Further, peri-traumatic self-disgust may promote vulnerabilities such as mental contamination which enable this elaboration. However, the retrospective and cross-sectional nature of these studies prohibits clear conclusions and thus restrict our ability to evaluate the predictive validity of self-disgust.

Nonetheless, a small number of treatment outcome studies enable further evaluation of this relationship. A case study (Bowyer et al., 2014) describing the integration of

compassion-focused techniques to target self-disgust within an overall trauma-focused CBT intervention evidenced considerable reductions in post-traumatic stress symptoms. Similarly, a 2-session intervention specifically targeting contamination-based appraisals and imagery has evidenced significant reductions in PTSD symptoms in a case study (Jung & Steil, 2012), a small scale intervention study (Jung, Steil & Stangier, 2011) and a randomized controlled trial (Jung & Steil, 2013). Demonstrating that reductions in self-disgust results in subsequent reductions in post-traumatic symptoms indicates that self-disgust at least plays a significant role in the maintenance, if not the development, of these symptoms.

Thus, overall empirical research on self-disgust and trauma is suggestive of a causal role for self-disgust, thus lending support to the first of our proposed relationship models. However, results are confounded by the considerable heterogeneity in the operationalisation of self-disgust, and like the depression literature, by a reliance on retrospective cross-sectional studies and a failure to control for other negative self-referential processes. Thus, it is also difficult to rule out the fourth potential relationship model, in which self-disgust only relates to post-traumatic difficulties due to its relationship with other variables such as shame.

[INSERT TABLE 6 HERE]

3.5.3 Self-disgust and difficulties with body-image

Five quantitative studies have examined the relationship between self-disgust and problems associated with disordered eating or body image (see table 7 below). Effect sizes are moderate to large when the zero-order correlations are considered, although beta values are much smaller when other negative self-referential emotions such as shame are controlled. All studies employed a cross-sectional or case-control design, and measurement of self-disgust has varied across studies. An additional qualitative study (Espeset et al., 2012) linked

self-disgust to specific eating disordered behaviours, in particular social withdrawal, food restriction, and dissociation from the body.

To illustrate, individuals with body-image related difficulties (eating disorders, body dysmorphic disorder) self-report significantly higher levels of disgust relative to controls both when focusing on their own bodies (Bornholt et al., 2005; Neziroglu et al., 2010) and in multi-item measures of self-disgust (Ille et al., 2014). In addition to significantly predicting overall eating difficulties, self-disgust also significantly moderated the relationship between eating disorder symptoms and suicidal ideation, such that eating disorder symptoms predicted suicidal ideation in those high in self-disgust but not in those low in self-disgust (Chu et al., 2015). This finding may suggest that self-disgust underpins a more severe and enduring manifestation of eating difficulties, which may in turn predict suicidal ideation. Moreover, self-disgust uniquely predicted bulimia independently of the effects of shame (Olatunji et al., 2015), and significantly mediated the relationship between shame and bulimia ($z = 2.25$, $p = .02$). However, the relationship between self-disgust and bulimia became weaker (although still significant) when shared variance was attributed to shame, suggesting that failure to consider the broader emotion of shame may result in over-estimation of the specific effects of self-disgust.

Although the above findings suggest a role for self-disgust in body-image difficulties, albeit a more modest one when shame is also considered, they are bounded by their cross-sectional nature, as well as their use of a convenience rather than a clinical sample – these methodological difficulties limit the specificity of conclusions regarding precisely how self-disgust relates to eating pathology across the spectrum of eating disorder severity. Although the qualitative paper (Espeset et al., 2012) suggest that self-disgust precipitates and drives

eating disordered behaviours such as food restriction and avoidance of body awareness, these causal inferences are similarly limited and require empirical testing.

Thus, the research on self-disgust in the context of body-image difficulties is inconclusive with regard to which of the four potential relationship models it best fits. However, given suggestions in the qualitative literature that self-disgust drives eating disordered behaviour (rather than vice versa), the significant (albeit much weaker) contribution of self-disgust to these difficulties independent of the effects of shame, and the moderating impact of self-disgust on suicidal ideation in the context of these difficulties, some very tentative support is lent to the first predictive model, which posits that self-disgust is causally related to the development of body-image difficulties.

[INSERT TABLE 7 HERE]

3.5.4 Self-disgust and self-harm

Three papers explicitly examined the relationship between self-disgust and self-harm (see table 8). Effect sizes were reported for only one of these studies (Bachtelle & Pepper, 2015), and are in the moderate to large range. Self-disgust was operationalised differently across studies, with two studies (Bachtelle & Pepper, 2015; Smith et al., 2015) employing a broad multi-item measure of self-disgust, and one (Abdul-Hamid et al., 2014) employing a visual analogue measure. Two employed cross-sectional designs (Bachtelle & Pepper, 2015; Smith et al., 2015) and one (Abdul-Hamid et al., 2014) employed an experimental design, with studies indicating a bi-directional relationship between self-disgust and self-harm.

To illustrate, Bachtelle & Pepper (2015) report strong positive correlations between self-disgust and shame linked to self-injury related scars, and moderate negative correlations between self-disgust and the ability to experience personal transformation or growth following self-injury, suggesting that self-disgust may inhibit recovery from self-harm.

Similarly, self-disgust significantly mediated both the relationship between depression and non-suicidal self-injury and the relationship between childhood sexual abuse and lifetime self-injury status (Smith et al., 2015), suggesting both that adverse life events exert their influence on self-injury partially through their effects on self-disgust and that self-disgust in turn increases the risk of depression following self-injury. Abdul-Hamid et al.'s (2014) experimental study lends further support to the complexity of this relationship. Specifically, when participants reflected on negative aspects of the personality and then their body (by writing a 3-minute free-narrative on this) and rated both changes in their disgust levels and changes in their self-harm urges subsequently, more frequent references to disgust terms in participant narratives was significantly related to an increase in urge to self-harm.

Overall, these findings tentatively suggest a reciprocal relationship between self-disgust and self-harm urges, with self-disgust both predicting subsequent self-harm and generated as a response to self-harm. Thus, these findings are supportive of both model 1, in which self-disgust has a causal influence on engagement in self-harm, and model 2, in which engagement in self-harm predicts subsequent self-disgust.

[INSERT TABLE 8 HERE]

3.5.5 Self-disgust and obsessive-compulsive symptoms

Three papers (see table 9) examined the relationship between self-disgust and obsessive compulsive difficulties, two of which have already been discussed in relation to post-traumatic difficulties (Badour et al., 2012) and eating disorders (Olatunji et al., 2015). Effect sizes are moderate, although beta values reduce when other variables are controlled for. One of these studies (Badour et al., 2012) assessed peri-traumatic self-disgust and its subsequent impact on the development of obsessive-compulsive difficulties. The other

studies assessed self-disgust using the multi-item Self-Disgust Scale. Two of these studies are cross-sectional (Badour et al., 2012; Olatunji et al., 2015) and one employs an experimental design. Results tentatively indicate that self-disgust drives obsessive-compulsive behaviours, rather than vice versa, and that self-disgust makes a unique contribution to this process independent of other negative self-referential emotions.

To illustrate, peri-traumatic self-disgust made a unique but small contribution to obsessive-compulsive difficulties independent of the effects of depression, disgust-sensitivity and post-traumatic cognitions (Badour et al., 2012), and general self-disgust made a small but significant independent contribution to obsessive-compulsive symptoms independent of the effects of shame (Olatunji et al., 2015). Experimentally-manipulated excessive engagement in health-related behaviours had no impact on self-disgust (Olatunji et al., 2014), suggesting that these behaviours are a consequence rather than a cause of self-disgust.

Thus, the evidence on self-disgust and obsessive-compulsive difficulties is very weakly suggestive of the first causal model. However, such conclusions are very tentative. Olatunji et al. (2014) employed a community sample who were not experiencing obsessive-compulsive symptoms and manipulated only a small range of behaviours which may be encompassed within obsessive-compulsive difficulties. It is therefore possible that when such behaviours occur in the context of significant psychological distress, they do drive further self-disgust. It is also probable that particular obsessive-compulsive symptoms not captured in that study (such as intrusive thoughts) drive further self-disgust. Thus, we cannot rule out model two, in which self-disgust is a consequence of obsessive-compulsive difficulties, or a reciprocal relationship between models one and two.

[INSERT TABLE 9 HERE]

3.5.6. Self-disgust and a diagnosis of borderline personality disorder

Four studies (see table 10) have reported on the relationship between self-disgust and a diagnosis of borderline personality disorder. Effect sizes, where reported, are in the large range. All four studies (Dudas et al., 2017; Ille et al., 2014; Schienle et al., 2013; Schienle et al., 2015) employed a case-controlled design and utilised multi-item measures of self-disgust (the QASD). Three of these studies (Dudas et al., 2017; Schienle et al., 2013; Schienle et al., 2015) also demonstrated differential patterns of activation in the amygdala brain regions in the client group relative to a control group, and an increased sensitivity to facial expressions of disgust in others. Schienle et al. (2015) postulated that the latter findings may be due to life experiences which have shaped predictions of rejection, thus sensitising participants to expressions of disgust from others.

Although these studies are indicative of elevated levels of self-disgust in this group of individuals, a number of methodological limitations preclude us from drawing conclusions about the predictive relationship between self-disgust and such difficulties. The study designs do not enable conclusions around the direction of effects. Furthermore, the construct validity of borderline personality disorder is questionable, and is likely to encompass a highly heterogeneous group of people. Thus, findings that self-disgust is elevated in a very heterogeneous group of people does not enable conclusions about why this might be the case (i.e. the particular psychological processes that self-disgust might relate to in this group). Notwithstanding the heterogeneity within the category itself, participants in the above studies typically presented with numerous additional psychological difficulties. Thus, it is entirely possible that higher levels of self-disgust confer a more general risk for more severe manifestations of psychological distress, rather than the more specific difficulties associated with borderline personality disorder.

[INSERT TABLE 10 HERE]

4. Discussion and conclusions

Overall, the review supports the construct validity of the concept of self-disgust – qualitative explorations of the phenomenology of self-disgust appear to describe a meaningful and coherent experience, which is distinct from other negative self-referent emotions, and which is associated with significant negative outcomes. Quantitative measures of self-disgust would appear to map well on to these qualitative descriptions, although they may be less sensitive in populations for whom the elicitors of self-disgust are specific rather than diffuse. Psychometric testing of these measures further indicates a coherent underlying structure, which is stable over time, and which correlates appropriately (not so strongly that it is measuring the same construct, but not so weakly that it is completely unrelated to constructs it should theoretically relate to) with both other measures of disgust and measures of other negative self-referent emotions.

It is more difficult to determine the predictive validity of self-disgust, particularly over and above the predictive value of established constructs such as shame. The evidence does however tentatively suggest that self-disgust is implicated in the aetiology of a range of mental health difficulties, particularly in the areas of depression, trauma and eating disorders, with perhaps a more reciprocal relationship evident between self-disgust and self-harm. However, a number of caveats limit the strength of these conclusions. Firstly, a dearth of prospective studies means that conclusions about the direction of effects are based on a small number of papers, or based on inferences from studies in which self-disgust is most likely to have pre-dated the difficulty being examined (e.g. a physical health condition resulting in a change in the self, a trauma). Secondly, many studies did not control for the potentially confounding effects of other self-relevant emotions, in particular shame, and those that did reported a more modest (although still significant) unique contribution of self-disgust.

Thirdly, many of the measures used to assess self-disgust, particularly in the area of trauma, may only capture a small part of the construct and may result in an over or under estimation of the strength of the relationship between self-disgust and mental health, particularly post-traumatic, difficulties. Fourthly, there is also an over-reliance on convenience rather than clinical samples, particularly in the research on depression and obsessive-compulsive difficulties; it is possible that the relationship between self-disgust and these difficulties is different when more severe manifestations of these difficulties are more prevalent in the sample. Finally, there is an over-reliance on between-group comparisons based on diagnostic categories which are considerably heterogeneous, or on examining the relationship between self-disgust and symptoms of a particular diagnostic category; this makes it difficult to infer the specific process through which self-disgust contributes to a particular mental health difficulty, and difficult to disentangle a causal influence of self-disgust from self-disgust simply being part of the phenomenology of the mental health difficulty. Research examining the relationship between self-disgust and specific symptoms, or more tightly related clusters of symptoms, may address this difficulty. To illustrate, it would be much more useful to know whether self-disgust predicts greater difficulty relating to other people than to know that self-disgust is higher in people with a diagnosis of borderline personality disorder. Research focused on identifying the unique processes which mediate the relationship between self-disgust and particular mental health difficulties would also add to this understanding.

Given the limitations outlined above, the clinical implications of this review should be interpreted with caution. However, the findings do suggest that self-disgust is a meaningful and distinct phenomenon with severe behavioural and psychological consequences, which is implicated in the development and maintenance of a range of mental health conditions. Thus, it should be taken into consideration in therapeutic practice. For example, the possibility that self-disgust is influencing an individual's presentation could inform the generation of

additional early hypotheses which could subsequently further inform important areas for assessment, particularly in the conditions discussed above. Assessing for the physiological, behavioural, cognitive and subjective emotion states identified as key to self-disgust can subsequently inform formulation and targets for treatment. Given the sensitive nature of this topic, assessing self-disgust will need to be approached carefully, and qualitative research could usefully inform how clients would prefer this topic to be broached. Nonetheless, research on assessment of other sensitive topics, such as abuse or shame (e.g. Gilbert & Proctor, 2006; Larkin & Morrison, 2006), can inform this process. Moreover, the review has highlighted the potential benefits of specific therapeutic programmes which target (e.g. Jung & Steil, 2012) self-disgust, albeit a more focused and contained aspect of self-disgust. New treatment programmes could build on this work by developing and adapting techniques which focus on the more diffuse aspects of self-disgust.

The review indicates several avenues for future research in order to further inform the clinical utility of self-disgust. As noted above, qualitative research exploring how clients experience assessment and intervention with self-disgust in therapy can inform how the concept can be most helpfully integrated into practice, as can treatment outcome studies which examine the efficacy of therapeutic strategies aimed at ameliorating self-disgust. Furthermore, there is a need for more prospective studies which examine the relationship between self-disgust and various mental health conditions over time, studies which examine the unique contribution of self-disgust to these difficulties as distinct from the contributions of shame and guilt, and studies which examine the processes through which self-disgust exerts its effects on mental health difficulties.

