

**Self-disgust in personality disorders:  
The role of childhood abuse and trauma, emotional invalidation and  
shame.**

Clare Drea

**D.Clin.Psy Thesis (Volume 1), 2016**

**University College London**

UCL Doctorate in Clinical Psychology

## **Thesis declaration form**

I confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signature:

Name: Clare Drea

Date: 12/2016

## Overview

This thesis examines predictors of self-disgust among a sample who screened positive for personality disorders. It is a joint thesis with '*The role of self-disgust in non-suicidal self-injury among individuals with personality disorder*' (Schwaiger, 2016).

Part 1, the literature review, examines whether self-disgust is associated with psychopathology (as evidenced by a DSM-5 mental health disorder). Seventeen studies indicate that self-disgust is associated with a wide range of mental health disorders including Depression, Borderline Personality Disorder and Eating Disorders. The evidence is limited by the use of largely non-clinical samples, cross-sectional designs, and by theoretical and methodological limitations regarding the operationalisation and measurement of the self-disgust construct.

Part 2, the empirical paper investigates predictors of self-disgust using a cross-sectional web-based survey. Self-disgust was elevated in those classified as PD according to a brief screening tool ( $n = 188$ ), relative to a non-PD sample ( $n = 133$ ). Childhood abuse and trauma and shame independently predicted self-disgust in those who screened positive for a probable PD. Self-disgust also mediated the relationship between childhood abuse and trauma and the likelihood of PD.

Part 3, the critical appraisal considers outstanding issues regarding the psychometric measurement of self-disgust. Directions for further research are discussed, as are the strengths and limitations of utilising web-based research and social media to aid recruitment in psychological research. Personal reflections are finally offered on how the research has impacted me as a researcher and clinician.

## Table of Contents

Acknowledgements .....	7
<b>Part 1: Literature Review.....</b>	<b>8</b>
Abstract .....	9
<b>1. Introduction .....</b>	<b>10</b>
1.1 Interpersonal and social-moral disgust.....	10
1.2 Self-disgust.....	13
1.3 Implications for psychopathology .....	14
1.4 Rationale for the review .....	15
<b>2. Method .....</b>	<b>15</b>
2.1 Search strategy .....	15
2.2 Study eligibility.....	16
2.3 Selection Process.....	17
2.4 Quality Assessment.....	19
<b>3. Results .....</b>	<b>22</b>
3.1 Measurement of self-disgust .....	29
3.2 Depression.....	31
3.3 Borderline Personality Disorder and Post Traumatic Stress Disorder .....	38
3.4 Non-Suicidal Self-Injury .....	44
3.5 Eating Disorders.....	48
3.6 Obsessive compulsive and related disorders.....	51
3.7 Schizophrenia.....	53
<b>4. Discussion.....</b>	<b>54</b>
4.1 Conceptualisation of self-disgust .....	55
4.2 Measurement of self-disgust .....	59
4.3 Gaps in the literature and directions for future research .....	60
4.4 Clinical Implications .....	63
4.5 Limitations .....	65
4.6 Conclusion .....	66
<b>5. References .....</b>	<b>67</b>

<b>Part 2: Empirical Paper.....</b>	<b>76</b>
Abstract.....	77
<b>1. Introduction.....</b>	<b>78</b>
1.1 Personality Disorders .....	80
1.2 Self-disgust in Personality Disorders .....	82
1.3 Predictors of self-disgust in PD.....	83
1.4 Focus of current study .....	87
<b>2. Method .....</b>	<b>89</b>
2.1 Design .....	89
2.2 Public and Patient Involvement (PPI) .....	90
2.3 Ethics and Informed Consent .....	91
2.4 Payment and Data Protection .....	92
2.5 Recruitment .....	92
2.6 Measures .....	93
2.7 Participants .....	103
2.8 Statistical plan .....	104
2.8.1 Missing data .....	104
2.8.2 Distribution of data .....	106
2.8.3 Study Hypotheses.....	107
<b>3. Results .....</b>	<b>109</b>
3.1 Hypothesis 1.....	109
3.2 Hypothesis 2.....	112
3.3 Hypothesis 3.....	112
3.4 Hypothesis 4.....	119
3.5 Hypothesis 5.....	120
<b>4. Discussion.....</b>	<b>123</b>
4.1 Comparison between PD and non-PD sample .....	123
4.2 Predictors of self-disgust in PD.....	125
4.3 Mediation Analyses.....	129
4.4 Study limitations .....	131
4.5 Directions for future research.....	132
4.6 Clinical implications .....	133
4.7 Conclusion .....	134
<b>5. References .....</b>	<b>135</b>

<b>Part 3: Critical Appraisal.....</b>	<b>145</b>
1. Introduction .....	146
2. The Self-Disgust Scale Revised SDS-R.....	146
3. Further Research Directions.....	149
4. Web-based research .....	150
5. Impact on the researcher .....	153
6. Conclusion .....	154
7. References .....	155

## **Appendices**

Appendix A. QualSyst criteria and scoring for evaluating research papers .....	157
Appendix B. Outline of contributions to joint thesis .....	166
Appendix C. Notification of Ethical Approval .....	168
Appendix D. Participant Information sheet .....	173
Appendix E. Participant Consent Form .....	177
Appendix F. Participant Help Sheet.....	179
Appendix G. Research recruitment poster .....	182
Appendix H. The Self-Report Standardised Assessment of Personality Abbreviated Scale (SAPAS-SR) .....	184
Appendix I. The Self-Disgust Scale – Revised (SDS – R) .....	186
Appendix J. The Disgust Propensity and Sensitivity Scale – Revised (DPSS – R).....	188
Appendix K. The Experience of Shame Scale (ESS) .....	190
Appendix L. The Invalidating Childhood Environment Scale (ICES) .....	193
Appendix M. Child Abuse and Trauma Scale (CATS).....	195
Appendix N. Scree Plot of PCA for 15-Item SDS-R.....	199
Appendix O. Component loadings in the 15-Item SDS-R.....	201

## Contents of Tables and Figures

### Part 1: Systematic Literature Review

Table 1. Domain and search term used in literature search .....	16
Figure 1. Flowchart of study selection.....	18
Table 2. QualSyst ratings of quantitative study quality .....	21
Table 3. QualSyst ratings of qualitative study quality .....	22
Table 4. Summary of studies.....	23
Table 5. Means and SD's of disgust scores in Rüsç et al., (2011).....	39
Table 6. Means and SD's of self-report measures in Shienle et al., (2013).....	40
Figure 2. Diagrammatic model of self-disgust as an emotion schema .....	56

### Part 2: Empirical Paper

Table 1. Component loadings in the 12-item SDS-R.....	98
Table 2. Participant Characteristics for PD and non PD sample.....	104
Table 3. Skewness and Kurtosis (Z score) for study variables .....	106
Figure 1. Conceptual mediation model .....	108
Table 4. Means (M), Standard deviations (SD) and T values for the SDS-R, DPSSR, ESS, CATS and ICES .....	111
Table 5. Correlation matrix (total sample).....	114
Table 6. Correlation matrix (PD sample).....	115
Table 7. Hierarchical Regression Model and Statistics for Dependent variable (SDS-R).....	118
Figure 2. Shame as a mediator of the association between childhood abuse & trauma and self-disgust in a PD sample .....	119
Figure 3. Self-disgust as a mediator of the association between childhood abuse & trauma and PD in the total sample .....	120
Figure 4. Self-disgust and shame as mediators of the association between childhood abuse & trauma and PD in the total sample .....	122

### Part 3: Critical Appraisal

Figure 1. Proposed hierarchical structure of the SDS-R.....	148
---	-----



## **Acknowledgements**

I am grateful to the clinicians and service users who took part in the early focus groups on self-disgust, and to all participants who completed the survey. Thank you for answering questions, which were not always easy to confront or think about. I am grateful to my supervisor Janet Feigenbaum for her clinical insight, encouragement and feedback on the numerous drafts. Thank you to Tom Fuggle for making the data collection as smooth a process as possible and to John King and Ravi Das for offering your invaluable statistical expertise. Sincere and warm thanks to my fellow researcher, Theresa Schwaiger for your moral support, encouragement and stimulating conversation on self-disgust – two minds are better than one when it came to researching this novel concept and I enjoyed sharing the process with you!

Above all, I would like to thank my partner Damien for the consistent faith and belief you have held in me these past three years; for never complaining when I was absent and buried in work, for showing interest and curiosity in what I do, for reading my case reports and thesis, for showing me love, patience and teaching me to believe in myself. All of this sustained me in more ways than you know.

## **Part 1: Literature Review**

**Is self-disgust associated with psychopathology?**

## Abstract

**Aims:** While much is known about the role of disgust in mental health disorders, research exploring self-disgust is in its infancy. This review investigates whether self-disgust is associated with mental health disorders classified in *The Diagnostic and Statistical Manual of Mental Disorders-5* (DSM-5; American Psychiatric Association, 2013). The review aims to provide a comprehensive examination of the methodological strengths and weaknesses of the literature and to identify directions for future research.

**Method:** A systematic literature search was conducted using the databases Psych INFO, Medline and Embase. Seventeen studies met the criteria for review representing 25 participant samples.

**Results:** Fifteen quantitative and two qualitative studies were identified. Self-disgust is implicated in a range of mental health disorders including Major Depressive Disorder (MDD), Borderline Personality Disorder (BPD), Non-Suicidal Self-Injury Disorder (NSSID) and Eating Disorders (EDs). Five studies found that self-disgust served a mediating or moderating role in the development of psychopathology.

**Conclusions:** Self-disgust may represent a trans-diagnostic construct implicated in the development, course and maintenance of psychopathology. The existing evidence is limited by variability in the conceptualization and measurement of self-disgust, the use of largely non-clinical samples and cross-sectional research designs. More research is needed utilising clinical samples, the most recently developed assessment tools for measuring self-disgust, and longitudinal designs to further elucidate the relationship between self-disgust and psychopathology.

## **1. Introduction**

Disgust, literally meaning ‘distaste’, has been acknowledged as one of six basic emotions in humans characterised by distinct facial, behavioural and physiological manifestations (Rozin, Markwith, & McCauley, 1994). Evolutionarily, disgust is thought to have originated in distaste; a food-rejection impulse triggered by the ingestion of unpleasant-tasting substances (Chapman, Kim, Susskind, & Anderson, 2009). While disgust may have emerged as a protective mechanism related to food rejection, it is thought to have evolved to shield organisms from other types of unhealthy stimuli. The predominant model regarding the cultural evolution of disgust suggests that these stimuli fall into four distinct domains of disgust; core, animal nature, interpersonal and socio-moral (Rozin, Haidt & McCauley, 2008).

Core disgust refers to the oral rejection of ‘offensive objects’ that are capable of contaminating the body such as harmful foods, bodily products, and certain animals. Core disgust is considered to operate as a ‘pathogen avoidance mechanism’ in order to protect the body from disease and infection (Reeve, 2015). Animal-nature disgust elicitors are thought to serve as reminders of human mortality and of our commonality to animals. These stimuli can include unconventional or inappropriate sexual acts, body envelope violations (e.g. gory injuries), poor hygiene and material related to death and decay (Haidt, Rozin, McCauley, & Imada, 1997). Interpersonal and socio-moral disgust however, are thought to represent more complex and sophisticated domains of disgust.

### **1.1 Interpersonal and socio-moral disgust**

Over time, disgust elicitors have expanded beyond simple oral contaminants, into more interpersonal contexts. Interpersonal disgust reactions are considered to

have evolved as a means of separating an individual from contamination that might result from the ‘strangeness, disease, misfortune and moral taint’ of other humans (Rozin et al., 2000; Rozin et al., 1994). This form of disgust is thought to involve a concern regarding the potential transmission of undesirable or polluting features of others, rather than distress associated with physical contaminants (Badour & Adams, 2015). Research has indicated that interpersonal disgust can be elicited through close proximity to an undesirable person or associated object (e.g. wearing the sweater of a murderer; Olatunji & Sawchuck, 2005) or even through indirect exposure to moral transgressions (Eskine, Novreske, & Richards, 2013). In an interpersonal context, the disgust response is associated with turning away from, avoiding, and distancing oneself from the offensive stimuli, as opposed to initiating attack or fight responses (Rozin et al., 2000). Indeed, research by Hodson & Costello (2007) suggests that interpersonal disgust sensitivity predicts more right-wing authoritarian beliefs and negative attitudes towards migrants and marginalised groups such as the poor. The authors suggest that in the same way that core disgust guards the boundary of the body, interpersonal disgust may serve to guard cultural boundaries, in order to repel certain groups of people in society.

The disgust emotion is thought to play an important social and communicative role in the dissemination of cultural values (Clark, 2015). For example, the activities of groups who violate accepted social and moral norms (e.g. paedophiles, murderers, rapists) are often labelled ‘disgusting’ and research suggests that the acts of stealing, lying, and fraud induce subjective reports of disgust (Tybur, Lieberman, & Griskevicius, 2009). These forms of disgust, elicited by abstract socio-moral transgressions have been referred to in the literature as moral, or socio-moral

disgust (Chapman & Anderson, 2013) and are thought to share common neural mechanisms activated by pathogen disgust (Borg, Lieberman & Kiehl, 2008).

Accordingly, the functional disgust response is considered to represent an acquired emotional gauge of that which is not acceptable within an individuals' sociocultural environment (Power & Dalgleish, 2008). The expansion of disgust elicitors from physical stimuli to social and moral acts is considered to represent a form of 'exaptation' (Rozin et al., 2008) which refers to an evolutionary process whereby an existing structure assumes a new functional role without changing its basic form (Mayr & Tax, 1960). Thus, in humans disgust is thought to have evolved from its origins in distaste, to its role as a pathogen avoidance mechanism, and eventually entering into society to regulate the social and moral order (Ivan, 2015).

A growing body of research supports the Terror Management Theory (TMT: Pyszczynski, Greenberg, & Solomon, 1999) as an explanatory model for moral disgust. TMT posits that conforming to group norms, particularly for moral codes, allows one to keep at bay the awareness of one's mortality. Primary disgust items may represent direct mortality threats, however other more subtle mortality threats may include moral transgressions that violate in-group standards and put one at risk of being ostracised from the community, which in turn has survival implications. Research suggests that moral disgust may be implicated in a number of inter-personally relevant psychological conditions. For example, moral disgust may be an important contributor to post traumatic reactions in that it increases mortality salience in trauma survivors (Badour, Ojserkis, McKay, & Feldner, 2014) and the extreme and rigid interpretation of moral and cultural codes have been implicated in those with eating disorders (Nemeroff & Cavanaugh, 1999).

## 1.2 Self-disgust

An obvious extension of the role of disgust in defining moral standards, and communicating what is and is not socially acceptable, is when the evaluative function of disgust is turned towards the self. Indeed, Moncrieff-Boyd and colleagues, (2013) suggest that self-disgust represents ‘an involuntary recruitment of the defensive disgust system, where the affect of disgust is turned upon the self’ (p7). Powell, Simpson & Overton (2013) have similarly conceptualized self-disgust as a dysfunctional, self-directed generalisation of the adaptive disgust response that manifests when aspects of the self are appraised as ‘disgusting’ by sociocultural definitions. Indeed, the same patterns of cognitive, behavioural and physiological responses underpinning disgust elicited by external stimuli are thought to characterise self-disgust responses (Cisler, Olatunji, & Lohr, 2009).

A significant body of research has investigated the basic emotion of disgust and its role in a range of mental health problems (Rozin et al., 2008; Olatunji & McKay, 2007). However, disgust elicited by the self, or self-disgust, is a novel concept in psychological research that remains particularly elusive and poorly understood. The construct of self-disgust has been conceptualised as a distinct self-conscious emotion (Roberts & Goldenberg, 2007), a negative personality trait (Olatunji, David, & Ciesielski, 2012) and as a basic emotional experience of disgust oriented towards the self (Overton, Markland, Taggart, Bagshaw & Simpson, 2008). Moreover, the term is closely linked to the emotion of shame though they are treated as empirically separable constructs in the literature. Disgust and shame have been shown to vary independently (Consedine & Magai, 2003) and are characterised by different facial expressions (Tracy, Robins & Schriber, 2009) and physiological responses (Scherer & Wallbott, 1994). The construct of self-disgust is also often

employed in the literature as a generic synonym for self-hatred or contempt (Green, Moll, Deakin, Hulleman & Zahn, 2013), though both constructs are also considered to be separate emotions (Roberts & Goldenberg, 2007). The empirical distinctions between disgust, shame and hate suggest that when disgust is directed towards the self, the emotion involved, self-disgust represents a unique and distinct psychological phenomenon. It has been argued that what distinguishes self-disgust from other aversive emotions and links it with the primary emotion of disgust is the *disgust response*, which includes specific action-tendencies, and experiential and cognitive changes characterised by attempts to withdraw and reject (Reynolds, McCambridge & Consedine, 2015).