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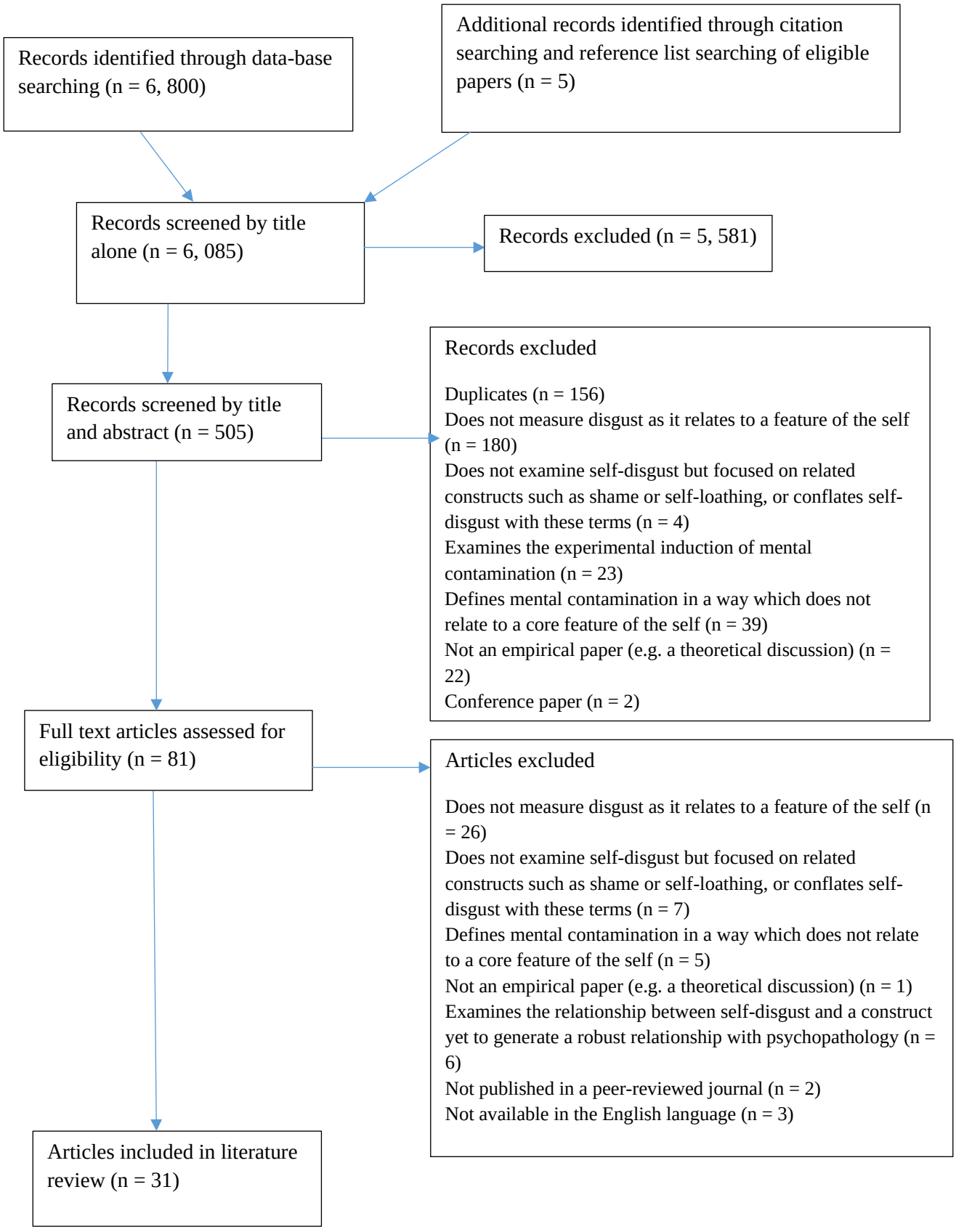

Figure 1. Flow diagram documenting search strategy

Table 1. Assessment of risk of bias

Authors	Unbiased selection of cohort?	Sample size calculation ?	Adequate description of cohort?	Validated method for assessing self-disgust?	Validated method for assessing mental health difficulty?	Outcome assessors blind to predictor variables?	Missing data minimal?	Confounders controlled for?	Appropriate analyses?
Abdul-Hamid, Denman & Dudas (2014)	Partial	No	Yes	Partial	Partial	n/s	Yes	Partial	Yes
Azlan, Overton, Simpson & Powell (2017)	Yes	No	Yes	Yes	Yes	n/s	n/s	Yes	Yes
Bachtelle & Pepper (2015)	Yes	No	Yes	Yes	Partial	n/s	n/s	No	Partial
Badour, Bown, Adams, Bunaciu, Feldner (2012)	n/s	No	Yes	Partial	Yes	n/a	n/s	Partial	Yes
Badour, Feldner, Blumenthal & Bujarski (2013)	n/s	No	Yes	Partial	Yes	n/s	n/s	Partial	Yes
Badour, Ojserkis, McKay & Feldner (2014)	n/s	No	Yes	Partial	Yes	n/s	n/s	Partial	Yes
Bornholt, Brake et al. (2005)	n/s	No	Yes	Partial	Partial	n/s	n/s	Partial	Yes
Bowyer, Wallace & Lee (2014)	No	n/a	Yes	Partial	Yes	No	n/a	No	Yes
Brake, Rojas, Badour, Dutton & Feldner (2017)	Yes	No	Yes	Yes	Yes	n/s	n/s	Partial	Yes
Chu, Bodell, Ribeiro & Joiner (2015)	Partial	Yes	Yes	Yes	Yes	n/s	Yes	Partial	Yes
Dudas et al. (2017)	Partial	No	Partial	Yes	Partial	No	n/s	Partial	Yes
Dyer, Feldman & Borgmann (2015)	Partial	No	Partial	Partial	Partial	No	n/s	No	Yes
Espeset, Gulliksen, Nordbo, Skarderud & Holte (2012)	Yes	n/a	Yes	Yes	Yes	n/a	n/a	n/a	Yes
Ille et al. (2014)	Partial	No	Partial	Yes	Yes	n/s	n/s	Partial	Yes
Jones et al. (2008)	Yes	No	Yes	Yes	Yes	n/a	n/a	n/a	Partial

Jung & Steil (2013)	No	Yes	Yes	Partial	Yes	n/s	Yes	No	Yes
Jung & Steil (2012)	No	n/a	Yes	Partial	Yes	n/s	Yes	No	Yes
Laffan, Millar, Salkovskis & Whitby (2015)	Yes	Yes	Yes	Yes	Yes	n/s	n/s	No	Yes
Olatunji (2015)	Partial	Yes	Partial	Yes	Partial	No	n/s	Partial	Yes
Olatunji, Cox & Kim (2015)	Partial	No	Yes	Yes	Yes	n/s	No	Yes	Yes
Overton, Markland, Simpson, Taggart & Bagshaw (2008)	Partial	Yes	Partial	Yes	Yes	n/s	n/s	Partial	Yes
Powell, Azlan, Simpson & Overton (2016)	Yes	No	Yes	Yes	Yes	n/s	Yes	Partial	Yes
Powell, Overton & Simpson (2014)	No	n/a	Yes	Yes	Yes	n/a	n/a	n/a	Yes
Powell, Simpson & Overton (2013)	Partial	No	Yes	Yes	Yes	n/s	Yes	Partial	Yes
Nexiroglu, Hickey & McKay (2010)	Partial	No	Partial	Partial	Partial	n/s	Yes	No	Yes
Rusch et al. (2011)	Partial	No	Yes	Partial	Partial	n/s	n/s	Partial	Yes
Schienle, Leutgeb & Wabnegger (2015)	Partial	No	Partial	Yes	Partial	n/s	n/s	No	Yes
Schienle, Haas-Krammer, Schoggle & Ille (2013)	Partial	No	Yes	Yes	Partial	n/s	n/s	No	Yes
Simpson, Hillman, Crawford & Overton (2010)	Partial	Yes	Yes	Yes	Yes	n/s	n/s	Yes	Yes
Smith, Steil, Weitzman, Trueba & Meuret (2015)	Partial	No	Yes	Yes	Yes	n/s	n/s	Partial	Yes
Steil, Jung & Stangier (2011)	Partial	No	Yes	Partial	Yes	n/s	Yes	No	Yes

n/s – not specified
n/a – not applicable

Table 2. Overview of included papers according to mental health difficulty considered

Mental health difficulty	Study	Methodology (Quant/Qual)
Post-traumatic stress difficulties	Badour et al. (2012)	Quantitative
	Badour et al. (2013)	Quantitative
	Bowyer, Wallace & Lee (2013)	Quantitative
	Brake et al. (2017)	Quantitative
	Rusch et al. (2011)	Quantitative
	Jung & Steil (2012)	*Mixed*
	Jung & Steil (2013)	Quantitative
	Steil, Jung & Stangier (2011)	Quantitative
Eating disorder or body image difficulties	Bornholt et al., 2005	Quantitative
	Chu et al., 2015	Quantitative
	Espeset et al., 2012	*Qualitative*
	Olatunji et al., 2015	Quantitative
	Neziroglu et al., 2010	Quantitative
Anxiety or depression	Azlan et al. (2017)	Quantitative
	Jones et al. (2008)	*Qualitative*
	Laffan et al. (2015)	Quantitative
	Overton et al. (2008)	Quantitative
	Powell et al. (2013)	Quantitative
	Powell et al. (2014)	*Qualitative*
	Powell et al. (2016)	Quantitative
	Simpson et al. (2010)	Quantitative
Self-harm	Abdul-Hamid et al. (2014)	Quantitative
	Bachtelle & Pepper (2015)	Quantitative
	Smith et al. (2015)	Quantitative
Diagnosis of borderline personality disorder	Dudas et al. (2017)	Quantitative
	Schienle et al. (2013)	Quantitative
	Schienle et al. (2015)	Quantitative
Obsessive-compulsive difficulties	Badour et al., 2012	Quantitative
	Olatunji et al., 2015	Quantitative
Obsessional cleaning and health-related behaviours	Olatunji et al., 2015	Quantitative
Multiple	Ille et al., 2014	Quantitative

Table 3. Characteristics of Included Studies

Authors	Research question	Design	Sample	Key measures	Analytic strategy	Key findings
Abdul-Hamid, Denman & Dudas (2014)	Examined Self-Relevant Disgust and Self-Harm Urges in Patients with Borderline Personality Disorder and Depression. Predicted that overall disgust levels would be higher in BPD group, and that increases in self-disgust would predict increases in self-harm urges.	Quasi-experimental between groups design, in which self-harm urges were measured across groups following task to induce self-disgust.	17 BPD patients, 27 MDD patients, 25 healthy controls All women	- Task – write a 3-minute narrative focused on negative aspects of the self, then a 3-minute narrative on negative aspects of the body - Visual analogue measures of disgust taken before and after both the person and body focused tasks - Changes in self-harm urges after both tasks - Narratives coded for the label of emotions	Krushkav-Wallis and Mann-Whitney U	The BPD group had higher levels of post-task disgust in the PERSON task (writing a piece focused on their own personality) than healthy volunteers. The BPD group had higher levels of post-task disgust in the BODY task (writing a piece on their emotions towards their body) than both the MDD group and the healthy controls. Changes in self-harm levels were associated with disgust narrative labels on a whole sample level. Changes in disgust levels in people with MDD in the PERSON task was associated with increased urges to self-harm.
Azlan, Overton, Simpson & Powell (2017)	Are levels of self-disgust higher in people with cancer compared to matched controls? Do higher levels of self-disgust in both cancer patients and controls predict higher levels of depression and anxiety?	Cross-sectional correlational	107 cancer patients with heterogeneous cancer dx (72 % women), compared to 107 controls matched on age and gender	- Self-disgust scale (Overton et al., 2008) - Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983)	Logistic regression categorising people in to cancer vs non-cancer categories based on disgust scores Multiple regression to examine relationships between self-disgust and depression/anxiety	Cancer patients were 1.13 times as likely to exhibit higher physical self-disgust than control patients. Both physical and behaviour self-disgust significantly correlated with anxiety and depression. Multiple regression analysis indicated that physical and behavioural self-disgust significantly predicted anxiety in cancer patients, but only behavioural self-disgust significantly predicted anxiety in controls. Physical (but not behavioural) self-disgust significantly predicted depression in both cancer patients and controls Behavioural self-disgust had only weak relationships to depression in both groups.
Bachtelle & Pepper (2015)	What emotions influence scar-related growth or shame in individuals who engage in non-suicidal self-injury (NSSI)?	Cross-sectional correlational	49 college students (73% female) with scars from NSSI , recruited from a broader sample	Deliberate Self-Harm Inventory (DSHI; Gratz, 2001), with an additional qst about future likelihood of self-harm. Self-Disgust Scale (Overton et al., 2008) Differential Emotions Scale IV (DES-IV-A; Izard et al., 1993)	Correlational analysis	Self-disgust was significantly negatively correlated with post-traumatic growth. Self-disgust was also significantly positively correlated with scar-related shame.
Badour, Bown,	Peri-traumatic fear, self and	Cross-sectional	Community	Rating of between 0 and 100 on the	Hierarchical multiple	Peritraumatic self-focused disgust significantly predicted

Adams, Bunaciu, Feldner (2012)	other-focused disgust in predicting development of PTSD or contamination-based OCD	correlational	sample of 49 adult women with a history of interpersonal traumatic victimization (27 sexual assault, 22 physical assault).	experience of peri-traumatic self-focused disgust, perpetrator-focused disgust and fear. Obsessive–Compulsive Inventory-Revised (OCI-R; Foa et al., 2002). Clinician-Administered PTSD Scale (CAPS; Blake et al., 1995)	regression	contamination-based OCD but not PTSD. Peritraumatic fear and other-focused discussed significantly predicted PTSD
Badour, Feldner, Blumenthal & Bujarski (2013)	Is the relationship between disgust sensitivity and PTSD following sexual trauma mediated by mental contamination?	Cross-sectional correlational	Community sample of 38 women with a history of at least one traumatic sexual assault, recruited from a broader study	Disgust Propensity and Sensitivity Scale-Revised (DPSS-R; van Overveld et al., 2006) Sexual Assault-Related Mental Contamination scale (Fairbrother and Rachman 2004) Clinician-Administered PTSD Scale (CAPS; Blake et al. 1995),	PROCESS (based on linear regression models and Sobel's test of the indirect effect)	Both disgust-sensitivity and sexual assault related mental contamination were significantly correlated with post-traumatic stress symptom severity. Disgust sensitivity predicted post-traumatic stress through its relationship with mental contamination.
Badour, Ojserkis, McKay & Feldner (2014)	Evaluated the degree to which self-focused and perpetrator-focused disgust were predictive of mental contamination following sexual trauma	Cross-sectional correlational	72 women recruited from the community with a history of sexual trauma	Rating of between 0 and 100 on the experience of peri-traumatic self-focused disgust, perpetrator-focused disgust and fear. Vancouver Obsessional Compulsive Inventory-Mental Contamination Scale (VOCI-MC; Rachman, 2005).	Hierarchical regression analysis.	Peri-traumatic self-focused disgust, but not peri-traumatic perpetrator-focused disgust or fear, was significantly associated with mental contamination following sexual trauma.
Bornholt, Brake et al. (2005)	What self-concepts are employed by adolescent girls to evaluate their bodies?	Cross-sectional	141 adolescent girls from across the weight range, including 28 girls currently hospitalized with anorexia.	Specially designed task in which participants visualised their bodies and circled the emotions they felt.	T-tests	Comparison of the anorexic group with a low-BMI control group drawn from the schoolgirl sample indicated that anorexic girls felt significantly more disgust towards their own bodies.
Bowyer, Wallace & Lee (2014)	Case study examining the efficacy of a compassion-focused approach to reduce feelings of self-disgust in enhancing trauma-focused CBT	Single-case repeated measures	A 17 year old girl who had suffered a sexual assault 5 years previously and was undergoing TF-CBT	Post Traumatic Diagnostic Scale (Foa, 1995) The Beck Depression Inventory (BDI-II; Beck, Steer and Brown, 1996) The Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (FSCRS; Gilbert, Clark, Hempel, Miles and Irons, 2004)	Descriptive comparison of pre and post test measures and client feedback.	PTSD symptom severity changed from severe to mild. Depression levels declined from moderate-severe to normal. Clinically significant decreases in how much the client expressed shame and disgust towards herself.
Brake, Rojas, Badour, Dutton & Feldner (2017)	Is the relationship between PTSD and suicide risk mediated by self-disgust? Is a different mediating relationship present for individual PTSD symptom clusters?	Cross-sectional	347 young adults (66% female) who have experienced at least 1 traumatic event as defined by DSM-V criteria	Self-Disgust Scale (SDS; Overton et al., 2008) PHQ-9 (Kroenke et al., 2001) Suicide Behaviours Questionnaire- Revised (Osman, 2001) Post-Traumatic Checklist for DSM-V (Weathers, Litz et al., 2013) Life Events Checklist (LEC-5; Weathers et	Multiple regression with boot-strapped confidence intervals	The relationship between total PTSD symptoms and suicide risk was mediated by the "disgusting self" scale of the SDS. Alt hough PTSD symptoms significantly predicted the "disgusting ways" scale, this scale in turn did not predict suicide risk. The "disgusting self" scale also mediated the relationship between the re-experiencing, negative mood/cognitions, and

				al., 2013)		avoidance PTSD symptom clusters and suicide risk. However, there was no relationship between alterations in arousal and the "disgusting self" scale, although there was a relationship to the "disgusting ways" scale.
Chu, Bodell, Ribeiro & Joiner (2015)	Does disgust moderate the relationship between eating disorders and suicidal ideation?	Cross-sectional correlational	341 young adults (66% women), recruited from a university	Eating disorder inventory (Garner, Olmstead, & Polivy, 1983). Disgust with life scale (Ribeiro, Bodell, & Joiner, 2012). Disgust propensity and sensitivity scale-revised (Fergus & Valentiner, 2009) Beck scale for suicide ideation (Beck & Steer, 1991).	Multi-variate linear regression analysis	Eating disorder symptoms and body dissatisfaction were associated with suicidal ideation at high levels of disgust towards the self and the world, but were not related at low levels of disgust at self/world.
Dudas et al. (2017)	Do patients with BPD self-report more self-disgust than controls? Is this connected with differential connectivity in emotion processing neural regions?	Case control	14 women with a BPD diagnosis and 14 female controls	Self-Disgust Scale (Overton et al., 2008) Neuro-imaging techniques	T-test	BPD subjects compared to controls scored significantly higher on the Self-disgust Scale (BPD 62.36 [10.4]; NC: 21.67 [7.4] $p < 0.001$). BPD showed abnormal patterns of activation, habituation and connectivity in regions linked to emotion regulation.
Dyer, Feldman & Borgmann (2015)	What emotions are triggered by the body areas associated with sexual trauma? Do PTSD&BPD patients exhibit more negative body-related images than controls? Do PTSD patients rate trauma-associated parts of the body more aversively?	Between-groups design comparing Dx groups to healthy controls (PTSD&BPD; PTSD only; BPD only; healthy controls)	23 patients with PTSD after CSA 25 participants with BPD but not CSA 22 patients with PTSD after CSA & BPD 27 healthy controls All women.	Modified version of the Survey of Body Areas (SBA; Kleindienst et al., 2014) Disgust sensitivity scale (dss) (Schienle, Walt, Stark & Vaitl, 2002) Body image guilt and shame scale (bigss; Thompson, Dinnel, & Dill, 2003)	Non-parametric Kruskal-Wallis test Mann-Whitney U	All negative body-related emotions were significantly higher in the patient groups than in the control groups. Significantly more feelings of disgust were observed in the PTSD&BPD group than in the BPD group alone. Both PTSD groups reported significantly more trauma-associated body areas than any of the other groups. Trauma-associated areas were rated significantly more negatively than non-trauma associated areas.
Espeset, Gulliksen, Nordbo, Skarderud & Holte (2012)	Qualitative exploration of the link between negative emotions and eating disorder behaviour in people with anorexia – how do patients with Anorexia Nervosa manage negative emotions, and how do they link this to anorexic behaviours?	Qualitative interviewing	14 women, aged 19-39, diagnosed with anorexia	Focused interview strategy	Grounded theory	Participants exhibited high levels of self-disgust and fear of becoming fat. Disgust was managed predominantly by avoidance.
Ille et al. (2014)	Do participants with "mental disorders" have higher levels of self-disgust compared to "healthy" controls?	Case control	112 patients with various diagnoses (eating disorders, borderline	Questionnaire for the Assessment of Self-Disgust (QASD) (Schienle et al., in print) Brief Symptom Inventory (BSI: Derogatis,	ANOVA (for comparison across groups)	Self-disgust was elevated in the patient group. Personal disgust was significantly higher than behavioural disgust in the patient group but not in the control group.

	Are there any differences across patient groups in levels of self-disgust? Is self-disgust (personal and behavioural) related to particular psychological traits which confer vulnerability for "mental disorder"?		personality disorder, schizophrenia, depression, spider phobia) compared to 112 "healthy controls".	1993).	Stepwise multiple regression (for examination of relationship between self-disgust and specific symptoms).	Patients with BPD and eating disorders had the highest levels of self-disgust on both subscales. In the patient group, hostility and psychoticism significantly predicted personal disgust. Anxiety and interpersonal sensitivity significantly predicted personal disgust. Traumatic events during childhood were a significant risk factor for self-disgust.
Jones et al. (2008)	Impact of exudate and odour from chronic venous leg ulceration on anxiety and depression.	Hermeneutic interviewing (qualitative)	20 people (12 women, 8 men, aged 52 – 86, mean 68 years), recruited from a larger study, who had experienced chronic leg ulcerations	Hermeneutic (unstructured) interviews	Elements of Colazzi's (1978) framework (examining significant statements) and van Manen's (1990) structure (eliciting rich descriptions of lived experiences)	Three themes: *Emotional responses to odour* – disgust, revulsion, leading to shame, embarrassment and self-loathing *Limitation on social activities due to odour or fear of odour* - due to a fear that others would find them disgusting *Way in which odour and fears of odour were managed by nurses*
Jung & Steil (2013)	RCT evaluating the efficacy of Cognitive Restructuring and Imagery Modification (CRIM) in treating Feeling of Being Contaminated (FBC) in PTSD	Randomized controlled trial	34 women (mean age 37) with PTSD from CSA were randomly assigned to either CRIM or wait-list control	Ratings of the intensity, vividness and uncontrollability of and distress caused by the FBC, pre, mid and post treatment. Post-traumatic Diagnostic Scale (McCarthy, 2008) CAPS (Blake et al., 1995) Administered pre and post-treatment and at 4-week follow-up.	MANOVA	Improvements in intensity of the FBC were significantly larger in the CRIM group than in the FBC group. A significantly larger reduction in PTSD severity was also observed in the CRIM group relative to the wait-list group.
Jung & Steil (2012)	Feeling of being contaminated in adult survivors of CSA and it's treatment – a case study	Case study demonstrating effectiveness of 2-session treatment programme to reduce FBC in CSA-related PTSD.	2 women who experienced chronic CSA-related PTSD and FBC	CAPS (Blake et al., 1995) Feeling of Being Contaminated scale (4 questions assessing intensity, frequency, distress and duration of FBC)	Pre and post intervention comparison of means	Qualitative description of the feeling of being contaminated by participants Significant reductions in PTSD symptoms following treatment of the feeling of being contaminated
Laffan, Millar, Salkovskis & Whitby (2015)	Investigating perceptions of disgust in older adults in residential care homes.	Cross-sectional correlational	54 older adults (mean age 86) in care homes vs 21 older adults in the community (mean age 69)	Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, and Williams, 2001). Specifically developed 9-item measure of self-disgust and perceived-other disgust in relation to care activities.	Mann-Whitney U	Overall self-disgust and perceived-other disgust ratings were very low in both samples. No statistically significant relationships were found between self-disgust or perceived other-disgust and depression in either sample.
Olatunji (2015)	Does excessive engagement in health-related behaviours modulate stable disgust-related variables, including self-disgust?	Between-groups ABA design	60 undergraduate students (30 per group; 73% female in 1 group; 80% female in another)	Health behaviour checklist (HBC; Olatunji et al., 2011) Disgust scale-revised (DS-R; Haidt et al., 1994) SDS (Overton et al., 2008) Manipulation task: Participants in the	A 2x3 ANCOVA	A significant effect of time on disgust propensity was observed in the experimental condition but not in the control condition. There was no significant reductions in self-disgust in either the health-condition or control group over time.

				experimental group monitored health behaviours for 1 week (A), then engage in excessive health-related behaviours (e.g. washing, checking temperature) for 1 week (B), then return to baseline and monitoring (A). Controls – stage A only.		
Olatunji, Cox & Kim (2015)	Self-disgust mediates the association between shame and symptoms of bulimia and OCD.	Cross-sectional correlational	403 undergraduates (67% women)	Other As Shamer (Goss, Gilbert, & Allan,1994) SDS (Overton et al., 2008) Disgust Scale-Revised (Haidt et al., 1994) Eating Attitudes Test—26 (EAT-26). (Garner, Olmsted, Bohr, & Garfinkel, 1982) Obsessive-Compulsive Inventory—Revised (OCI-R) (Foa et al., 2002) DASS-21 (Lovibond & Lovibond, 1993)	Preacher & Hayes (2008) – bootstrapping; linear regressions	Self-disgust mediated the relationship between shame and OCD symptoms, as well as the relationship between shame and bulimic symptoms.
Overton, Markland, Simpson, Taggart & Bagshaw (2008)	Validation of the self-disgust scale Is the relationship between dysfunctional attitudes and depressive symptomatology mediated by self-disgust?	Cross-sectional correlational	A convenience sample of 111 participants (81 females, 30 males) , largely comprising undergraduate students	The Self-Disgust Scale (SDS) (Overton et al., 2008) The Beck Depression Inventory II (BDI-II) (Beck, 1967) The DASS-21 (Lovibond & Lovibond, 1993) Dysfunctional Attitudes Scale – A (Weissman, 1980)	Factor analysis Series of linear regressions to conduct Baron & Kenny's (1986) test for mediation.	The SDS demonstrated good psychometric properties, and two underlying factors – disgusting "self" and disgusting "ways". Self-disgust partially mediated the relationship between dysfunctional attitudes and depressive symptoms
Powell, Azlan, Simpson & Overton (2016)	Is the relationship between disgust-related side effects and depression mediated by self-disgust in those high in disgust sensitivity but not low in disgust-sensitivity?	Cross-sectional correlational	132 volunteers who had been treated for cancer (83 women, mean age 57)	Disgust Propensity and Sensitivity Scale-Revised (DPSSR; van Overveld et al., 2006). SDS (Overton et al., 2008) Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983	Path analysis	Self-disgust mediated the relationship between disgust-related cancer side effects and depressive symptomatology in those high in disgust-sensitivity but not in those low in disgust-sensitivity.
Powell, Overton & Simpson (2014)	Qualitative exmploration of the phenomenological experience of self-disgust in depression	Semi-structured interviews (qualitative)	9 female participants (age 19 – 39, mean 24) recruited from a larger study who scored high in self-disgust (as measured by the SDS) and depression (as measured by the DASS-21)	Semi-structured interviews, in which participants were informed that the purpose of the interview was to examine disgust towards the self.	Interpretative Phenomenological Analysis	Four themes: *Subjective experience of self-disgust* – visceral, all-encompassing, can be experienced as an ever-present background sense of a more intense emotional reaction *Origins of the disgusting self* – disgust-based criticism or abuse in childhood or adolescence. *Consequences of self-disgust* – desire to cleanse the self, strategies to deal with self-disgust (avoidance, withdrawal) *Self-disgust and other emotional states* – hatred, anger, shame, sadness
Powell, Simpson & Overton (2013)	Self-disgust should predict depressive symptoms over time, but not the reverse; six-month self-disgust should mediate the relationship between dysfunctional	Repeated measures longitudinal design.	110 participants (final sample), 77% female	Self-disgust scale (Overton et al., 2008) Dysfunctional Attitudes Scale form A (DAS-A; Weissman, 1980). Depression, Anxiety and Stress Scale (DASS; Lovibond & Lovibond, 1993).	Structural equation modelling	Controlling for baseline depression, self-disgust at 6 months predicted depression at 12 months; however, depression at 6 months did not predict self-disgust at 12 months. The effect of baseline dysfunctional attitudes on depression at 12 months was mediated by 6-month self-disgust. 6-month self-disgust also significantly predicted 12-month

	cognitions at baselines and depression at 12 months					dysfunctional attitudes, suggesting a more circular relationship.
Nexiroglu, Hickey & McKay (2010)	The role of disgust in Body Dysmorphic Disorder	Repeated measures (mirror trial) x5) between groups (x2 – BDD vs control) design.	6 participants (5 male, 1 female) with BDD vs 8 (3 male, 1 female) controls	Disgust Scale-Revised (Haidt et al., 1994) Physiological measures Visual analogue scales. Task – participants were asked to look in the mirror and focus attention on a part of their face they disliked. Ps were asked to report on what they were focusing on. Ps then rated how much disgust and anxiety they felt whilst doing this task. This was repeated 5 times.	One-way repeated measures ANOVAS.	Significant decreases in disgust ratings over mirror trails in the BDD group but not in the control group (n2 = .49 vs n2 = .16) However, overall disgust ratings were much higher in the BDD group (e.g. average of between 40 and 55 out of 100 across trials, compared to average of between 0 and 10 across trials for controls.
Rusch et al. (2011)	Is there a stronger association between the self and disgust in those with BPD and PTSD then between the self and anxiety?	Between-groups (2 – control vs dx) design examining differences in responding to implicit association test.	20 women with BPD, 20 women with PTSD, 15 women with BPD and PTSD, 37 psychologically healthy women.	Implicit Association Test (IAT) , measuring response latencies when disgust or anxiety words were associated with self or other	ANOVA	Stronger relationship between disgust and the self than between anxiety and the self in those with PTSD and BPD.
Schienle, Leutgeb & Wabnegger (2015)	Are patients with BPD more sensitive to disgusted facial expressions in others? Are patients with BPD higher in self-disgust? Is this associated with abnormal activation in the amygdala?	Case control	25 women with a BPD diagnosis, and 25 healthy women of comparable age.	Borderline Symptom List (BSL-23; Bohus et al., 2009) Questionnaire for the Assessment of Self-Disgust (QASD) (Schienle et al., 2014) Questionnaire for the Assessment of Disgust Proneness (QADP; Schienle et al., 2002) T1 weighted brain scans (to enable voxel-based morphology analysis).	2-sample t-tests	Borderline symptom-severity was positively correlated with both personal and behavioural self-disgust (r = 0.59 and r = 0.53 respectively). The BPD group had significantly higher levels of self-disgust. Whole-brain analysis showed no significant between-group differences, although there was increased grey matter volume in the amygdala in the patient group.
Schienle, Haas-Krammer, Schoggle & Ille (2013)	Altered state and trait disgust in BPD	Case control	30 female patients with BPD compared with 30 healthy women.	Borderline Symptom List (BSL-23; Bohus et al., 2009) Questionnaire for the Assessment of Disgust Proneness (QADP; Schienle et al., 2002) Scale for the Assessment of Disgust Sensitivity (SADS; Schienle et al., 2010) Questionnaire for the Assessment of Self-Disgust (QASD)	Correlation matrix One-way ANOVA	Elevated levels of self-disgust were reported in the BPD group – significantly higher than in the control group. Significant correlations were observed between self-disgust and borderline symptom severity in the patient group (r = .67, personal disgust; r = .51, behavioural disgust).
Simpson, Hillman, Crawford & Overton (2010)	Does self-esteem and self-disgust independently mediate the relationship between dysfunctional cognitions and depression?	Cross-sectional correlational	Non-clinical sample of 110 participants (84 females, 36 males, mean age 21)	Self-Disgust Scale (Overton et al., 2008) BDI-II (Beck, 1967) DASS (Lovibond & Lovibond, 1993) DAS-A (Weissman, 1980). Rosenberg self-esteem	Baron & Kenny (1986) – series of linear regression models.	Both self-disgust and self-esteem independently partially mediated the relationship between dysfunctional attitudes and depression.
Smith, Steil, Weitzman,	Does self-disgust mediate the relationship between	Cross-sectional	549 undergraduate psychology	Inventory of Statements about Self-Injury (ISAS; Klonsky & Glenn,	Baron & Kenny (1986) – series of	Self-disgust fully mediated the relationship between depression and non-suicidal self-injury.