### **1.3 Implications for psychopathology**

It is proposed that while transient feelings of self-disgust may be adaptive in some instances (such as motivating personal hygiene or modifying behaviour to conform to social norms), persistent feelings of self-disgust may be maladaptive and potentially harmful (e.g. Espeset et al., 2012; Neziroglu, Hickey & McKay, 2010). Indeed emerging research indicates that enduring disgust directed towards the self may be a characteristic feature of a range of mental health problems (Powell, Simposn & Overton, 2015). Despite this, there is a significant lack of research investigating the potential role of self-disgust in the acquisition and maintenance of psychopathology (Olatunji et al., 2007).



## **1.4 Rationale for Review**

In the last twenty years, clinical research has implicated maladaptive disgust reactions in a range of mental health problems (Olatunji & McKay, 2007; Olatunji & Sawchuk, 2005) and it is now evident that disgust is an emotion that is susceptible to dysfunction. However, despite growing interest in the relevance of self-disgust to psychopathology, there remain relatively few empirical papers demonstrating this link. The current review sought to 1) review the existing empirical literature on self-disgust in psychopathology and 2) to provide a comprehensive examination of the methodological strengths and weaknesses of the literature and to identify gaps in the literature and directions for future research.

## **2. Method**

### **2.1 Search Strategy**

An initial literature search was carried out using the electronic databases, Psychinfo, Embase and Medline to identify relevant studies. For accuracy, each database was searched separately. The search aimed to identify papers which examined the relationship between self-disgust and a DSM-5 mental health disorder. Search terms that reflected the concepts of interest were developed by reading relevant published papers and noting down any relevant synonyms or keywords. Search terms for each concept were derived and truncation applied where relevant (Table 1).

*Table 1: Domain and search term used in literature search*

<b>Domain</b>	<b>Search Term</b>
Self	self* or self concept*
Disgust	disgust* or revolt* or revuls* or repugnan* or abhorren* or loath*
Mental health disorder	mental health disorder* or mental disorder* or mental disease*

Search terms for each domain were entered separately with the Boolean operator ‘OR’ and the ‘auto explode’ function was applied to relevant subject headings. The three domains were then combined using the ‘AND’ function in each of the electronic databases. Search terms such as ‘contempt’ and ‘hate’ were not included as these terms are considered more synonymous with anger than disgust (Power & Dalgleish, 2016) and the current review was specifically focused on emotional phenomena related to disgust. In addition to the conducted database searches, all reference lists in relevant studies were manually searched. The search was restricted to only include papers that used adult, human participants, and were published in English and in peer-reviewed journals between 1990 and October 2016. This search strategy returned 526 articles in total (Psych info; 184, Medline; 175, Embase, 167). Once duplicates had been removed, a total of 343 articles were identified across all three databases.

## **2.2 Study Eligibility**

To distinguish relevant papers, the following eligibility criteria were applied to the 343 article abstracts:

1. The study investigated ‘self-disgust’ or a form of disgust that was focused on the self or aspects of the self.
2. The study investigated the above in relation to a DSM-5 mental health disorder (either via a quantitative symptom measure or a study sample that was adequately screened for a DSM-5 mental health disorder)
3. The study directly examined or reported on the relationship between self-disgust and a DSM-5 mental health disorder (e.g. descriptive or observational studies including qualitative interviews, cross-sectional surveys, longitudinal studies and neuroimaging studies). It was decided to include diverse forms of evidence for different types of research in order to maximize the findings. This was considered necessary due to the lack of existing research on self-disgust and the lack of clarity regarding the operationalization of the construct.
4. The study clearly articulated their research design, methods, and outcomes in order to appraise the methodology.

### **2.3 Selection process**

Of the 343 articles obtained, 72 were identified as potentially relevant. Full text copies were reviewed to ascertain whether their methodology and analysis were suitable to address the aims of the review. The same criteria were applied to hand searched papers. Following revision, 17 papers were retained in the review, representing 25 participant samples. Fifteen papers were identified through the electronic database search and two identified through a hand search (Figure 1).

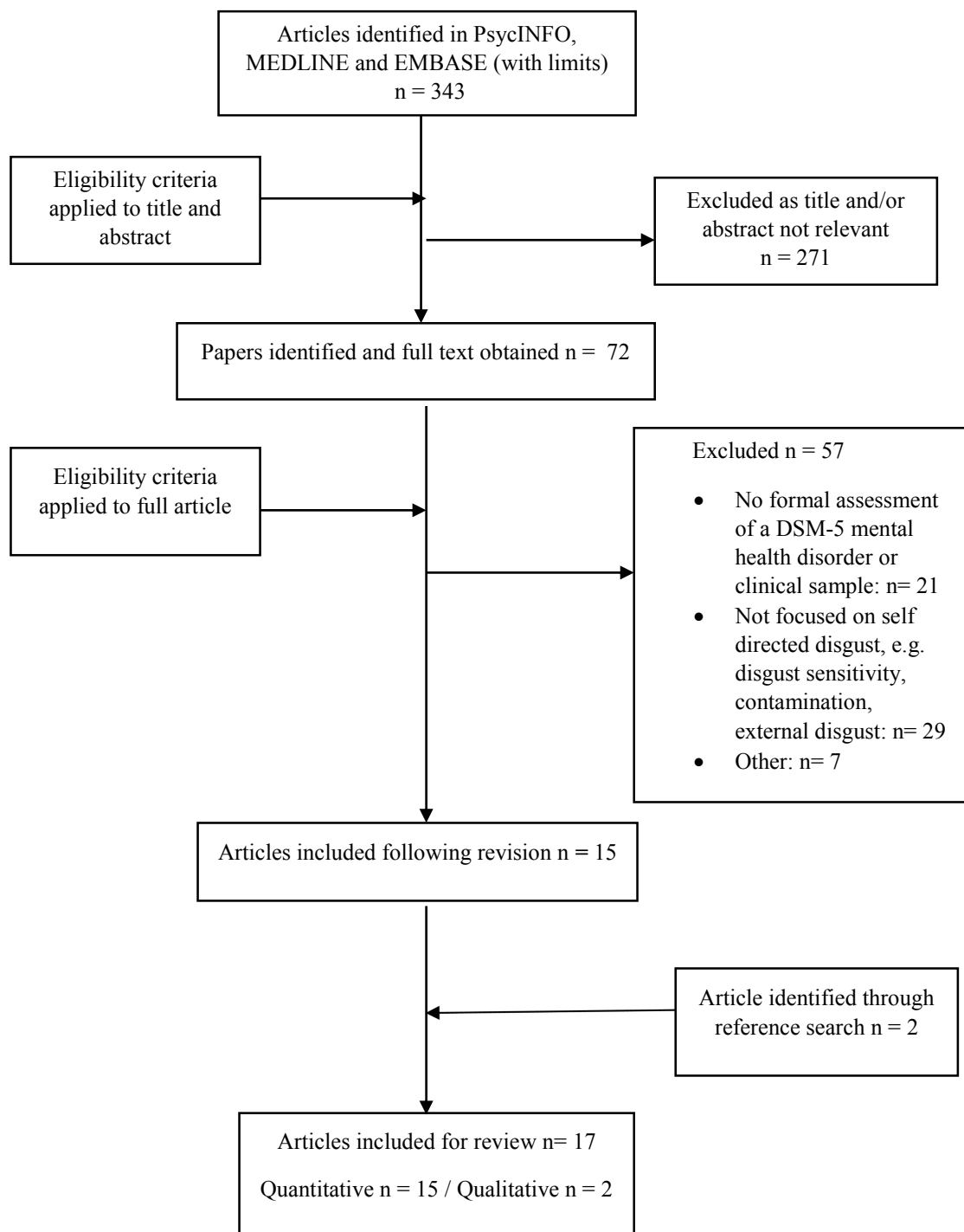


Figure 1: Flowchart of study selection

## 2.4 Quality Assessment

The studies included in the review were evaluated using the Standard Quality Assessment Criteria for Evaluating Primary Research Papers from a Variety of Fields (QualSyst; Kmet, Lee, & Cook, 2004). QualSyst is a pragmatic review tool that incorporates two separate scoring systems to critically appraise quantitative and qualitative research papers. The scoring systems draws on existing published tools, relying upon the instruments developed by Cho & Bero, (1994) and Timmer, Sutherland, & Hilsden, (2003) for quantitative studies and the guidelines suggested by Mays & Pope (2007) and Popay & Williams (1998) for qualitative studies.

Each scoring system gives a score of 2 ('Yes'), 1 ('Partial') or 0 ('No') depending on the degree to which a particular study accords with up to 14 separate criteria for quantitative studies and 10 separate criteria for qualitative studies. Checklist items that are not relevant to a particular study design are marked as non-applicable ('N/A') and excluded from the total summary score. Summary scores are calculated by dividing the total sum by the total possible sum, therefore all summary scores have a maximum of 1 even if certain items are not applicable to the study in question. The quality ratings for quantitative and qualitative studies obtained in the review are shown in Table 2 and 3. (See Appendix A for the QualSyst criteria and scoring).

Although QualSyst is a useful aid for assessing research quality, it has limitations. Ratings are based on the reviewer's own perception of the quality of research and are therefore highly subjective and prone to bias. Given the absence of standard operational definitions of internal validity in the literature or a 'gold standard' measure to which QualSyst can be compared, there is no way to accurately

assess its validity. Furthermore, it has limited inter-rater reliability and was developed using a small sample of test studies, which prevented its developers from estimating standard statistical measures of agreement. The QualSyst ratings in this review should therefore be interpreted with caution.

**Table 2:** *QualSyst (Kmet, et al., 2004) Ratings of quantitative study quality*

Item Number* and corresponding score																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Score	
Smith et al., (2015)	2	2	1	2	n/a	n/a	n/a	1	2	2	1	n/a	2	2	0.90	
Olatunji, Cox & Kim (2015)	2	2	2	2	n/a	n/a	n/a	1	2	2	1	n/a	2	2	0.86	
Powell et al., (2013)	2	2	1	2	n/a	n/a	n/a	1	2	2	2	0	2	2	0.86	
Chu et al., (2015)	2	2	1	2	n/a	n/a	n/a	2	2	2	1	n/a	2	1	0.85	
Overton et al., (2008)	2	2	1	1	n/a	n/a	n/a	1	2	2	1	n/a	2	1	0.80	
Simpson et al., (2010)	2	2	1	1	n/a	n/a	n/a	1	2	2	1	n/a	2	1	0.80	
Zahn et al., (2015)	2	2	2	2	n/a	n/a	n/a	2	1	1	1	n/a	1	2	0.80	
Rüsch et al., (2011)	2	2	1	1	n/a	n/a	n/a	1	1	2	2	1	2	1	0.72	
Schienle et al., (2013)	2	2	1	1	n/a	n/a	n/a	1	1	2	0	1	2	2	0.72	
Bachtelle & Pepper (2015)	2	1	2	2	n/a	n/a	n/a	1	1	1	0	n/a	2	2	0.70	
Schienle Leutgeb & Wabnegger (2015)	2	2	1	1	n/a	n/a	n/a	1	1	2	0	1	2	2	0.68	
Schienle et al., (2015)	2	2	1	1	n/a	n/a	n/a	1	1	2	0	1	2	2	0.68	
Neziroglu, et al., (2010)	2	2	2	1	n/a	n/a	n/a	2	1	1	1	1	1	1	0.56	
Ille et al., (2014)	1	2	1	1	n/a	n/a	n/a	1	1	2	1	n/a	2	1	0.55	

**Notes:** Maximum score for each study is 1. Item 5, 6, 7 excluded from all reviews due to non-intervention based studies. See Appendix A for criteria and scoring

1. Question/objective sufficiently described? 2. Study design evident and appropriate? 3. Method of comparison group selection *or* source of input variables described and appropriate? 4. Subject (and comparison group, if applicable) characteristics sufficiently described? 5. If interventional and random allocation was possible, was it described? 6. If interventional and blinding of investigators was possible, was it reported? 7. If interventional and blinding of subjects was possible, was it reported? 8. Outcome and exposure measures well defined and robust to measurement/misclassification bias? Means of assessment reported? 9. Sample size appropriate? 10. Analytic methods described/justified and appropriate? 11. Some estimate of variance is reported for the main results? 12. Controlled for confounding? 13. Results reported in sufficient detail? 14. Conclusions supported by the result?

**Table 3:** *QualSyst (Kmet, et al., 2004) Ratings of qualitative study quality*

	Item Number* and corresponding score										
	1	2	3	4	5	6	7	8	9	10	Score
Powell, Overton & Simpson (2014)	2	2	2	1	1	2	1	2	2	1	0.80
Espeset, Gulliksen Nordbø, Skårderud & Holte (2012)	2	2	2	1	1	1	2	1	2	0	0.70

**Notes.** Maximum score for each study is 1. See Appendix A for criteria and scoring

1. Question /objective sufficiently described? 2. Study design evident and appropriate?  
3. Context for the study clear? 4. Connection to a theoretical framework / wider body of knowledge?  
5. Sampling strategy described, relevant and justified? 6. Data collection methods clearly described and systematic? 7. Data analysis clearly described and systematic? 8. Use of verification procedure(s) to establish credibility 9. Conclusions supported by the results? 10. Reflexivity of the account?

### 3. Results

Seventeen studies met the inclusion criteria (two qualitative and 15 quantitative). Self-disgust and its association with the following DSM-5-mental health disorders are discussed: (1) Major Depressive Disorder, (2) Borderline Personality Disorder and Post-Traumatic Stress Disorder, (3) Eating Disorders, (4) Non-Suicidal Self-Injury, (5) Obsessive compulsive and related disorders and (6) Schizophrenia. Table 4 summarises the findings from all studies.



**Table 4:** *Summary of studies (ordered by mental health disorder sample)*

Mental health disorder	Author, date and country	Participants	Self-disgust measure	Mental health disorder measure	Study design & Analytic strategy	Key findings
<b>Depression</b>						
1.	Overton, Markland, Taggart, Bagshaw & Simpson (2008) UK	<b>Total n = 111</b> Psychology undergraduates Opportunity sample	SDS	BDI/DASS-DEP	Cross-sectional Mediation analysis	Self-disgust mediated the relationship between dysfunctional cognitions and depression.
2.	Simpson, Hillman, Crawford & Overton (2010) UK	<b>Total n = 120</b> Psychology undergraduates Opportunity sample	SDS	BDI/DASS-DEP	Cross-sectional Mediation analysis	Self-disgust and self-esteem significantly predicted depression scores. Self-disgust and self-esteem partially mediated the relationship between dysfunctional cognitions and depressive symptoms.
3.	Powell, Simpson & Overton (2013) UK	<b>Total n = 110</b> University volunteer sample 77% female Recruited via university	SDS	DASS-DEP	Longitudinal Mediation analysis	Self-disgust predicted depressive symptoms over six and 12 months Self-disgust partially mediated the relationship between dysfunctional cognitions and depression at 12 months 'Physical' self-disgust was a stronger predictor of depressive symptoms than 'Behavioural' Self-disgust.
4.	Powell, Overton, & Simpson	<b>Total n = 9</b> Female volunteers with clinically relevant depressive symptoms/	Study sample screened via	Study sample screened via	Qualitative semi-structured interviews	Four superordinate themes identified: 1) The subjective experience of self-disgust, 2) Origins of the revolting self

	(2014) UK	high self-disgust Recruited from larger sample of a related study.	SDS	DASS-DEP	Interpretive Phenomenological Analysis	3) Consequences of self-disgust 4) Associated emotional states Self-disgust was associated with depression, problems with eating, physical appearance, interpersonal relationships, and self-persecution
5.	Abdul-Hamid, Denman & Dudas (2014) UK	<b>Total n = 69</b> Major Depressive Disorder (MDD) sub sample (n=27) Screened via the MINI Recruited from newspaper advert	VAS/coding of narrative labels	HAMD	Quasi-experimental  Non-parametric tests for group comparison	MDD participants had more base line self-disgust and disgust reactivity than healthy volunteers but no more than BPD participants.
6.	Ille et al., (2014) Austria	<b>Total n = 224</b> Clinical sample: n=112 MDD sub-sample: n=21 Recruited from university hospital Criteria for diagnostic assessment of MDD not recorded Healthy matched controls n = 112 Recruitment process not stated	QASD	MDD diagnosis	Cross-sectional (group comparison)  ANCOVA'S, Regression	MDD participants differed from controls only in 'personal disgust'. In MDD participants, 'Obsession-compulsive' symptoms best predicted 'personal disgust'.
7.	Zahn et al., (2015) UK	<b>Total n = 132</b> Patients with remitted MDD (no co-morbid Axis 1 disorder/medication free) Recruited via advertisements	AMDP System (self-disgust subscale)	MDD sample screened via MADRS	Cross-sectional retrospective  Hierarchical cluster analysis	Feelings of self-disgust/contempt were more frequent than guilt and shame in retrospective accounts of a depressive episode. Self-disgust most closely co-occurred with core depressive symptoms.
<b>BPD and PTSD</b>						
8.	Rüsch et al., (2011) Germany	<b>Total n = 92</b> BPD subsample: n=20 Recruited from psychotherapy department Healthy women (n=37) Recruitment unknown	IAT	BPD sample Screened via IPDE	Cross-sectional (group comparison)  Correlation ANOVA	BPD participants implicitly associated themselves more strongly with disgust than anxiety. Implicit self-concept among BPD patients was more disgust-prone than controls.