Trueba & Meuret (2015)	depression and Non-Suicidal Self-Injury (NSSI)? Does self-disgust mediate the relationship between Child Sexual Abuse and NSSI?		students	2009) Self-disgust scale (Overton et al., 2008) Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995) Painful and Provocative Events Scale (Bender, Gordon, Bresin et al., 2011).	linear regressions.	Self-disgust partially mediated the relationship between childhood sexual abuse and non-suicidal self-injury.
Steil, Jung & Stangier (2011)	Pilot study evaluating efficacy of specially developed intervention in treating FBC in PTSD	Single-group repeated measures design assessing outcomes before and after treatment and at follow-up.	9 women (age 28 – 57, mean age 43) suffering from chronic CSA-related PTSD plus the FBC.	Ratings of the intensity, vividness and uncontrollability of and distress caused by the FBC, pre, mid and post treatment. Post-traumatic Diagnostic Scale . CAPS (Blake et al., 1995)	Wilcoxon's test for post-hoc comparison between means.	Large reductions in FBC between t0 and t2 (d = 2.23) and in PDS scores (d = 0.99). Large reductions in PTSD symptoms.

Table 4. Effect sizes for the relationship between self-disgust and depression

Study	Zero-order correlation	Partial correlations/ Beta value
Azlan et al. (2017) Physical self-disgust Behavioural self-disgust Controlling for disgust sensitivity and disgust propensity: Physical self-disgust Behavioural self-disgust	 r = .64 r = .53	 β = .60 (cancer), β = .54 (control) β = .08 (cancer), β = .12 (control)
Overton et al. (2008) Controlling for dysfunctional cognitions	r = .66	 β = .61
Simpson et al. (2010) Unique contribution relative to low self-esteem	r = .47	 β = .45
Powell et al. (2013) Controlling for dysfunctional cognitions, unique contribution at 6 months Controlling for dysfunctional cognitions, unique contribution at 12 months	r = .51	 β = .30 β = .26
Powell et al. (2016) (physical, behavioural) Physical self-disgust Behavioural self-disgust	r = .72, r = .60	 β = .47 β = .26
Laffan et al. (2015) – no effect sizes reported for the relationship between self-disgust and depression.	non-significant	
Ille et al. (2014) Personal disgust Behavioural disgust	 r = .335 ns – not reported	

Table 5. Effect sizes for the relationship between self-disgust and anxiety

Study	Zero-order correlation	Partial correlations/ Beta value
Azlan et al. (2017) Physical self-disgust Behavioural self-disgust Controlling for disgust sensitivity and disgust propensity: Physical self-disgust Behavioural self-disgust	 r = .45 r = .47 	 β = .28 (cancer), β = .18 (control) β = .26 (cancer), β = .29 (control)
Powell et al. (2016) (physical, behavioural) Physical self-disgust Behavioural self-disgust	r = .60, r = .58 	 β = .27 β = .23
Laffan et al. (2015) – no effect sizes reported for the relationship between self-disgust and depression.	non-significant	
Ille et al. (2014) Personal disgust Behavioural disgust		 ns – not reported β = .300 (control sample), β = .529 (community sample)

Table 6. Effect sizes for the relationship between self-disgust and trauma-related difficulties

Study	Zero-order correlation	Partial corr/ Beta value
Badour et al. (2014) –relationship between self-disgust and mental contamination after trauma Controlling for post-traumatic cognitions, depression, physical contamination fears, PTSD dx	r = .48	 β = .34
Badour et al. (2012) – peri-traumatic self-disgust and PTSD symptoms Controlling for disgust sensitivity, obsessive-compulsive symptoms, anxiety sensitivity, negative affect.	r = .07	 β = -.07
Badour et al. (2013) – relationship between mental contamination following trauma and PTSD Controlling for disgust-sensitivity	r = .66	 β = .54
Brake et al. (2017) – reported unstandardized estimates only		
Dyer et al. (2015) – effect sizes not reported.		
Rusch et al. (2011) – compared the association between the self and disgust in PTSD&BPD women (0) and healthy controls (1)	r = -.34	
Bowyer et al. (2011) – case study; reduction in PTSD symptoms after a self-disgust based intervention – not reported		
Jung & Steil (2012) – case study examining reduction in PTSD symptoms after self-disgust focused intervention – no effect size reported		
Steil, Jung & Stangier (2011) – small scale pilot study examining reduction in PTSD symptoms after self-disgust focused intervention.	r = .44	
Jung & Steil (2013) – RCT examining reduction in PTSD symptoms after self-disgust focused intervention – effect size indicates difference in PTSD symptoms over time in treatment group as compared to the control group.	r = .42	

Table 7. Effect sizes for the relationship between self-disgust and body-image difficulties

Study	Zero-order correlation	Beta value
Bornholt et al. (2005) – comparison of disgust-related words circled in a body-focus task between anorexic girls and a control group – effect sizes not reported.		
Neziroglu et al. (2010) – comparison of people with BDD to controls on a visual analogue self-disgust after mirror task – effect sizes not reported, but raw between-group data suggest large differences [50/100 (BDD) compared to 10/100(controls)]		
Chu et al. (2015) – relationship between suicidality and self-disgust relationship between self-disgust and eating disorder symptoms Controlling for anxiety and depression: Relationship between self-disgust and suicidal ideation Relationship between self-disgust and bulimia Relationship between self-disgust and body dissatisfaction Relationship between self-disgust and drive for thinness Relationship between self-disgust*eating disorder and suicidal ideation Relationship between those eating disorder symptoms and suicidal ideation in those high in self-disgust	r = .34 r = .51	 β = 0.14 β = 0.06 β = 0.30 β = 0.25 β = 0.14 β = 0.23
Olatunji et al. (2015) – relationship between self-disgust and symptoms of bulimia Controlling for shame (unique contribution): Controlling for shame (added contribution)	r = .24	 β = .14 β = .02
Ille et al. (2014) – comparison of people with eating disorders compared to healthy controls on self-disgust Personal disgust: Behavioural disgust:	 r = .561 r = .548	

Table 8. Effect sizes for the relationship between self-disgust and self-harm

Study	Zero-order correlation	Partial correlations/ Beta value
Bachtelle & Pepper (2015) – scar-related shame and self-disgust Scar-related growth and self-disgust	r = .64 r = -.49	
Smith et al. (2015) – standardised effect sizes not reported		
Abdul-Hamid et al. (2014) – effect sizes not reported.		

Table 9. Effect sizes for the relationship between self-disgust and obsessive-compulsive difficulties

Study	Zero-order correlation	Partial correlation/ Beta value
Badour et al. (2012) – relationship between peritraumatic self-focused disgust and o/c symptoms Controlling for disgust sensitivity, anxiety sensitivity, post-traumatic symptoms, depression	r = .38	 β = 0.02
Olatunji et al. (2015) – relationship between self-disgust and o/c symptoms Controlling for shame	r = .30	 β = .12
Olatunji et al. (2014) – effect of engaging in excessive health-related behaviours on self-disgust – no significant effect		

Table 10. Effect sizes for the relationship between self-disgust and borderline personality issues

Study	Zero-order correlation	Partial correlations/ Beta value
Dudas et al. (2017) – no effect size reported		
Schienle et al. (2015) – relationship between "borderline symptoms" and personal self-disgust Relationship between "borderline symptoms" and behavioural self-disgust	r = .59 r = 0.53	
Schienle et al. (2013) - relationship between BPD, self-disgust and amygdala structure – no effect sizes reported		
Ille et al. (2014)	r = .637	

Appendix 1-1

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Section Three: Critical Appraisal

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A systematic review suggested that the concept of self-disgust, despite some methodological and conceptual limitations, offers considerable clinical utility in understanding the development and maintenance of a range of mental health difficulties. One such difficulty in which self-disgust may be implicated is in the development and maintenance of post-traumatic stress reactions. This research project therefore examined whether there was a significant relationship between self-disgust and the severity of post-traumatic stress symptoms experienced after trauma-exposure, and if so, whether this relationship was mediated by the influence of self-disgust on avoidant or anxious attachment styles. Eighty-five participants who had experienced a traumatic event in adulthood completed an on-line battery of questionnaires assessing their demographics, characteristics of their trauma, self-disgust, attachment style, post-traumatic stress symptoms (re-experiencing, hyper-arousal, and avoidance symptoms) and dissociation. Results indicated that self-disgust significantly positively correlated with all post-traumatic symptoms, with both an anxious and avoidant attachment style, and with the experience of sexual trauma. Moreover, self-disgust fully mediated the relationship between the experience of sexual trauma and increased post-traumatic stress severity. However, an avoidant attachment style did not significantly relate to any of the post-traumatic symptoms, and an anxious attachment style only strongly related to dissociation symptoms and weakly (albeit significantly) related to the intrusions symptom cluster and to the total post-traumatic stress symptoms score. Moreover, only the relationship between self-disgust and dissociation was significantly mediated by an anxious attachment style. Thus, the results highlight the importance of self-disgust in the development of post-traumatic symptoms, in particular following sexual trauma. They also implicate increased interpersonal anxiety as a potential mechanism through which self-disgust may influence more severe dissociation symptoms. However, additional variables are needed to account for the relationships between self-disgust and the other post-

traumatic symptom clusters. Findings highlight the importance of targeting self-disgust after trauma-exposure in order to prevent escalation of post-traumatic symptom severity. Findings also highlight the particular importance of considering self-disgust in individuals with more dissociative presentations, with additional attention paid to formulating the role of interpersonal anxiety in this relationship.

The aim of this critical appraisal is to offer a critique of each stage of the research process in order to enable full evaluation of the implications of these findings. Specifically, I will first discuss the development of the research question, particularly discussing my efforts to maintain a reflexive approach in evaluating the utility of self-disgust for the literature review whilst having some investment in the outcome in terms of the empirical paper. I will secondly examine the research question itself in terms of its ontological and epistemological assumptions, and outline any tensions that such assumptions may create in applying findings from the research to clinical practice. Thirdly, I will briefly examine the efficacy of the study's methodology in answering this research question, and the implications of methodological biases for translating the findings to practice. I will conclude by interpreting the recommendations from the research within an overall framework of the study's strengths and weaknesses.

Development of the research question

My interest in this research area stemmed from my clinical experience in working with post-traumatic stress difficulties, which encompassed work with two individuals for whom disgust-based reactions formed a key role in maintaining their difficulties. It also stemmed from my interest in the self-disgust literature more generally. One of the study's supervisors is also a key contributor to the self-disgust literature. It was necessary for me to consider these influences throughout the research project in order to reduce allegiance effects.

For example, I needed to be aware that these experiences may bias me towards expecting a strong relationship between self-disgust and post-traumatic stress symptoms, and therefore I needed to ground development of the research question clearly in the literature, and maintain a clear perspective on the study limitations throughout the project. It was particularly important to adopt a reflexive approach to the literature review – although I had conducted a sufficient preliminary review of the self-disgust and trauma literature prior to the development of the research question to suggest a strong relationship between self-disgust and post-traumatic symptoms, it was possible that an in-depth objective critical appraisal would conclude that the concept of self-disgust lacked clinical utility. This would have obvious implications for the utility of my research paper. In order to manage this, it was necessary for me to acknowledge this potential tension and place as many objectivity checks on the process as possible – for example, through stringent risk of bias assessments on all included papers. Although I feel I was able to maintain an objective position and have grounded the conclusions of the review firmly in the available data, the overall thesis findings need to be considered in this context.

Ontological and epistemological assumptions

The underlying assumptions of the project followed a critical realist (Bhaskar, 1998; 2002) position. Thus, the study assumes that self-disgust, post-traumatic stress symptoms, and attachment styles are real constructs, which are more or less experienced in similar ways across groups of people, and which relate to each other in more or less similar ways across groups of people. Moreover, the study assumes that we can measure at least approximations of these concepts, if not the full underlying constructs themselves, through the use of standardised questionnaires. Throughout the course of my clinical training, I have come to find that a critical realist stance can most usefully bridge the gap between research and clinical practice, although I have found that a social constructionist approach can be useful in

clinical practice in relation to particular difficulties, and in drawing attention to the contexts from which we conceptualize difficulties. To illustrate, the concept of post-traumatic stress disorder evolved from observations of veterans returning to the United States from the Vietnam War (Kutchins & Kirk, 1997). Thus, it is not only based on observations of a relatively small number of people, it is also based on particular cultural concepts – for example, it is intrinsically tied to the idea of an individual "self" within whom there are assumed to operate particular biological, cognitive or emotional deficits arising from the traumatic event. However, other cultures do not consider the self as comprising of internal processes, but rather have a much more interactional view of the self (Priya, 2015). Within such cultures, distress arising from trauma may be poorly understood or captured by individualistic intra-psychic processes. For example, cross-cultural research has identified that distress arising from natural disasters or war in more collectivist cultures is situated in a loss of harmonious relationships rather than through the intra-psychic processes captured in the concept of post-traumatic stress severity (Bracken, Giller & Summerfield, 1995; Priya, 2015). Thus, nomothetic theories of trauma reactions, as proposed by this research, are culturally bound and only make sense within cultures in which there are shared systems of meaning. A similar logic can be applied to the study of emotions. If we accept that emotions are generated by cognitive appraisal structures, which are themselves derived from our social environment, then our qualitative experience of emotions is also bound by culturally shared concepts. To illustrate, the emotion of anger as we experience it requires cognitive appraisals of intent, responsibility or blame. Thus, cultures which lack notions of personal responsibility should experience anger in a qualitatively different way – for example, as frustration or annoyance, but without an element of blame (Ratner, 1989; Solomon, 1984). In the absence of socially shared concepts which generate emotions, the experience of emotion (and their subsequent action tendencies) is likely to be qualitatively different. To illustrate this point,

whereas research in Western countries has exclusively linked self-disgust to negative concepts, a body of research in Japan has linked self-disgust to more positive concepts, such as motivation to change perceived negative aspects of the self and high self-esteem (e.g. Mizuma, 2003; Satoh, 2001). Although self-disgust appears to have been conceptualised quite differently in these studies compared to how it is conceptualised in this review[1], it cannot be assumed that it is not the cultural meaning attached to the concept, rather than the concept itself, which drives association with more positive characteristics or processes in some cultures but highly negative associations in other cultures.