9.	Schienle et al., (2013) Austria	<b>Total n = 60</b> BPD females (n = 30) Diagnosed with BPD according to ICD-10 criteria Recruited from inpatient psychiatric hospital Healthy women (n = 30) Recruitment unknown	QASD	BSL-23	Cross-sectional (group comparison)  Correlation ANOVA	Childhood sexual abuse severity was un related to implicit self-disgust. BPD patients reported elevated self-disgust relative to controls BPD patients showed a broad spectrum of altered disgust processes, which was positively correlated with disorder severity.
10.	Abdul-Hamid, Denman & Dudas (2014) UK	<b>Total n = 69</b> BPD sub sample (n=17) Screened via the SCID II Recruited from PD Services	Vas/coding of narrative labels	PAI-BOR	As above	BPD participants had more baseline self-disgust than healthy volunteers but no more than MDD participants BPD participants responded with more disgust when focussing on negative aspects of themselves and reported more disgust in their narratives than MDD group or healthy volunteers.
11.	Ille et al., (2014) Austria	<b>Total n = 224</b> BPD sub sample: n=17 Criteria for diagnostic assessment of BPD sample not recorded	QASD	BPD diagnosis	As above	BPD participants reported highest levels of self-disgust relative to four clinical groups 'Psychoticism' was the best predictor of self-disgust in the BPD subsample
12.	Schienle, Leutgeb & Wabnegger, (2015) Austria	<b>Total n = 50</b> BPD females: n=25 Diagnosed according to DSM-5 criteria Healthy females: n=25 Recruited via local inpatient hospital and newspaper	QASD	BSL-23	Cross-sectional Neuroimaging  Regression analyses	Trait self-disgust was positively correlated with severity of BPD symptoms and insula volume.
13.	Schienle, Wabnegger, Schongassner &	<b>Total n = 50</b> BPD females: n = 25 Healthy females: n = 25	QASD	BSL-23	Cross-sectional Neuroimaging	BPD participants reported significantly higher trait self-disgust than controls. Self-disgust was positively correlated

	Leutgeb (2015) Austria	(Same sample as Schienle, Leutgeb & Wabnegger, 2015)			Regression analyses	with amygdala activation in the BPD sample BPD sample responded with greater amygdala activation to 'approaching disgust' faces.
14.	Rüsch et al., (2011) Germany	<b>Total n = 92</b> PTSD females (n=20) Recruited from psychotherapy department	IAT	PTSD sub-sample diagnosed via SCID I	As above	PTSD participants implicitly associated themselves more strongly with disgust than anxiety. Implicit self-concept among PTSD patients was more disgust-prone than controls, but no more than BPD patients.
<b>NSSI</b>						
15.	Abdul-Hamid, Denman & Dudas (2014) UK	<b>Total n = 69</b> BPD (n=17) MDD (n=27) Screened via the MINI and SCID II Health volunteers (n=25) Recruited from PD services & newspaper adverts	VAS (change in self-disgust) /coding of narrative labels	VAS (change in self-harm urge)	As above	Following a self-focused task, self-disgust reported in a written narrative was associated with an increase in self-harm urges across whole sample.
16.	Smith et al., (2015) USA	<b>Total n = 549</b> University students Recruited via university website	SDS	ISAS	Cross-sectional Mediation analysis	Participants endorsing recent NSSI reported highest levels of self-disgust. Self-disgust fully mediated the relationship between depressive symptoms and NSSI status.
17.	Bachtelle & Pepper (2015) USA	<b>Total n = 49</b> Undergraduate students with scars from previous self-injury Recruited via e-mail invitation based on mass test screening	SDS	DSHI ISAS	Cross sectional survey Correlation T-tests	Levels of SH scar-related shame were associated with higher likelihood of self-disgust.

Eating Disorders						
18.	Espeset, Gulliksen, Nordbø, Skårderud & Holte (2012) Norway	<b>Total n = 14</b> Females aged 20–39 years who met criteria for Anorexia Nervosa (AN) Recruited from specialist ED services	n/a	AN sample diagnosed via DSM-5 criteria (up to 1 year previously)	Qualitative semi-structured interview  Grounded Theory Analysis	Participants reported high levels of self-disgust, which triggered restrictive eating and purging. Participants used avoidance to manage self-disgust (e.g. avoiding food, body focused situations, physical closeness and sexuality)
19.	Ille et al., (2014)	<b>Total n = 224</b> ED sub sample: n=40 Criteria for diagnostic assessment of ED sample not recorded	QASD	n/a	As above	ED subsample reported second highest levels self-disgust relative to four other clinical groups. Interpersonal sensitivity, depression and obsession were the best predictors of personal disgust in the ED sample.
21.	Chu, Bodell, Riberio & Joiner (2015), USA	<b>Total n = 341</b> University students Recruited via university website	DWLS (self-disgust subscale)	EDI BSS	Cross-sectional Multivariate regression analyses	Eating disorder symptoms were associated with increased suicidal ideation at high levels of self-disgust but not at low levels of self-disgust.
22.	Olatunji, Cox & Kim (2015)	<b>Total n = 403</b> University students Recruited via university	SDS	EAT-26	Cross-sectional Mediation Analyses	Self-disgust independently predicted symptoms of Bulimia. Self-disgust mediated the relationship between shame proneness and Bulimia.
Obsessive compulsive/ related disorders						

23.	Neziroglu, Hickey, & McKay (2010) USA	<b>Total n = 12</b> Body Dysmorphia diagnosed via SCID I: n = 6 Community control group: n = 6  Recruited via outpatient mental health service and internet based advertising/posting at local university	Heart Rate/Skin Temperature  VAS	n/a	Quasi-experimental  ANOVA's	BDD participants reported significantly higher levels of self-reported self-disgust during a mirror staring task.
24.	Olatunji, Cox & Kim (2015)	<b>Total n = 403</b> University students Recruited via university	SDS	OCI-R	As above	Self-disgust mediated the relationship between shame proneness and OCD.
<b>Schizophrenia</b>						
25.	Ille et al., (2014)	<b>Total n = 224</b> Schizophrenia sub-sample: n=15 Criteria for diagnostic assessment of 'Schizophrenia' not recorded	QASD	n/a	As above	Patients with 'schizophrenia' differed from matched controls only in personal disgust. Hostility and psychoticism best predicted 'personal disgust' in 'Schizophrenia' sub-sample.

**Notes. Abbreviations in table:** AMDP: Assessment and Documentation of Psychopathology Interview; BDI: Beck Depression Inventory; BSI: Brief Symptom Inventory; BSL 23: Borderline Symptom List 23; BSS: Beck Scale for Suicide Ideation; DASS DEP 21: Depression Subscale of the Depression Anxiety and Stress Scale; DWLS: Disgust with Life Scale; DSHI: Deliberate Self Harm Inventory; EDI: Eating Disorder Inventory; Eat – 26: Eating Attitudes Test – 26; HAMD: Hamilton Depression Rating Scale; IAT: Implicit Association Test; IPDE: International Personality Disorder Examination; ISAS: Inventory of Statements about Self-Injury; MADRS: Montgomery-Åsberg-Depression-Scale; MINI: Mini-International Neuropsychiatric Interview; OCI –R: Obsessive Compulsive Inventory – Revised; PAI-BOR: Personality Assessment Inventory-Borderline Features; PTSD: Post-traumatic Stress Disorder; SCID I: The Structured Clinical Interview for DSM-5 Axis I Disorders; SDS: Self-disgust Scale; QASD: Questionnaire for the Assessment of Self-Disgust; BSS: Beck Scale for Suicidal Ideation; VAS: Visual Analogue Scale.