Therefore, the findings of this study are bound within cultures which share similar notions of the self, of emotion, and of the concepts which generate emotion. Thus, in applying findings from this research to practice, close attention should be paid to the personal meaning of symptoms or experiences, the origins of this meaning, and the context of these origins. Clinical psychologists, trained in multiple psychological models from across epistemological and ontological positions, may be well positioned in bridging the gap between nomothetic theories of emotional disorder based on general assumptions and an idiosyncratic appreciation of the unique personal meaning and context of these concepts for individuals. To illustrate, someone with post-traumatic stress symptoms may evaluate particular symptoms (e.g. flashbacks) as indicative of "illness" or "weakness". This narrative may have been informed by dominant biomedical narratives which have created the category of "post-traumatic stress disorder", and it may in itself cause further distress. However, the psychologist can draw attention to the contextual rather than universal nature of such narratives in an attempt to alleviate distress at this level. This may in turn create more space

[1] These studies were excluded from the literature review as they did not measure constructs with a robust relationship to mental distress. Self-disgust was also conceptualised quite differently in these studies, and appear to capture self-discrepancies (or differences between the actual and ideal self) than strong feelings of disgust elicited by a core and stable feature of the self.

for the individual to address symptomatic difficulties based on models of post-traumatic stress. Such as approach would require integration of narrative (White & Epston, 1990) and cognitive-behavioural approaches to trauma, an eclectic approach for which clinical training prepares clinical psychologists well.

Methodology

The remainder of this appraisal will examine how well the methodology was equipped to answer the research questions posed in the review, focusing on construct operationalisation, recruitment, and sample.

Measures and concepts

How well the study is equipped to answer the research question depends to a large extent on how well the constructs under study are operationalised and measured. Thus, it is important to consider how well operationalisation and measurement of self-disgust, attachment, post-traumatic stress symptoms and dissociation within this study map on to the presumed structure of these difficulties in the population. Such an evaluation, in order to be meaningful, also requires consideration of the likely accuracy of the presumed structure of these difficulties in the population.

Self-disgust

As highlighted in the literature review of this paper, qualitative accounts of self-disgust indicate a coherent and meaningful concept, the facets of which the Self-Disgust Scale-Revised appear to capture well. Psychometric studies of the SDS (on which the SDS-R is based) (Overton, Markland, Taggart, Bagshaw & Simpson, 2008) indicate strong Cronbach's alpha, suggesting that it is measuring a consistent underlying construct, strong test-retest reliability, suggesting that it is measuring a construct which is stable over time, and moderate to strong correlations with other measures of disgust, which suggest that it is

measuring a concept that constellates around the basic emotion of disgust (Overton et al., 2008). Similarly promising psychometric data have been reported for the revised version of the self-disgust scale (Powell, Overton & Simpson; in Powell, Overton & Simpson, 2015).

Within this sample, a Cronbach's alpha score of .92 was obtained for the total self-disgust scale, with scores of .85 and .87 obtained for the physical and behavioural self-disgust scales respectively. Moreover, the factor structure obtained in this sample mapped clearly onto the expected factor structure, with a physical self-disgust, behavioural self-disgust and total self-disgust scale emerging. Thus, overall it would appear that self-disgust is an internally consistent, reliable phenomenon with a stable underlying structure in the general population, and that it's operationalisation within this particular study effectively captured this structure.

Attachment

Classification of attachment styles in children has been achieved with a degree of reliability and has been robustly linked to a host of developmental outcomes (e.g. Zack et al., 2015). However, conceptualisation and measurement of attachment in adults has presented more difficulties, with competing views as to how many attachment styles exist and how consistent they are across relationships. The theoretical underpinnings of the measure of attachment used in this study, the Psychosis Attachment Measure, presupposes a two-dimensional theory of attachment comprising an anxious spectrum (which is theoretically linked to internal working models of the self) and an avoidance spectrum (which is theoretically linked to internal working models of others). It further presupposes that these attachment styles, informed as they are by relatively stable internal working models, are consistent across different kinds of relationship. Although there is some support for such a structure from confirmatory factor analysis studies (e.g. Brennan, Clark, & Shaver, 1998),

other researchers propose a four-factor structure comprising a fearful, dismissing, secure, and preoccupied factor (Bartholomew & Horowitz, 1991), and still others support a two-factor structure simply comprising a secure and insecure factor (e.g. Stein et al., 2002). Moreover, evidence has suggested that the consistency of attachment style across adult relationships is quite weak (Ross and Spinner, 2001). Thus, the manner in which attachment style is conceptualised in this research project makes particular assumptions about the nature of attachment – that it can be categorised according to avoidant and anxious dimensions, and that it is consistent across relationships – which are open to challenge.

Indeed, findings from this study are not consistent with the first of these assumptions - a factor analysis of the PAM indicated that a four-factor solution was more appropriate, with these factors seeming to correspond to Bartholomew's (1991) four-factor model. Moreover, attempting to produce a two-factor solution produced the secure-insecure factor structure proposed by Stein et al. (2002). Therefore, it is not at all clear from this research that anxious and avoidant spectrums represent a coherent way with which to conceptualise attachment relationships. It may be more useful to conceptualise attachment along secure and insecure attachment dimensions, with insecure attachment sharing common processes (e.g. a fear of rejection) that may promote a range of behaviours fitting of both an anxious or avoidant attachment style or an oscillation between the two. Rather than attempting to categorise particular types of insecure attachment, it may be more beneficial to explore the specifics of the individuals' models of the self and other, both generally and in response to particular relationships, and their specific relationship to interpersonal behaviours in a variety of contexts. Cognitive-analytical therapy (Ryle & Kerr, 2002) can offer a useful framework for mapping these specific relationships.

Post-traumatic stress symptoms (Intrusions, Avoidance, Hyper-vigilance)

Re-experiencing, avoidance and hyper-vigilance are considered to be the core symptoms of post-traumatic stress disorder (DSM-IV-TR, 2000), and considerably inform assessment and formulation of post-traumatic stress reactions, particularly within single-theory models (e.g. Ehlers & Clark, 2000). The measure of post-traumatic difficulties used in this study, the Impact of Events Scale – Revised (Weiss & Mamar, 1997), is based upon these three factors. Although there is some support for this factor structure from confirmatory factor analysis studies (Elhai & Palmieri, 2011; Yufik & Simms, 2010), many other confirmatory factor analysis studies have lent support to alternative four-factor models, with particularly well-supported models suggesting that emotional numbing should be separated from either avoidance to form a numbing factor (e.g. Asmundson, Stapleton & Taylor, 2004; DuHamel et al. 2004) or from other items on the hyper-arousal scale to form a general distress factor (e.g. Elhai, Gray, Docherty, Kashdan, & Kose, 2007; Elklit & Shevlin, 2007; Krause, Kaltman, Goodman, & Dutton, 2007; Palmieri,Weathers, Difede, & King, 2007). Thus, the measure of post-traumatic stress severity used in this study, the IES-R, may be derived from an out-dated conceptualisation of post-traumatic symptom structure.

This study reflected the lack of clarity about the specific processes underpinning post-traumatic stress reactions and the relationships between these processes. Specifically, the intrusions and many of the hyper-vigilance items loaded on to the same factor (perhaps indicative of a strong emotional reaction to intrusions, or strong emotions as intrusions in themselves), sleep formed an independent factor, and one item (I was aware that I still had a lot of feelings about it but I didn't deal with them) did not load strongly on to any of the factors. As most of the analyses in this study were based on the total IES-R score (which evidenced high Cronbach's alpha; .86) rather than subscales, this is unlikely to have biased the results to a large degree. However, as the IES-R is based on the aforementioned three factors, it has limited items reflecting processes not captured under these three factors – for

example, on emotional numbing or experiential avoidance strategies. Therefore, these difficulties, which may represent important facets of post-traumatic stress reactions, were not captured. Thus, in translating these findings to practice, careful assessment of the relationship between self-disgust and some of these processes will be important in bridging this gap.

Dissociation

Dissociative experiences are considered separate to the other post-traumatic symptoms (DSM-5), despite their frequent co-occurrence. Theoretical understandings of how dissociation relates to other post-traumatic symptoms are limited, but some propose that (similar to avoidance) dissociation may prevent processing and integration of the trauma memory (Brewin, Dalgleish & Joseph, 1996; Ehlers & Clark, 2000). The proposed structure of dissociation in trauma-exposed populations is quite variable and encompasses quite a range of processes. The measure of dissociation used in this study, the DES-R, is purported to comprise a depersonalisation/derealisation scale (reflecting the degree to which one's experiences or sense of self feel "unreal"), an absorption scale (reflecting the frequency which the individual is unaware of their present surroundings), and an amnesia scale (reflecting the frequency with which one presents with forgetfulness for autobiographical experiences). Other measures (e.g. Steinberg, 1994) propose identity confusion and identity alteration as additional components of dissociation. Some researchers (e.g. Holmes, Brown, Mansell & Fearon, 2005) propose a qualitative distinction between the derealisation/depersonalisation or absorption dimensions of dissociation and the identity alterations or amnesia element of dissociation, proposing that the former ("detachment") is driven by disruptions to processing and the latter ("compartmentalisation") is driven by a separation of different systems of knowledge. There is some factor-analytic support for this distinction, particularly in research conducted in highly distressed clinical samples (e.g. Amdur & Liberzon, 1996; Dunn, Ryan, & Paolo, 1994). However, other studies have

produced the intended three-factor structure of the DES (e.g. Darves-Bornoz, Degiovanni, & Gaillard, 1999), and still other studies have reported a one-factor solution (e.g. Fischer & Elnitsky, 1990; Holtgraves & Stockdale, 1997). Thus, there is a lack of clarity around the specific processes comprising dissociation and the degree to which these processes are on a continuum or qualitatively distinct from each other. They do however appear to closely correlate (Bernstein, Ellason, Ross, and Vanderlinden, 2001).

Within this sample, factor analysis indicated that a one-factor solution was most appropriate for the DES-R. Cronbach's alpha of .92 further supports the idea that a single underlying concept was being measured. Given that one-factor solutions are more common in community rather than clinical samples (e.g. Fischer & Elnitsky, 1990; Holtgraves & Stockdale, 1997), it may be that at lower levels of expression, dissociative experiences form a continuum; however, at higher levels, these experiences split into qualitatively different processes. Thus, in translating the results to clinical practice, a more detailed assessment of dissociation will be required which disentangles the specific processes encompassing dissociation and their relationship to self-disgust and attachment insecurity.

Recruitment

The method through which participants were recruited to the study has considerable potential to introduce sampling bias, which constrain the generalisability of the findings. Recruitment via on-line advertisement and questionnaire completion could have introduced bias in a number of ways. First of all, it limits the sample not only to those who are literate, but to those who are computer literate. This may exclude from participation individuals with lower education levels. It also excludes from participation non-English speaking individuals, thus resulting in a cultural bias. Secondly, recruitment was likely biased towards individuals who do present with post-traumatic difficulties, as such individuals are more likely to access

on-line support groups than individuals who have adjusted relatively well to their traumatic experience. Therefore, although the study intended to sample people across all levels of adjustment to trauma, the actual sample was comprised largely of individuals more severely affected. This may over-estimate the relationship between self-disgust and post-traumatic stress severity. Thirdly, all participants completed the questionnaires in the same order, and therefore order effects may have further conflate the strength of the relationship between the variables. Fourthly, there was no objective way to assess post-traumatic stress severity, nor any of the other study variables; therefore there was no way of determining whether participants over or under estimated their symptom severity. Finally, although the decision to include participants who had experienced any type of traumatic event was deliberately taken in order to maximize variability, it arguably dilutes the clarity of interpretation of the findings. It is possible that different types of trauma result in different pathways to post-traumatic stress difficulties, and thus these differing processes may be masked by including sufferers of very diverse traumatic experiences in the same sample.

Sample

In addition to the selection biases highlighted above, characteristics of the sample itself limits the conclusions of the research. Most notably, the sample comprised almost exclusively of female participants, and therefore the findings may not be applicable to men. The sample were also quite highly educated, with a high percentage achieving some level of third level education. Thus, the findings may be less applicable to individuals who are less well educated, a likely consequence of the recruitment bias documented above. Relatedly, the sample were also quite high functioning, with approximately 65% identifying as in full time work, study or both. This contrasts somewhat with the extremely high average scores obtained on the IES-R, which suggested that the sample comprised individuals very high in post-traumatic stress severity, as one would expect symptom severity of this nature to

significantly interfere with day-to-day functioning. This finding may suggest that the IES-R is vulnerable to ceiling effects or to an over-estimation of symptoms. Thus, the findings would appear to be most applicable to females, to those with quite a high level of education, and to those who can function relatively well despite quite high symptoms. Findings may be less relevant to male victims of trauma, to those who have lower levels of education, and to those whose functioning is very severely affected by post-traumatic symptoms.

Conclusions

To conclude, this research can make some valuable contributions to case conceptualisation and intervention in post-traumatic stress difficulties. However, these contributions are bound by a number of caveats which need to be considering when translating findings to clinical practice. Specifically, the findings are based on context-specific models of emotional distress, and thus assessment will not only require careful exploration of symptoms themselves, but also of unique meaning of these symptoms to clients, the influence of this meaning, and the contexts which shaped these meanings; findings are also based on constructs which may be in need of further revision or refinement, and thus clinical assessment of these constructs needs to be flexible and open-minded; findings may obscure differing routes to post-traumatic symptoms following different trauma experiences; and findings may not be representative of male victims of trauma or trauma sufferers who have received less education.

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Section Four: Ethics Proposal and Supporting Documentation

Aoife Clarke

Doctorate in Clinical Psychology

Division of Health Research, Lancaster University

Word count: 4,044 (minus appendices)

Faculty of Health and Medicine Research Ethics Committee (FHMREC)
Lancaster University

Application for Ethical Approval for Research involving direct contact with human participants

Instructions ***[for additional advice on completing this form, hover PC mouse over 'guidance']***

1. Apply to the committee by submitting:
    a. A **hard copy** of the University's **Stage 1 Self Assessment (part A only)** and **Project Questionnaire**. These are available on the Research Support Office website: LU Ethics
    b. The completed application **FHMREC form**
    c. Your full research proposal (background, literature review, methodology/methods, ethical considerations)
    d. All accompanying research materials such as, but not limited to,
        1) Advertising materials (posters, e-mails)
        2) Letters/emails of invitation to participate
        3) Participant information sheets
        4) Consent forms
        5) Questionnaires, surveys, demographic sheets
        6) Interview schedules, interview question guides, focus group scripts
        7) Debriefing sheets, resource lists

Please note that you DO NOT need to submit pre-existing handbooks or measures which support your work, but which cannot be amended following ethical review. These should simply be referred to in your application form.

2. Submit the FHMREC form and all materials listed under (d) by email as a **SINGLE attachment in PDF format** by the deadline date. **Before converting to PDF ensure all comments are hidden by going into 'Review' in the menu above then choosing *show markup>balloons>show all revisions in line.***

3. Submit one collated and signed paper copy of the full application materials in time for the FHMREC meeting. If the applicant is a student, the paper copy of the application form must be signed by the Academic Supervisor.

4. Committee meeting dates and application submission dates are listed on the FHMREC website. Applications must be submitted by the deadline date, to:

    Dr Diane Hopkins
    B14, Furness College
    Lancaster University,
    LA1 4YG
    d.hopkins@lancaster.ac.uk

5. Prior to the FHMREC meeting you may be contacted by the lead reviewer for further clarification of your application.

6. Attend the committee meeting on the day that the application is considered, if required to do so.

1. **Title of Project**: The relationship between traumatic events, self-disgust, inter-personal avoidance, and the development of post-traumatic symptoms: a mediation analysis

2. **Name of applicant/researcher**: Aoife Clarke

3. **Type of study**

✓ Includes *direct* involvement by human subjects.

☐ Involves existing documents/data only, or the evaluation of an existing project with no direct contact with human participants. Please complete the University Stage 1 Self Assessment part B. This is available on the Research Support Office website: LU Ethics. Submit this, along with all project documentation, to Diane Hopkins.

4. If this is a student project, please indicate what type of project by marking the relevant box/deleting as appropriate: (please note that UG and taught PG projects should complete **FHMREC form UG-tPG**, following the procedures set out on the FHMREC website

PG Diploma ☐ Masters dissertation ☐ PhD Thesis ☐ PhD Pall. Care ☐

PhD Pub. Health ☐ PhD Org. Health & Well Being ☐ PhD Mental Health ☐ MD ☐

DClinPsy SRP ☐ [if SRP Service Evaluation, please also indicate here: ☐ DClinPsy Thesis ✓

Applicant Information

5**. Appointment/position held by applicant and Division within FHM** Trainee Clinical Psychologist on the Doctorate in Clinical Psychology programme

6**. Contact information for applicant**:
E-mail: a.clarke1@lancaster.ac.uk **Telephone**: **********(please give a number on which you can be contacted at short notice)
Address: Clinical Psychology, Faculty of Health and Medicine, Furness College, Lancaster University , LA1 4YF

7. Project supervisor(s), if different from applicant:
Name(s): Dr Filippo Varese and Dr Jane Simpson

E-mail(s): j.simpson2@lancaster.ac.uk and filippo.varese@manchester.ac.uk

8. Appointment held by supervisor(s) and institution(s) where based (if applicable):
Dr Jane Simpson: Chartered Clinical Psychologist, Research Director and Senior Lecturer at Lancaster University
Dr Filippo Varese: Clinical Psychologist, Lecturer in Clinical Psychology at Manchester University

9. **Names and appointments of all members of the research team (including degree where applicable)**

Aoife Clarke BA, MSc
Dr Filippo Varese, PhD, ClinPsyD
Dr Jane Simpson, DClinPsy

The Project
NOTE: In addition to completing this form you must submit a detailed research protocol and all supporting materials.

10. **Summary of research protocol in lay terms (indicative maximum length 150 words)**:

Although a large proportion of adults experience traumatic events, most do not go to develop long-lasting symptoms of post-traumatic stress disorder (e.g. intrusions, avoiding reminders of the trauma, hyper-arousal). It is important to delineate what makes some individuals more vulnerable to developing these difficulties. Theory and research suggests that self-disgust following a trauma makes people more likely to develop these symptoms. Research suggests that self-disgust renders people more likely to be interpersonally avoidant, which in turn can

make the development of post-traumatic symptoms more likely. This study proposes to test whether self-disgust following a trauma predicts more severe symptoms of post-traumatic stress disorder, and whether this relationship is mediated by increased interpersonal avoidance. Individuals who have experienced a traumatic event in adulthood will be asked to complete questionnaires (via on-line forums) assessing self-disgust, interpersonal avoidance and trauma-symptomology. Data from these questionnaires will then be analysed within a quantitative mediation analysis.

11. **Anticipated project dates (month and year only**)

Start date: August 2016 End date: June 2017

12. **Please describe the sample of participants to be studied (including maximum & minimum number, age, gender**):

Participants will be anyone over the age of 18 who has experienced a traumatic event in adulthood. Traumatic events may include sexual assault, domestic violence, exposure to combat, or exposure to other life threatening situations. It was decided to include individuals who have experienced any type of trauma as some research indicates that some kinds of trauma are more strongly associated with self-disgust than others (e.g. Fairbrother & Rachman, 2004; Rachman, 2004), and so sampling people who have experienced a range of traumas will allow for greater variability in self-disgust.

Inclusion criteria:
The individual is aged 18 or over.
The individual has experienced a traumatic event in adulthood. Types of traumatic event included in this definition are described above.

Exclusion criteria:
~~The individual experienced trauma in childhood. This is because the experience of childhood abuse is strongly linked to the development of self-disgust, and therefore self-disgust in these individuals may pre-date the experience of a trauma in adulthood.~~ [See amendment request]
The individual does not have a sufficient understanding of the English language to complete the questionnaires. Unfortunately it will not be possible to make the questionnaires available in other languages.

The inclusion and exclusion criteria will be made clear to participants on the information sheet.

A minimum sample size of 76 will be required to detect a medium effect size ($F^2 = 0.15$) in a regression model with three predictors, in which the probability level is set at 0.05 and statistical power is set at 0.80. The following on-line statistical programme was used to calculate the sample size based on these parameters: http://www.danielsoper.com/statcalc/calculator.aspx?id=1. The maximum number of participants sought will be 543 – this is the number of participants required to detect a small effect size ($F^2 = 0.02$) with the same parameters. Although it is unlikely that this number will be achieved, implementing this maximum number will ensure that the study does not become over-powered and detect as statistically significance an effect size which has little if any clinical significance.

13. **How will participants be recruited and from where? Be as specific as possible**.

Participants will be primarily accessed via online support forums or social media websites (e.g. Facebook, Twitter, specific on-line support groups). A separate Facebook account will be set up using the researcher's University e-mail address. Facebook pages advertising the study will then be linked to this professional Facebook account rather than the researcher's personal account. A link to the study will be posted on these forums or websites. In the case of on-line support groups, this will be done with the moderators permission. On-line support groups and discussion forums for individuals who have experienced trauma include (but are not limited to):

The trauma survivors network
http://www.traumasurvivorsnetwork.org/pages/peer-support-groups

PTSDsupportgroup
http://ptsd.supportgroups.com/

Heathfulchat PTSD chatroom
http://www.healthfulchat.org/ptsd-chat-room.html

Daily Strength Post-traumatic stress group
http://www.dailystrength.org/c/Post-Traumatic-Stress-Disorder/support-group

AfterSilence.org
http://www.aftersilence.org/forum/

Pandora's Aquarium message board
http://pandys.org/forums/

With regard to other social media, in order to protect the researcher's personal information, the study will be advertised by either creating a professional account for the study or by asking others to share the study link. Additionally, a hard copy of the study advertisement will be pinned to noticeboards in the waiting rooms of charitable organizations in the ***** **** ** *******. This hard copy will also contain a link to the study, which interested individuals can type in to an internet search engine to access.

An example of what this study advertisement will look like is contained in Appendix 1.

14. **What procedure is proposed for obtaining consent**?

Individuals who are interested in learning more about the study can then click on the link to the study advertised on the online forums (or type it into a search engine if they have accessed a hard copy of the study advertisement), which will bring them to the study's information sheet (see appendix 2). This will tell them more about what to expect from the study (including any potential for distress) and explain issues of anonymity, confidentiality and right to withdraw. The information sheet will also list the researcher's e-mail address should anyone wish to ask any questions or request more information about the study. Following reading the participant information sheet, individuals will be directed to an online consent form (see appendix 3) asking them to confirm that they have understood the aforementioned issues. Those who want to consent to participate can then select "I agree" and begin completing the questionnaires. Please note that the consent form does not ask for any identifying information, and therefore all survey responses are anonymous. It is assumed that all participants will have the capacity to consent.

15. **What discomfort (including psychological eg distressing or sensitive topics), inconvenience or danger could be caused by participation in the project? Please indicate plans to address these potential risks. State the timescales within which participants may withdraw from the study, noting your reasons.**

Due to the sensitive nature of the topics being examined, it is possible that some individuals will experience distress during or as a result of participating in the study. It is anticipated that any such distress experienced will be mild and transient – all measures used in this study have been previously used in past research with no reports of undue distress experienced by participants. Furthermore, research examining the degree to which individuals who have suffered a trauma experience distress as a result of participating in research has found that participants reported experiencing only minimal distress, and furthermore felt that the benefits of participating in trauma research outweighed the costs (Becker-Blease & Freyd, 2006; Binder, Cromer & Freyd, 2010).

Nonetheless, the study's design has incorporated several features in order to both minimize the risk of distress and support participants to manage any distress that they do experience:

- Firstly, the information sheet will clearly state the sensitive nature of the questions participants will be asked and alert them to the fact that some questions may cause upset. The entirely voluntary nature of participation, as well as participants' right to withdraw from the study at any time prior to submitting their data, will be stressed.
- The information sheet will also list some resources for coping with any distress experienced during the study – thus, participants will be provided with resources to draw on even if they do not complete the study.
- The de-briefing sheet, accessed at the end of completing the survey, will also provide some signposting to support services that participants can access to help them to manage any distress that they experience.

With regard to participants' right to withdraw from the study, participants will be able to withdraw any time prior to submitting their survey responses. Specifically, when participants come to the end of the survey, they will be asked to select the "Submit" option – responses prior to clicking submit will not be accessed by the researcher. As the surveys will be anonymous, after submitting their survey responses participants will not be able to request that their data be withdrawn, as their data will not be identifiable.

16. **What potential risks may exist for the researcher(s)? Please indicate plans to address such risks (for example, noting the support available to you; counselling considerations arising from the sensitive or distressing nature of the research/topic; details of the lone worker plan you will follow, and the steps you will take**).

There is minimal risk to the researcher, as this research will not involve direct contact with research participants. It is possible that the nature of the topic may cause some distress to the researcher. Should this occur, the researcher will reflect on these during supervision with the research supervisor, in addition to drawing on personal and professional self-care resources.

17. **Whilst we do not generally expect direct benefits to participants as a result of this research, please state here any that result from completion of the study**.

There are no direct benefits to participants as a result of participating in the study. However, some may find it helpful to reflect on and share their experiences while contributing to trauma research. Participants also have the option of requesting feedback on the overall findings of the report – this may help them to understand their experiences better. Additionally, it is hoped that the findings of the report will lead to some recommendations for clinical practice in terms of early intervention with individuals who have experienced a trauma in order to limit the severity with which they experience PTSD symptoms. These findings and recommendations may lead to direct benefits to participants who request feedback on the study findings. Indirectly, we hope to use the research findings to better inform support offered to people who have experienced a trauma – this might lead to better service provision for these individuals.

18. **Details of any incentives/payments (including out-of-pocket expenses) made to participants**:
Participants will be invited to take part in a raffle in which they will be entered in a draw to win a £50 Amazon voucher. To do this, participants will be asked to enter their email addresses and to tick a box indicating they wish to be entered in to the draw. The voucher will be sent to the winning participant via email.

19. **Briefly describe your data collection and analysis methods, and the rationale for their use. Please include details of how the confidentiality and anonymity of participants will be ensured, and the limits to confidentiality**.

Data collection
On completion of the anonymous on-line consent form (described above), participants will be taken to a survey and prompted to complete the following questionnaires five in this order:

1) Participants will initially be asked to complete a brief demographic questionnaire assessing their age, gender, nationality, employment status, and a brief description of the nature of the traumatic event they experienced. Participants will also be asked whether or not they have experienced childhood trauma [see amendment request] This information will be used to describe the sample, which will help us (and other researchers) better determine

who our findings are most relevant to. It is not envisaged that this information will be used in the mediation analysis.

2) The Self-Disgust Scale-Revised (Powell, Overton & Simpson; in Powell, Overton & Simpson, 2015) will be used to measure self-disgust. This is a 22-item scale which produces two subscales (Physical self-disgust and Behavioural self-disgust), as well as a total self-disgust score. Strong internal consistency and concurrent validity have been evidenced for this instrument (Powell et al; in Powell et al., 2015).

3) The Psychosis Attachment Measure (Berry, Wearden, Barrowclough & Liversidge, 2006) will be used to measure attachment functioning. It is a self-report measure containing 16-items relating to thoughts, feelings and behaviours within significant relationships. It produces an anxious and avoidant attachment subscale. Although initially developed for and validated with people presenting with psychosis (e.g. Berry, Wearden, Barrowclough, Oakland & Bradley, 2012), it has also demonstrated good reliability and validity and a similar underlying factor structure in non-psychotic samples (Berry, et al., 2006; Sheinbaum, Berry & Barrantes-Vidal, 2013; Van dam et al., 2014; Wearden, Peters, Berry, Barrowclough & Liversidge, 2008). It has also been used as a measure of attachment functioning in clients with a diagnosis of post-traumatic stress disorder in addition to psychotic experiences (Berry, Ford, Jellicoe-Jones & Haddock, 2015).

4) The Impact of Events Scale–Revised (IES-R) will be used to assess levels of current PTSD symptoms. The IES-R is a 22-item questionnaire assessing levels of current PTSD symptoms in relation to a specific traumatic stressor (Weiss & Mamar, 1997). The measure also has three subscales assessing re-experiencing, avoidance and hyperarousal symptoms. The IES-R has been shown to have strong internal consistency and test–retest reliability (e.g. Giorgi et al., 2015).

5) The Dissociative Experiences Scale-II (Carlson & Putnam, 1993) will be used to assess trauma-related dissociation, as this post-traumatic symptom is not captured on the IES-R. This is a 28 item scale assessing various facets of dissociation, with respondents rating each item according to how frequently they experience it. It produces an "amnesia" subscale, a "depersonalization/de-realization" subscale, and an "absorption" subscale, as well as a total dissociation score. It has demonstrated adequate reliability and validity (Stockdale, Gridley, Balogh & Holtgraves, 2002). The treatment of this scale within the overall analysis depends on the degree to which it correlates with the IES-R – if strong internal consistency is present, the total dissociation score from this scale will be integrated with the IES-R scale to form a single dependent variable. If the correlation between the two scales is low, results from this scale will be treated as a separate dependent variable.

Appendix 5 details the full research survey as it will appear to participants.

Once they have completed all of the above questionnaires, participants will need to select "submit" on the webpage. This will submit the participants' responses anonymously – there will be no identifying information (such as name, e-mail address) attached to these responses. Responses will be uploaded onto a secure encrypted server accessible only to the researcher. Participants will then access the de-briefing sheet (see appendix 5), which will indicate to them that they have the option of receiving feedback on the overall study findings and entering in to a draw to win a £50 Amazon Voucher. Participants will be prompted to select "Next" if they wish to avail of either of these options, or "Exit" if they do not. Selecting "Exit" will result in the person exiting the survey, and no identifying information will have been submitted to the researcher in any format. Selecting "Next" will bring up a new web page (see appendix 6) asking the participant to select "Yes" or "No" to the two above questions (if they would like to receive feedback and if they would like to be entered in to a draw to win a £50 voucher), and to submit their e-mail address. This information will be submitted completely separately to their survey data – this will be stated on the web-page. It will not be possible to link participant data to their e-mail address, thus participant data will remain anonymous.

All e-mail addresses submitted will be kept confidential by the researcher. They will be stored separately on an encrypted University server in a password protected file accessible only to the researcher. Thus, confidentiality around who has participated in the research will be maintained. As data is anonymous, it is not possible to impose limits to confidentiality based on survey responses. The only scenario in which it is envisaged that the researcher may have to break confidentiality is if a participant contacted the researcher directly via the e-mail address provided to enable questions about the research to be answered, and indicates that they or somebody else is at

risk of harm. If this should arise, in line with safeguarding procedures the researcher will ask the participant for some identifying information, inform them that I may have to break confidentiality (if appropriate), and proceed to inform the most appropriate person. This procedure will be made clear to participants on the information sheet, however it is envisaged that this scenario is very unlikely to arise.