### 3.1 Measurement of self-disgust

The measures used to assess self-disgust varied in their reliability and validity. The Self-Disgust Scale (SDS; Overton et al., 2008) is the most widely used psychometrically evaluated scale for assessing self-disgust and was utilised by seven studies in the review. The SDS was initially validated on a sample of 111 undergraduates; principal-component analysis revealed two factors to underlie the SDS including the ‘Disgusting self,’ related to enduring, physical aspects of the self, and ‘Disgusting ways’, related to ones behaviour. The SDS has demonstrated a high level of internal consistency ( $\alpha = .91$ ), test–retest reliability ( $r(13) = 0.94, p < .001$ ) and concurrent validity ( $r[109] = .25, p < .01$ ) with the Disgust Sensitivity Scale (DSS, Haidt, McCauley, & Rozin, 1994). The Questionnaire for the Assessment of Self-Disgust (QASD; Schienle, Ille, Sommer & Arendasy, 2014) is a German version of the SDS and was utilised by four studies in the review. The QASD has two subscales (personal disgust and behavioural disgust) and has been shown to be reliable; Guttman’s  $\lambda_4$  was 0.86 (personal disgust) and 0.81 (behavioural disgust; Schienle et al., 2013).

Chu et al., (2015) used a subscale of an existing ‘disgust with life scale’ (Ribeiro, Bodell, & Joiner, 2012) to assess self-disgust which included items such as ‘I am disgusted with myself’, ‘I am repulsive’, and ‘my own behaviours make me

sick'. The self-disgust subscale was significantly correlated with the SDS (Overton et al., 2008;  $r=.91$ ) and demonstrated high internal consistency (Cronbach's  $\alpha=.96$ ).

Zahn et al, (2015) added six new items to an existing phenomenological psychopathology-based interview (AMDP) to assess self-disgust. Questions included: 'do you sometimes feel disgust, contempt, hate or loathing?' 'which term would you prefer?', 'is this mostly towards yourself, others or both?', 'what are the typical situations?' and 'how often and how much do these feelings bother you?'. Inter-rater reliability for the self-disgust subscale of the AMDP was very high ( $\kappa = 0.89$ ).

One study in the review combined self-report and psychophysiological methods to assess self-disgust (Neziroglu, Hickey, & McKay; 2010). This included assessment of heart rate and skin temperature (as disgust is thought to elicit parasympathetic activity) in addition to visual analogue scales (VASs), which are commonly used to assess subjective emotion ratings in conjunction with physiological measures (Vrana, 1994; Yartz & Hawk, 2002). Visual analogue scales were utilised by one further study in the review (Abdul-Hamid, Denman & Dudas, 2014). One remaining paper used an implicit association test to assess automatically activated self-disgust (Schienle et al., 2013). Finally, two studies adopted a



qualitative methodology to explore the experiences of self-disgust among those with depression (Powell et al., 2014) and eating disorders (Espeset et al., 2012).

### **3.2 Depression**

Seven study samples investigated self-disgust in relation to depression. Two studies (Overton et al., 2008; Simpson et al., 2010) utilised a cross-sectional design to examine the whether self-disgust mediates the relationship between dysfunctional thoughts and depressive symptoms. Overton et al., (2008) administered the (SDS) to an opportunistic sample of 111 undergraduates. In this sample, self-disgust was significantly positively correlated with two measures of depression; the Beck Depression Inventory (BDI;  $r(109) = .66, p < .001$ ) and the depression subscale of the Depression Anxiety and Stress Scale (DASS;  $r(109) = .67, p < .001$ ). Self-disgust partially mediated the relationship between dysfunctional cognitions and depression (BDI;  $b = .63, t = 8.79, p < .001$ ; DASS;  $b = .61, t = 8.54, p < .0001$ ). The relationship between cognitions and depression was still significant after controlling for self-disgust suggesting that other mediator variables are also involved in the relationship. The authors concluded that self-disgust may have a functional role in the development of depression by partially mediating the relationship between dysfunctional thoughts and depressive symptoms. These findings were extended by

Simpson, Hillman, Crawford, & Overton, (2010) who demonstrated that self-disgust and self-esteem partially mediated the relationship between dysfunctional cognitions and depressive symptoms among 120 undergraduate students.

In both former studies, sample sizes were sufficient to confer statistical power, however the use of a non-clinical, undergraduate sample may have limited the generalisability of the findings. Although the authors argue that mediation is supported by their cross-sectional data, it has been suggested that only longitudinal data can be used to test mediation hypotheses (Maxwell & Cole, 2007), thus the conclusions drawn from their data need to be interpreted with caution. In view of the methodological concerns outlined, both studies received a rating of 0.75 using the QualSyst critical appraisal rating tool (Kmet et al., 2004).

Using a retrospective, cross-sectional design, Zahn et al., (2015) found that self-disgust was implicated in major depressive disorder (MDD). The authors explored the consistency and coherence of self-blaming emotions in 132 patients with remitted depression based on retrospective accounts of their most recent and severe episode of depression. Self-blaming emotions (including six items related to self-disgust/contempt) were assessed using a phenomenological psychopathology-based interview (AMDP; Faenhdreich & Stieglitz, 1997).

Cluster analysis revealed that during a depressive episode, self-blaming emotions were very common (82%) and that self-disgust/contempt (46%) was the most common, followed by guilt (39%) and shame (20%). Moreover, the cluster comprising self-disgust/contempt was most strongly associated with core depressive symptoms (hopelessness and feelings of inadequacy). These findings are interesting given that the diagnostic criteria for Major Depressive Disorder according to the DSM-5 (APA, 2013) has been restricted to excessive feelings of ‘guilt’ or ‘worthlessness’, when in fact feelings of self-disgust/contempt may be more highly associated with the disorder. As such, the authors argue for the refined assessment of self-blaming emotions in depression to include feelings of self-disgust in order to improve the diagnosis and phenomenological understanding of MDD.

A strength of Zahn et al’s, (2015) study was the rigorous inclusion criteria and detailed screening procedures for the study sample. However, assessment of self-blaming emotions during a depressive episode was retrospective which may have biased participants to under report certain emotions. Another limitation relates to the assessment of self-disgust using six new items added to the AMDP. Although inter-rater reliability for the new items was high ( $\kappa=0.89$ ), the items were conflated with ‘contempt’, and ‘loathing’ which are arguably theoretically distinct constructs and may not represent a valid and comprehensive assessment of self-disgust.

Notwithstanding the limitations, the study does suggest that self-disgust is a potentially salient emotion in major depression. The study received a Qualysyst rating of 0.80 (Kmet et al., 2004).

Ille et al., (2014) found that participants with MDD demonstrated significantly elevated trait self-disgust relative to healthy controls according to the QASD (Schienle, Ille, Sommer & Arendasy, 2014), however this difference was only observed on the 'personal disgust' subscale. The control group generally reported very low levels of self-disgust, indicating that self-disgust may be more associated with psychopathology. Methodological limitations include poor description of the study sample and a lack of reporting regarding the diagnostic assessment of MDD. It is also unclear whether screening for possible co-morbid psychological disorders was conducted across the whole sample. These substantial methodological flaws and poor reporting of results resulted in a QualSyst rating of 0.55.

Abdul-Hamid et al., (2014) investigated whether self-disgust may be an emotional trigger for self-harm urges in people with Major Depressive Disorder (MDD; n=27), relative to a BPD sample (n=17) and healthy controls (n=25). Participants completed a task that required them to focus on negative aspects of their body and their personality. Self-disgust was assessed using a visual analogue scale

(VAS) before and after the task and via the coding of a written narrative produced by participants during the task. Changes in self-disgust according to the VAS were higher in the MDD group relative to healthy controls, but no more than the BPD group. When focusing on negative aspects of their personality, there was an association between post-task self-disgust and changes in self-harm urges in the MDD group only (MDD:  $p=0.033$ ). This suggests that focusing on aspects of the self may trigger increased feelings of self-disgust, which may then trigger the urge to self-harm in people with MDD.

Powell, Overton, & Simpson (2014) applied a qualitative methodology to obtain a more rich and informed understanding of self-disgust in depression. Semi-structured interviews were conducted with 9 female participants who experienced high levels of self-disgust (according to the SDS) and clinically relevant depressive symptoms (according to the DASS-DEP). Interpretative Phenomenological Analysis (IPA) led to the identification of four superordinate themes; 1) the subjective experience of self-disgust, indicated that self-disgust was perceived as a consuming, visceral experience with trait and state components; 2) the origins of the revolting self highlighted the role of others in the genesis of self-disgust; 3) the consequences of self-disgust' included the psychological and behavioural results of a disgusting self (such as dissociation, self persecution and avoidance of looking at the self) and

4) associated emotional states, described associations between self-disgust and other feeling states including shame, anger and sadness. Overall, self-disgust was associated with depression, problems with eating, physical appearance, interpersonal relationships, and self-persecution. This was a high quality study which drew on purposive sampling and a number of verification procedures were applied to establish credibility, such as triangulation of the authors' interpretations and a disconfirming case analysis was conducted following theme identification (Yardley, 2008). Limitations of the study related to a lack of respondent validation regarding the theme identification and while the authors attempted to acknowledge the importance of reflexivity, they failed to expand on how their personal characteristics may have affected their interpretation of participant's accounts. Given the above limitations, the study received a QualSyst rating of 0.80 (Kmet et al., 2004).

While two studies (Overton et al., 2008; Simpson et al., 2010) highlighted the mediating role of self-disgust in depression, Powell, Simpson, & Overton (2013) used a prospective, longitudinal design to examine whether their hypothesised mediation sequence was valid over time. Self-report data on self-disgust, dysfunctional cognitions and depressive symptoms was collected online from a non-clinical sample. After baseline (n=464), longitudinal follow-ups were conducted at 6 months (n=152) and 12 months (n=110).

Trait levels of self-disgust significantly predicted depressive symptoms over time, but not the reverse. This lends support to the hypothesis that self-disgust is best considered an antecedent to depression (Overton et al., 2008). They found that the mediation model proposed by Overton et al., (2008) was too simplistic and that important predictors were missing from the model and that rather than dysfunctional thoughts leading to self-disgust, which leads to depression in a linear sequence, dysfunctional cognitions and self-disgust are likely to interact in the temporal prediction of depressive symptoms. Disgust towards physical aspects of the self, rather than behaviour, was a stronger predictor of depressive symptoms over time.

A strength of the study was its longitudinal design and although it does not imply causality, it does indicate the temporal precedence of the constructs. However, the relationship between the study constructs did fluctuate over time, for example depression scores were lower during the second wave of the study (summer) and higher during the first and third wave of the study (winter). This may indicate the presence of confounding variables not controlled for, such as seasonal effects or environmental stressors that may have predicted depression over time. In addition, notable sample attrition may have biased the data as 354 participants (74.3%) did not complete the study between baseline and 12-month follow up. The study received a QualSyst rating of 0.86 (Kmet et al., 2004).

### 3.3 Borderline Personality Disorder and Post Traumatic Stress Disorder

Only one study in the review investigated the relationship between PTSD and self-disgust (Rüsch et al., 2011). In this study, BPD and PTSD were collapsed into one clinical group representing a ‘trauma related disorder’. Therefore BPD and PTSD have been grouped together for the purpose of this review. Six study samples assessed self-disgust in Borderline Personality Disorder using cross-sectional, group comparison designs (two of which adopted a neuroimaging methodology).

Rüsch and colleagues, (2011) investigated state level, automatically activated self-disgust in women with BPD and PTSD. They used an Implicit Association Test (IAT) to compare levels of self-disgust among three clinical groups (BPD,  $n=20$ , PTSD,  $n=20$ , BPD + PTSD,  $n=15$ ) and a healthy control group ( $n=37$ ). Women with BPD *or* PTSD demonstrated a significantly more disgust prone self-concept than controls. Contrary to expectation, women with both BPD *and* PTSD did not. However, all 55 patients, collapsed into one group, exhibited a significantly more disgust-prone self-concept than controls (Table 5, very right column; T-test for independent samples: Cohen’s  $d=-0.73$ ).



**Table 5:** Means and SDs of Disgust scores across three groups in Rüsç et al., (2011) study

	BPD (n = 20)	PTSD (n = 20)	BPD & PTSD (n = 15)	Healthy Women (n = 37)	<i>T (P)<sup>a</sup></i>
IAT, D score (Self-disgust)	-0.38* (0.56)	-0.35* (0.40)	-0.12 (0.74)	0.10 (0.52)	-3.44 (.001)

<sup>a</sup> Comparisons are T tests comparing all 55 patients, collapsed into one group, with controls.

The unexpected result that patients with both BPD and PTSD did not have a significantly more disgust prone self-concept than controls may represent a false negative finding due to the small sample used ( $n = 15$  and  $n = 37$  respectively). A post-hoc calculation of the effect size was calculated according to Thalheimer & Cooks' (2002) methodology; Cohen's  $d$  was .34, which is regarded as a small effect size. The non-significant finding therefore suggests that the study was insufficiently powered to detect the effect that was observed. A further unexpected finding was that childhood sexual abuse severity was unrelated to self-disgust among the clinical group (IAT,  $r = .07$ ,  $p = .62$ ). Despite a number of unexpected findings, the authors argue that self-relevant disgust is a possible feature of BPD and PTSD that operates on an automatic-implicit level, outside of conscious awareness. A limitation of the study relates to the assessment of self-disgust via an IAT. The IAT assesses the strength of the association between self and disgust (relative to anxiety). The choice of comparative categories therefore influences the interpretation of the IAT and

alternative comparative categories may have yielded different results. Despite the notable limitations, the study provides empirical evidence for elevated self-disgust at an implicit, non-conscious level in people with BPD and PTSD and received a QualSyst rating of 0.72 (Kmet et al., 2004).

Schienle et al., (2013) found additional evidence of heightened self-disgust in people with BPD. The authors compared 30 female BPD patients to 30 healthy females on measures of self-disgust (QASD; Schienle et al., 2014) and BPD symptoms (BSL-23; Bohus et al., 2009). BPD patients reported elevated self-disgust scores relative to controls (see Table 6). Self-disgust was positively correlated with severity of BPD symptoms (BSL-23); (personal disgust,  $r = 0.67$ ,  $p < 0.001$ ; behavioural disgust,  $r = 0.51$ ,  $p = 0.004$ ) and there was a stronger correlation between the two subscales of the QASD for the BPD group ( $r = 0.79$ ) compared to controls ( $r = 0.47$ ). This suggests that the BPD group differentiated less between disgust at their own behaviour and disgust at their physical appearance and personality and may indicate a stronger deficit of self-perception.

**Table 6:** Means and SD's of Self Report Measures in Shienle et al., (2013) study

	BPD	Control	T <sub>58</sub> (p)
Self-disgust (QASD)			
<i>Personal disgust</i>	2.25 (1.08)	0.31 (0.24)	<0.001
<i>Behavioural disgust</i>	1.88 (0.82)	0.43 (0.37)	0.009

Self-disgust did not differ between participants with and without a history of abuse, which is in line with the findings of Rüsch et al., (2011). However, only 29% of the clinical sample endorsed a history of abuse; the sample size may therefore have been too small to detect a significant effect (Type II error). It was not possible to calculate the observed effect size due to a lack of reporting of data in the study. Overall the study highlighted that BPD patients showed elevated self-disgust which was positively correlated with disorder severity. Limitations of the study related to the small study sample (n=60) and lack of reporting regarding the inclusion/exclusion criteria for the healthy control group. The study was accordingly given a QyalSyst (Kmet et al., 2004) rating of 0.72.

Ille et al., (2014) extended the above findings by comparing self-disgust scores on the QASD between BPD participants (n=17) and a number of other clinical groups. Participants with BPD demonstrated the highest levels of self-disgust (on both subscales of the QASD) compared to those with MDD (n=21), EDs (n=40), and schizophrenia (n=15) suggesting that self-disgust may be particularly associated with BPD. According to the Brief Symptom inventory (BSI; Derogatis, 1993) the symptom dimension of 'Psychoticism' ('the idea that something is wrong with your mind') best predicted self-disgust in the BPD subsample.