Data Analysis

In order to be analysed, survey data will be downloaded onto an encrypted University server. Analysis will involve pooling responses across participants, thus further protecting the confidentiality of participants. Descriptive statistics will first be performed in order to describe the sample both demographically and in terms of overall levels of self-disgust, interpersonal avoidance, and symptoms of PTSD. Data cleaning and checking will first be conducted in order to prepare the data for analysis, and preliminary correlation analyses will also be conducted to determine the strength of the relationships between key variables.

The Preacher & Hayes (2008) bootstrapping method will be used to conduct the mediation analysis. The SPSS macro MEDIATE will be used to conduct these analyses. This method will produce a regression table estimating the total amount of variance in trauma symptom severity predicted by the full model, the variance in trauma symptom severity predicted by self-disgust, the variance in interpersonal avoidance predicted by self-disgust, and the variance in trauma symptom severity predicted interpersonal avoidance. The model will also produce a p-value for each of these relationships. Thus, both an effect size and a measure of statistical significance for each relationship within the model can be established. This macro will also produce a means to calculate the statistical significance of the indirect effect, that is the degree to which the relationship between self-disgust and trauma-related distress is mediated by interpersonal avoidance. Specifically, MEDIATE produces a bootstrap confidence interval for the proposed mediating relationship; if the bootstrap confidence interval produced does not contain zero, then the indirect effect can be assumed to be statistically significant.

20. **If relevant, describe the involvement of your target participant group in the *design and conduct* of your research**.

It has not been possible to involve service users in the design of the research. However, the researcher will discuss the project with members of the LUPIN team who have accessed mental health services in order to ensure that the research is conducted as sensitively as possible.

21. **What plan is in place for the storage of data (electronic, digital, paper, etc.)? Please ensure that your plans comply with the Data Protection Act 1998**.

The survey data will be downloaded onto an encrypted University server accessible only to the researcher in order to enable analysis to take place. When the study ends, the encrypted data will be transferred via ZendTo file transfer software to the University Research Co-ordinator (Sarah Heard) to be saved on password protected file space on the University server. An email will be sent to the Research Coordinator (Sarah Heard) with the password for encrypted files, the end date of the study and the year that the data should be deleted/destroyed. The data will be saved for 10 years in line with the Data Protection Act (1998).

22. Will audio or video recording take place? ☑ no ☐ audio ☐ video

If yes, what arrangements have been made for audio/video data storage? At what point in the research will tapes/digital recordings/files be destroyed?

n/a

23. **What are the plans for dissemination of findings from the research? If you are a student, include here your thesis**.

The study will be written up as part of a thesis and submitted to Lancaster University for examination. The researchers will also aim to publish the study in an academic journal, and present the findings at research

conferences. Participants who requested feedback on the findings of the study will also be sent a brief and accessible summary of the study's key findings and recommendations. As participant data is anonymous this summary will relate to the group as a whole and not to the individual participant. The researcher will also provide a brief summary of the main findings and implications to the support organizations or forums that hosted the study.

24. **What particular ethical considerations, not previously noted on this application, do you think there are in the proposed study? Are there any matters about which you wish to seek guidance from the FHMREC**?

I feel that all ethical issues have been discussed in previous sections.

Signatures: Applicant: Aoife Clarke

Date: 16.10.2016

*Project Supervisor (if applicable): ……

Date: ……

*I have reviewed this application, and discussed it with the applicant. I confirm that the project methodology is appropriate. I am happy for this application to proceed to ethical review.

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Appendix 4-1

Study Advertisements:

Online/ In Print

Research participants needed! I am a trainee clinical psychologist and for my doctorate thesis, I am exploring what might make people vulnerable to developing post-traumatic stress disorder after the experience of a traumatic event.

If you have experienced a traumatic event as an adult, I would like to invite you to take part in my research by completing an online, anonymous survey. At the end of the survey you have an option to enter your email address if you'd like to receive feedback on the study findings and be entered in to a prize draw to win a £50 Amazon voucher.

I would sincerely appreciate your help and I hope that my research will be helpful for people who have these experiences in the future. If you would like to find out more information or would like to take part please type the following link into an internet search engine: (insert link)

Thank you!!

Appendix 4-2

Introduction

My name is Aoife Clarke, and I am a trainee clinical psychologist on the Doctorate in Clinical Psychology course at Lancaster University. This research forms part of my thesis for the course. The following information provides more details on the study and what you would be asked to do if you decide to participate in it. If you have further questions after reading this information sheet, or would like more information before making a decision, then please feel free to contact me at the e-mail address listed below.

What is the purpose of this study?

Although quite a lot of people experience a traumatic event in their lifetime, not everyone goes on to develop long-term psychological difficulties afterwards. It is important to figure out what makes some people more vulnerable to developing these difficulties after a traumatic event, so that services can provide better early intervention to individuals who have experienced a trauma. In carrying out this research, I would like to find out if the way people feel about themselves after a trauma and the way that they relate to other people makes people more likely to develop psychological difficulties. Therefore, we are asking people to take part in the study who:

- Have experienced a traumatic event as an adult.
- Are 18 years old or over.

What will I be asked to do?

If you wish to take part, you will be asked to complete an anonymous online survey. The online survey will guide you through a series of questions that will ask you some general information about yourself such as your age and gender. You will then be guided through a series of 4 brief questionnaires about how you feel about yourself since you experienced the traumatic event, how you relate to other people, and how you experience symptoms of post-traumatic stress disorder. It should take between 10 and 20 minutes to complete the survey.

Some of the survey questions may be sensitive for you. Examples of sensitive items on the survey include “I can’t stand being me” or “I worry a lot about my relationships with other people”. One of the items also asks you to indicate in general terms the nature of the traumatic event you experienced. If you are upset by any of these items, there is a list of services you can contact for support below.

Do I have to take part?

You do not have to take part in the study if you don’t want to. If you decide you want to take part but change your mind while completing the survey, you can simply exit the survey. However, after you have submitted your responses, it will not be possible to have your data withdrawn from the study. This is because your data is anonymous, and we will not know which data is yours.

What are the possible disadvantages and risks of taking part?

Although some of the survey items are of a sensitive nature, the questionnaires have been used in many other studies and should not cause undue distress. However, if you do experience distress, you can discontinue the study at any time. There is also a list of contact details at the bottom of this page for services you make contact if you are experiencing distress.

What are the possible benefits of taking part?

There are no direct benefits to taking part in this study. However, completing the survey may provide you with an opportunity to reflect on your feelings and experiences. Research findings obtained during the study will also help us to better understand the experiences of people who have suffered a trauma, and may potentially be used to improve psychological treatments.

If you would like to be entered in to a prize draw to win a £50 amazon voucher and/or you would like to receive a summary of the study findings, please fill in your email address in the box provided at the end of the survey. .

Will my data be identifiable?

No. All the information that you provide is anonymous – it will not have any identifying information (such as your name, your e-mail address) attached to it. The anonymous data in itself will be handled in strict confidence. It will be shared only with my supervisors in order to guide analysis. The data collected during the study will be stored in a secure place and only the researchers will have access to it. Data files stored on the computer will be password protected. No names or addresses will be included and participants will be identified only by numbers in any computerised data files used in the analyses of the results. The data you provide will be kept anonymously for a maximum of 10 years on the University's secure server. It will then be permanently deleted.

If you provide your email address so that you can be entered in to the prize draw, or so that I can send you a summary of the findings, then I will keep this in a secure, password protected file. This information will not be attached to the information you provide on the survey and so the data collected will remain anonymous.

The only circumstances in which you might be identifiable and in which I would need to break confidentiality is if you contacted me directly and told me something that made me concerned about yours, or someone else's safety. This may mean that I would need to ask you for some more information about yourself, and inform someone who could help. In urgent circumstances, I would need to contact emergency services.

What will happen to the results of the research study?

The results of the research will be included in a report that will be submitted for examination by Lancaster University. The results may also be published within an academic journal, and may be presented at conferences. There will be no personal information about any of the people who participate within any of these reports or presentations.

Contact details

If you have any questions about the research, please feel free to contact me at the details listed below:

Aoife Clarke
Trainee Clinical Psychologist
E-mail: a.clarke1@lancaster.ac.uk

You are also free to contact the project's supervisors.

Dr Jane Simpson
Clinical Psychologist (Academic Supervisor)
E-mail: Jane.Simpson2@lancaster.ac.uk
OR
Dr Filippo Varese
Clinical Psychologist (Field Supervisor)
f.varese@manchester.ac.uk

If you have any experience during your participation that you are unhappy with and wish to make a complaint, please contact:

Professor Roger Pickup
Faculty of Health and Medicine
Division of Biomedical and Life Sciences
Lancaster University
Lancaster
LA1 4YD

Email: r.pickup@lancaster.ac.uk
Tel: 01524 593746

The following is a list of services you may contact for support, advice, or in emergency:

The Samaritans

The Samaritans are open 24 hours a day 365 days a year. You can contact them to talk through anything that is troubling you. For more information visit their website, or contact them on:

Website: www.samaritans.org
Telephone: 08457 90 90 90
Email: jo@samaritans.org

Victim Support

If you've been a victim of any crime or have been affected by a crime committed against someone you know, we can help you find the strength to deal with what you've been through. Our services are free and available to everyone, whether or not the crime has been reported and regardless of when it happened.

See more at: www.victimsupport.org.uk
Or Call: 0845 30 30 900
Weekdays 9am to 8pm, weekends 9am to 7pm, bank holidays 9am to 5pm

Police

If you think someone is in immediate danger please call the police on their emergency number 999

Telephone for non-emergency calls: 101
Telephone for emergencies: 999

Thank you for reading this information sheet
Please select Next to continue to the consent form

Appendix 4-3

Online consent form

Thank you for reading the information sheet for this study, and for your interest in participating. Before commencing the survey, please read the statements below and tick if you agree with them. If you would like further information before consenting to participate, please e-mail me at a.clarke1@lancaster.ac.uk.

Tick to agree

I confirm that I have read the information sheet and understand what I will be asked to do as part of the study.

I understand that I do not have to participate in the study, and that I am free to withdraw at any time without giving any reason.

I understand that my survey responses will be completely anonymous – they will not have any identifying information, such as my name or e-mail address, attached to them.

I understand that once my responses have been submitted it will not be possible for them to be withdrawn, as the researcher won't know which data is mine.

I understand that the research data will be saved on a secure encrypted drive accessible only to the researcher.

I understand that the information from my responses will be pooled with other participants' responses, anonymised and may be published.

I understand that the anonymous pooled data will be shared with the research supervisors in order to guide the analysis.

I understand that if I provide my email address that this will be kept confidential and will not be kept with the anonymous data that I provide within the survey.

I understand that if I contact the researcher directly that there may be circumstances in which the researcher may need to break confidentiality

I consent to take part in the above study.

Appendix 4-4

Full Survey

Thank you for taking the time to complete this survey. You are free to discontinue the survey at any time. If you have any queries, please contact the researcher (Aoife Clarke) at a.clarke1@lancaster.ac.uk. If you feel distressed by any of the questions, please contact one of the services I have provided the contact details of.

There are 5 sections to this survey. Please read the instructions carefully at the start of each section. At the end of the survey you will be asked to enter your email address if you wish to be entered in to a prize draw, or if you wish to receive feedback on the overall study findings. This is completely optional – you do not have to provide your email address if you don't want to. Your e-mail address will not be linked in any way to your survey responses, which will always be received in an anonymous format.

This questionnaire asks you for some basic information about yourself. This is so that we can describe our sample, and know who are findings are most relevant to.

Demographic Questionnaire	
What age are you?	
What is your gender?	
What is your nationality?	
What is the highest level of education you have currently completed?	
Are you currently (please circle):	- Working - Studying - Unemployed
Please briefly indicate the nature of the traumatic event you experienced (e.g. sexual assault, combat, road traffic accident)	
Have you experienced severe trauma (e.g. abuse) in childhood? (please answer yes or no)	

This questionnaire is concerned with how you feel about yourself. Please consider your feelings since your experience of the traumatic event. When responding to the statements below, please circle 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
I find myself repulsive	1	2	3	4	5	6	7
I am proud of who I am.	1	2	3	4	5	6	7
I am sickened by the way I behave.	1	2	3	4	5	6	7
Sometimes I feel tired.	1	2	3	4	5	6	7
I can’t stand being me.	1	2	3	4	5	6	7
I enjoy the company of others.	1	2	3	4	5	6	7
I am revolting for many reasons.	1	2	3	4	5	6	7
I consider myself attractive	1	2	3	4	5	6	7
People avoid me	1	2	3	4	5	6	7
I enjoy being outdoors	1	2	3	4	5	6	7
I feel good about the way I behave.	1	2	3	4	5	6	7
I do not want to be seen.	1	2	3	4	5	6	7
I am a sociable person.	1	2	3	4	5	6	7
I often do things I find revolting.	1	2	3	4	5	6	7
I avoid looking at my reflection.	1	2	3	4	5	6	7
Sometimes I feel happy.	1	2	3	4	5	6	7
I am an optimistic person.	1	2	3	4	5	6	7
I behave as well as everyone else.	1	2	3	4	5	6	7
It bothers me to look at myself.	1	2	3	4	5	6	7
Sometimes I feel sad.	1	2	3	4	5	6	7
I find the way I look nauseating.	1	2	3	4	5	6	7
My behaviour repels people.	1	2	3	4	5	6	7

We all differ in how we relate to other people. This questionnaire lists different thoughts, feelings and ways of behaving in relationships with others.

Thinking generally about how you relate to other key people in your life, **please use a tick to show how much each statement is like you**. Key people could include family members, friends, partner or mental health workers.

There are no right or wrong answers

	Not at all	**A little**	**Quite a bit**	**Very much**
1. I prefer not to let other people know my 'true' thoughts and feelings.	(..)	(..)	(..)	(..)
2. I find it easy to depend on other people for support with problems or difficult situations.	(..)	(..)	(..)	(..)
3. I tend to get upset, anxious or angry if other people are not there when I need them.	(..)	(..)	(..)	(..)
4. I usually discuss my problems and concerns with other people.	(..)	(..)	(..)	(..)
5. I worry that key people in my life won't be around in the future.	(..)	(..)	(..)	(..)
6. I ask other people to reassure me that they care about me.	(..)	(..)	(..)	(..)
7. If other people disapprove of something I do, I get very upset.	(..)	(..)	(..)	(..)
8. I find it difficult to accept help from other people when I have problems or difficulties.	(..)	(..)	(..)	(..)
9. It helps to turn to other people when I'm stressed.	(..)	(..)	(..)	(..)
10. I worry that if other people get to know me better, they won't like me.	(..)	(..)	(..)	(..)

	Not at all	**A little**	**Quite a bit**	**Very much**
11. When I'm feeling stressed, I prefer being on my own to being in the company of other people.	(..)	(..)	(..)	(..)
12. I worry a lot about my relationships with other people.	(..)	(..)	(..)	(..)
13. I try to cope with stressful situations on my own.	(..)	(..)	(..)	(..)
14. I worry that if I displease other	(..)	(..)	(..)	(..)

people, they won't want to know me anymore.				
15. I worry about having to cope with problems and difficult situations on my own.	(..)	(..)	(..)	(..)
16. I feel uncomfortable when other people want to get to know me better.	(..)	(..)	(..)	(..)

Below is a list of difficulties people sometimes have after stressful life events. Please read each item and then indicate how distressing each difficulty has been for you during the past 7 days or other agreed time:

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

Any reminder brought back feelings about it	0	1	2	3	4
I had trouble staying asleep	0	1	2	3	4
Other things kept making me think about it	0	1	2	3	4
I felt irritable and angry	0	1	2	3	4
I avoided letting myself get upset when I thought about it or was reminded of it	0	1	2	3	4
I thought about it when I didn't mean to	0	1	2	3	4
I felt as if it hadn't happened or it wasn't real.	0	1	2	3	4
I stayed away from reminders about it	0	1	2	3	4
Pictures about it popped in to my mind	0	1	2	3	4
I was jumpy and easily startled	0	1	2	3	4
I tried not to think about it	0	1	2	3	4
I was aware that I still had a lot of feeling about it but I didn't deal with them.	0	1	2	3	4
My feelings about it were kind of numb.	0	1	2	3	4
I found myself acting or feeling like I was back at that time.	0	1	2	3	4
I had trouble falling asleep	0	1	2	3	4
I had waves of strong feelings about it.	0	1	2	3	4
I tried to remove it from my memory	0	1	2	3	4
I had trouble concentrating	0	1	2	3	4
Reminders of it caused me to have physical reactions	0	1	2	3	4
I had dreams about it	0	1	2	3	4
I felt watchful and on-guard	0	1	2	3	4
I tried not to talk about it	0	1	2	3	4

This questionnaire consists of twenty-eight questions about experiences that you may have in your daily life. We are interested in *how often you have these experiences*. It is important, however, that your answers show how often these experiences happen to you when you are not under the influence of alcohol or drugs.

Fill in the answer that shows how much this happens to you.

a. Never
b. It has happened once or twice
c. No more than once a year
d. Once every few months
e. At least once a month
f. At least once a week

____ 1. Some people have the experience of driving a car and suddenly realizing that they don't remember what has happened during all or part of the trip.

____ 2. Some people find sometimes that they are listening to someone talk and they suddenly realize that they did not hear part or all of what has just been said.

____ 3. Some people have the experience of finding themselves in a place and they have no idea how they got there.

____ 4. Some people have the experience of finding themselves dressed in clothes that they don't remember putting on.

____ 5. Some people have the experience of finding new things among their belongings that they do not remember buying.

____ 6. Some people sometimes find that they are approached by people that they do not know who call them by name or insist that they have met before

____ 7. Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person.

____ 8. Some people are told that they sometimes do not recognize friends or family members.

____ 9. Some people find that they have no memory for some important events in their lives, for example a wedding or graduation

____ 10. Some people had the experience of being accused of lying when they do not think that they have lied.

____ 11. Some people have the experience of looking in a mirror and not recognizing themselves.

____ 12. Some people sometimes have the experience of feeling that other people, objects, and the world around them are not real.

____ 13. Some people sometimes have the experience of feeling that their body does not seem to belong to them.

____ 14. Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event.

____ 15. Some people have the experience of not being sure if things that they remember happening really did happen or whether they just dreamed them

____ 16. Some people have the experience of being in a familiar place and finding it strange and unfamiliar.

____ 17. Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them.

____ 18. Some people find that they become so involved in fantasy or daydream that it feels as though it were really happening to them.

____ 19. Some people find that they are sometimes able to ignore pain.

____ 20. Some people find that they sometimes sit staring off into space thinking of another event and are not aware of the passage of time.

____ 21. Some people sometimes find that when they are alone they sometimes talk out loud to themselves.

____ 22. Some people find that in one situation they may act so differently compared to another situation that they feel almost as if they were two different people.

____ 23. Some people sometimes feel that in some situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them, for example, sports or social situations, etc.

____ 24. Some people sometimes find that they cannot remember whether they have done something or have just thought about doing that things, for example, whether they have just mailed a letter or just thought about mailing it.

____ 25. Some people sometimes find evidence that they have done things that they do not remember doing.

____ 26. Some people sometimes find writings, drawing, or notes among their belongings that they must have done but cannot remember doing.

____ 27. Some people sometimes find that they hear voices in their head that tell them to do things or comment on what they are doing.

____ 28. Some people sometimes feel as if they are looking at the world through a fog so that people or objects appear far away or unclear.

Appendix 4-5

De-briefing Sheet

Thank you for participating in our study. The study aims to determine how someone thinks and feels about themselves following a trauma (particularly feelings of shame or disgust), whether this makes the person more likely to develop symptoms of post-traumatic stress disorder, and if so, whether this is because it makes them more likely to withdraw or relate differently in personal relationships. If you would like to know more about the research, please contact me at a.clarke1@lancaster.ac.uk.

If you experienced any distress when participating in this study, the following support services may be able to assist you to manage this:

The Samaritans

The Samaritans are open 24 hours a day 365 days a year. You can contact them to talk through anything that is troubling you. For more information visit their website, or contact them on:

Website: www.samaritans.org
Telephone: 08457 90 90 90
Email: jo@samaritans.org

Victim Support

If you've been a victim of any crime or have been affected by a crime committed against someone you know, we can help you find the strength to deal with what you've been through. Our services are free and available to everyone, whether or not the crime has been reported and regardless of when it happened.

See more at: www.victimsupport.org.uk
Or Call: 0845 30 30 900
Weekdays 9am to 8pm, weekends 9am to 7pm, bank holidays 9am to 5pm

Police

If you think someone is in immediate danger please call the police on their emergency number 999

Telephone for non-emergency calls: 101
Telephone for emergencies: 999

If you would like to be entered in to a draw to win an a £50 Amazon voucher or you would like to be provided with feedback on the study findings, please select Next at the bottom of this page. If not, please select Exit at the bottom of this page to exit the survey.

Appendix 4-6

Optional Dialogue Box

Tick yes/no

I would like to be entered in to a draw to win a £50 Amazon Voucher.

I would like to receive feedback on the overall findings of the study.

Please enter your e-mail address in the box below and select “submit”. Please note that your e-mail address is not linked to the survey data that you submitted earlier.

Appendix 4-7

Ethical Review Form for Research Involving Human Participants

No data with human participants should be collected until ethical approval has been formally given.

Name of Student: Aoife Clarke

Project Title:

The relationship between traumatic events, self-disgust, inter-personal avoidance, and the development of post-traumatic symptoms: a mediation analysis

Overall aim of the research project: (3 – 4 sentences)

The research aims to investigate the following:

- Does self-disgust following a trauma predict the severity of the trauma response?
- Does self-disgust following a trauma predict interpersonal avoidance?
- Does interpersonal avoidance following a trauma predict the severity of the trauma response?
- Is the relationship between self-disgust and severity of traumatic symptoms mediated by interpersonal avoidance?

Proposed Research Methods:

A cross-sectional survey design will be used to answer the research questions, in which participants will be asked to complete an on-line survey comprising a number of psychometric questionnaires.

Intended participants:

Participants will be anyone over the age of 18 who has experienced a traumatic event. They will primarily be accessed via social media and/or online support groups for victims of trauma. The FHMREC application form provides more detail on inclusion and exclusion criteria for participants.

Signature of student: ……

Signature of Supervisor: ……

Please complete all sections by ringing the appropriate answer.

1. RISKS

Do any aspects of the study pose a possible risk to participants' physical well-being (e.g. use of substances such as alcohol or extreme situations such as sleep deprivation)?		NO
Are there any aspects of the study that participants might find embarrassing or be emotionally upsetting?	YES	
Are there likely to be culturally sensitive issues (e.g. age, gender, ethnicity etc)?		NO
Does the study require access to confidential sources of information (e.g. medical, criminal, educational records etc.)?		NO
Might conducting the study expose the researcher to any risks (e.g. collecting data in potentially dangerous environments)?		NO
Does the intended research involve vulnerable groups (e.g. prisoners, children, older or disabled people, victims of crime etc.)	YES	

2. DISCLOSURE

Does the study involve covert methods?		NO
Please confirm that the study does not involve the use of deception, either in the form of withholding essential information about the study or intentionally misinforming participants about aspects of the study.		NO deception is not involved

3. DEBRIEFING

Do the planned procedures include an opportunity for participants to ask questions and/or obtain general feedback about the study after they have concluded their part in it?	YES		

4. INFORMED PARTICIPATION/CONSENT

Will participants in the study be given accessible information outlining: a) the general purpose of the study, b) what participants will be expected to do c) individuals' right to refuse or withdraw at any time?	YES		
Will participants have an opportunity to ask questions prior to agreeing to participate?	YES		
Have appropriate authorities given their permission for participants to be recruited from or data collected on their premises (e.g. shop managers, head teachers, classroom lecturers)?			NA

5. ANONYMITY AND CONFIDENTIALITY

Is participation in the study anonymous?	YES		
If anonymity has been promised, do the general procedures ensure that individuals cannot be identified indirectly (e.g. via other information that is taken)?	YES		
Have participants been promised confidentiality?	YES		
If confidentiality has been promised, do the procedures ensure that the information collected is truly confidential (e.g. that it will not be quoted verbatim)?	YES		
Will data be stored in a secure place which is inaccessible to people other than the researcher?	YES		
If participants' identities are being recorded, will the data be coded (to disguise identity) before computer data entry?			NA

6. SUMMARY OF ETHICAL CONCERNS

If any of the boxes below require ticks, you should complete the relevant sections in the Stage 2 ethics documentation. If none of the boxes require ticks, then it is reasonable to expect approval.

If you have answered 'YES' to any of the questions in Section 1 (risks), please tick the box	√
If you have answered 'YES' to any of the questions in Section 2 (Disclosure/covert methods), please tick the box	
If you have answered 'NO' to any of the questions in Section 3 (debriefing), please tick the box	
If you have answered 'NO' to any of the questions in Section 4 (consent), please tick the box	
If you have answered 'NO' to any of the questions in Section 5 (confidentiality), please tick the box	

Student signature **Date**

_____ _____

APPROVAL:

_____ _____

Project supervisor **Date**

Appendix 4-8

THE UNIVERSITY OF LANCASTER

PFACT project information and ethics questionnaire

(*To be completed by the Principal Investigator in all cases*)

Name of principal investigator: Aoife Clarke

pFACT ID or Project Title: The relationship between traumatic events, self-disgust, inter-personal avoidance, and the development of post-traumatic symptoms: a mediation analysis

1. *General information*

1.1 Have you, if relevant, discussed the project with

☐ the Data Protection Officer?

☐ the Freedom of Information Officer?

√ N/A

(Please tick as appropriate.)

1.2 Is publication an intended outcome of the research?

Y

1.3 If yes to 1.2, is publication allowed under the funders' terms and conditions?

Y

1.4 Has a contract, terms and conditions, tender, acceptance form, or similar document requiring institutional approval, been received?

N (n/a)

1.5 Does any of the intellectual property to be used in the research belong to a third party?

N

1.6 Are you involved in any other activities that may result in a conflict of interest with this research?

N

1.7 Will you or research staff be working with an NHS Trust?

N

1.8 If yes to 1.7, what steps are you taking to obtain NHS approval?

n/a_____

_____

1.9 If yes to 1.7, who will be named as sponsor of the project?

_____

1.10 What consideration has been given to the health and safety requirements of the research?

Issues of ethical concern, in particular the sensitive nature of the questions posed in the survey and the vulnerability of the participant group, are discussed in detail in the FHMREC application form, as are the means through which the study design has been adapted to minimise the risk these concerns pose.

1.11 Is a statement of institutional commitment to the research required?

N

2. *Information for insurance or commercial purposes*

(*Please put N/A where relevant, and provide details where the answer is yes.*)

2.1 Will the research involve making a prototype?

N

2.2 Will the research involve an aircraft or the aircraft industry?

N

2.3 Will the research involve the nuclear industry?

N

2.4 Will the research involve the specialist disposal of waste material?

N

2.5 Do you intend to file a patent application on an invention that may relate in some way to the area of research in this proposal? If YES, contact Gavin Smith, Research and Enterprise Services Division. (ext. 93298)

N/A

3. *Ethical information*

(*Please confirm this research grant will be managed by you, the principal investigator, in an ethically appropriate manner according to:*

(a) the subject matter involved;
(b) the code of practice of the relevant funding body; and
(c) the code of ethics and procedures of the university.)

(*Please put N/A where relevant*)

3.1 Please tick to confirm that you are prepared to accept responsibility on behalf of the institution for your project in relation to the avoidance of plagiarism and fabrication of results.

√

3.2 Please tick to confirm that you are prepared to accept responsibility on behalf of the institution for your project in relation to the observance of the rules for the exploitation of intellectual property.

√

3.3 Please tick to confirm that you are prepared to accept responsibility on behalf of the institution for your project in relation to adherence to the university code of ethics.

√

3.4 Will you give all staff and students involved in the project guidance on the ethical standards expected in the project in accordance with the university code of ethics?

Y

3.5 Will you take steps to ensure that all students and staff involved in the project will not be exposed to inappropriate situations when carrying out fieldwork?

Y

3.6 Is the establishment of a research ethics committee required as part of your collaboration? (This is a requirement for some large-scale European Commission funded projects, for example.)

N

3.7 Does your research project involve human participants i.e. including all types of interviews, questionnaires, focus groups, records relating to humans, human tissue etc.?

Y

3.7.1 Will you take all necessary steps to obtain the voluntary and informed consent of the prospective participant(s) or, in the case of individual(s) not capable of giving informed consent, the permission of a legally authorised representative in accordance with applicable law?

Y

3.7.2 Will you take the necessary steps to find out the applicable law?

Y

3.7.3 Will you take the necessary steps to assure the anonymity of subjects, including in subsequent publications?

Y

3.7.4 Will you take appropriate action to ensure that the position under 3.7.1 – 3.7.3 are fully understood and acted on by staff or students connected with the project in accordance with the university ethics code of practice?

Y

3.13 Does your work involve animals? If yes you should specifically detail this in a submission to the Research Ethics Committee. The term animals shall be taken to include any vertebrate other than man. N

3.13.1 Have you carefully considered alternatives to the use of animals in this project? If yes, give details.

N/A

_____

_____

3.13.2 Will you use techniques that involve any of the following: any experimental or scientific procedure applied to an animal which may have the effect of causing that animal pain, suffering, distress, or lasting harm? If yes, these must be separately identified.

N/A

Signature: _____

Date: _____

N.B. Do not submit this form without completing and attaching the Stage 1 self-assessment form.

Applicant: Aoife Clarke
Supervisors: Jane Simpson
Department: Health Research
FHMREC Reference: FHMREC16024

24 October 2016

Dear Aoife,

Re: The relationship between traumatic events, self-disgust, inter-personal avoidance, and the development of post-traumatic symptoms: a mediation analysis

Thank you for submitting your research ethics amendment application for the above project for review by the **Faculty of Health and Medicine Research Ethics Committee (FHMREC)**. The application was recommended for approval by FHMREC, and on behalf of the Chair of the Committee, I can confirm that approval has been granted for this research project.

As principal investigator your responsibilities include:

- ensuring that (where applicable) all the necessary legal and regulatory requirements in order to conduct the research are met, and the necessary licenses and approvals have been obtained;
- reporting any ethics-related issues that occur during the course of the research or arising from the research to the Research Ethics Officer at the email address below (e.g. unforeseen ethical issues, complaints about the conduct of the research, adverse reactions such as extreme distress);
- submitting details of proposed substantive amendments to the protocol to the Research Ethics Officer for approval.

Please contact me if you have any queries or require further information.

Tel:- 01542 592838
Email:- fhmresearchsupport@lancaster.ac.uk

Yours sincerely,

Dr Diane Hopkins
Research Integrity and Governance Officer, Secretary to FHMREC.