A study by Abdul-Hamid et al., (2014) found that BPD participants (n=17) had more baseline self-disgust according to a visual analogue scale (VAS) and responded with more self-disgust after focussing on negative aspects of themselves than healthy volunteers (n=25), but not more than those with MDD (n=27). Moreover, while focusing on negative aspects of themselves, BPD participants reported more self-disgust in a written narrative than healthy volunteers or those with MDD. Participants with BPD in particular, responded with more self-disgust when focusing on aspects of their body rather than their personality. These findings suggest that state levels of self-disgust can be activated by focusing on negative aspects of oneself and that body-based disgust may be a particularly salient feature in BPD. Finally, two studies compared structural imaging data and their associations with self-disgust among 25 females with BPD and 25 healthy women (Schienle, Leutgeb & Wabnegger, 2015; Schienle, Wabnegger, Schongassner & Leutgeb, 2015).

Schienle, Leutgeb & Wabnegger, (2015) focused on amygdala subdivisions and their association with self-reported BPD symptom severity (assessed by the BSL-23; Bohus et al., 2009) and self-disgust (assessed by the QASD). They replicated the findings of Schienle et al., (2013); trait self-disgust was associated with BPD symptom severity (QASD-personal:  $r=.59$ ,  $p=.002$ ; behavioural  $r=.53$ ,

$p=.006$ ) and specifically with auto-aggressive behaviour. In BPD patients, self-disgust was associated with increased insula volume and correlated negatively with the volume of the secondary somatosensory cortex (SII; activated during tactile and visceral sensations alterations). The authors argue that the insula is a crucial structure for experiences of disgust and that increased insular volume constitutes a risk factor for the development of self-disgust or that alternatively, on-going and excessive feelings of self-disgust may lead to increased insular volume.

Drawing on the same participant sample as above, Schienle, Wabnegger, Schongassner & Leutgeb, (2015) conducted an fMRI study investigating the effects of personal space intrusion in women with BPD, hypothesizing that they would show greater amygdala reactivity to ‘approaching’ disgust faces relative to controls and that this would be correlated with trait self-disgust. BPD participants reported significantly higher trait self-disgust than controls according to the QASD. The BPD sample responded with greater amygdala activation to ‘approaching’ disgust faces and the degree of self-disgust (as indexed by the QASD scores) was able to predict amygdala activation in response to ‘approaching’ disgust faces. The authors suggest that BPD participants may therefore be especially sensitive to social contexts involving disgust, which may be associated with trait levels of self-disgust. Notable methodological limitations in

both studies include a small sample size and the clinical sample had a number of co-morbid mental health conditions which may have limited the specificity of the findings. Both studies therefore received a QualSyst rating of 0.68 (Kmet et al., 2004). Overall the results suggest that self-disgust is a possible feature of BPD that operates at an automatic-implicit level, outside of conscious awareness, is associated with BPD symptom severity and specifically, with auto-aggressive behaviour as well as with increased insula volume.

### **3.4 Non-Suicidal Self-Injury (NSSI)**

Non-suicidal self-injury (NSSI) has recently been added to the DSM-5 as a putative disorder in its own right and refers to the deliberate harming of the self in a physical way without the intent of committing suicide (APA, 2013). Three studies investigated self-disgust and its association with NSSI.

Abdul-Hamid et al., (2014) hypothesised that self-disgust may be an emotional trigger for NSSI in people with BPD (n=17) especially, but also in people with MDD (n=27) and healthy controls (n=25). Changes in visual analogue scale rating of self-disgust (before and after a task focusing on negative aspects of oneself) were only associated with increased NSSI urges in the MDD group and not in the BPD group. However, among the whole sample, self-disgust reported in a written

narrative during the task was significantly associated with an increase in NSSI urges. Self-disgust was the only emotion in the written narrative associated with changes in NSSI urges. A strength of the study was that it attempted to model the generation of negative self-relevant emotions (including self-disgust) and NSSI urges and was therefore high in ecological validity. Moreover, there was a high level of diagnostic precision within the clinical samples due to stringent inclusion/exclusion criteria, which contributed to the specificity of the findings. However, these findings should be considered preliminary given the small sample size used, particularly in the patient group of interest (BPD;  $n=17$ ) and may indicate the presence of Type II error in relation to the non-significant study finding (changes in self-disgust assessed by the VAS were not associated with changes in NSSI urges). It was noteworthy that inter-rater reliability checks were not conducted on the coding of the written narratives which may have led to over-reporting of disgust based labels. Owing to the methodological limitations outlined, the study received a QyalSyst (Kmet et al., 2004) rating of 0.72.

A recent study highlighted that self-disgust might be an important component of NSSI in a non-clinical group. Smith et al., (2015) investigated 549 college students in a cross-sectional survey. Self-disgust (SDS; Overton et al., 2008) fully mediated the relationship between depressive symptoms and NSSI status ( $Z=4.34$ ,

$SE = .022, p < .001$ ) and partially mediated the relationship between sexual abuse and NSSI status ( $Z = 2.17, SE = .01, p < .05$ ). A one standard deviation increase in self-disgust was related to a two-fold increase in the odds of reporting self-harming behaviours, after controlling for all study variables (depression, self-disgust, anxiety sensitivity, sexual abuse, physical abuse). The authors suggest that self-disgust may serve as an emotional trigger for NSSI and that early sexual abuse may represent a risk factor for NSSI, via the development of self-relevant disgust. This finding is supported by data from Ille et al., (2014) who found that in a mixed clinical sample, those who had experienced physical and/or sexual abuse during childhood reported significantly more self-disgust than those who did not.

In addition, recent self-harmers in Smith et al.'s (2015) study reported the highest levels of self-disgust, depression and anxiety, compared to past or non-self-harmers. The authors argue that self-disgust may therefore serve as a maintaining factor for NSSI. Smith et al., (2015) is a high quality study owing to its very large sample size and the fact that a number of important variables were controlled for. However, the cross-sectional design of the study meant that the temporal associations between the study constructs were not examined and the study therefore received a QyalSyst rating of 0.90 (Kmet et al., 2004).

Bachtelle & Pepper (2015) investigated the association between self-disgust



and the psychological meaning made of NSSI scars. In a sample of undergraduates with scars from previous NSSI, and who endorsed current self-injurious behavior ( $n=49$ ), levels of scar-related shame (DES-IV-A; Izard et al., 1993) were positively associated with self-disgust ( $r = 0.64$ ,  $p < 0.001$ ) according to the SDS (Overton et al., 2008) while levels of scar-related growth were negatively associated with self-disgust ( $r = -0.49$ ,  $p < 0.01$ ). These findings add to the existing literature by suggesting that feelings of self-disgust may not only trigger self-harm (Abdul-Hamid et al., 2014; Smith et al., 2015), but may possibly be a consequent emotional reaction to NSSI scars. This hypothesis is supported by qualitative data in the review which found that depressed females identified disgust as a “consequence” of previous engagement in self-harm (Powell et al., 2014). The exploratory nature of Bachtelle & Pepper’s (2015) study means it is difficult to determine the nature of the relationship between scar-related shame and self-disgust, particularly given the overlapping nature of self-disgust and shame. The study received a Quallsyst rating of 0.70 (Kmet et al., 2004).

Overall, the evidence suggests that self-disgust may serve a mediating and maintaining role in NSSI and that self-disgust may be an emotional trigger for NSSI, but may also be a consequent emotional reaction to NSSI.

### 3.5 Eating Disorders

Three studies explored the association between self-disgust and EDs.

Olatunji, Cox & Kim (2015) noted that the experience of shame has been implicated in the development of eating disorders (EDs) and propose that self-disgust may be the mechanism which accounts for this association. They administered a cross-sectional survey to 403 undergraduates and controlled for a number of confounds including disgust sensitivity and depression. Mediation analyses revealed that self-disgust partially mediated the relationship between shame proneness and symptoms of Bulimia ( $z = 2.25$ ,  $p = .02$ ). The authors argue that shame may trigger automatically generated feelings of self-disgust that become difficult to regulate, which is then thought to confer risk for the development of Bulimia and purging behaviours. In this reciprocal process, shame, self-disgust, and symptoms of bulimia are considered to interact in a manner in which each one influences the experience of the other.

The cross-sectional nature of the data means it is difficult to make definitive inferences about the direction of the observed relationships between the study constructs. Longitudinal research is needed to determine temporal precedence (i.e. that shame precedes self-disgust and that self-disgust precedes Bulimia symptoms)

as the distinction between shame and self-disgust is yet to be empirically determined.

The current study received a QualSyst rating of 0.86 (Kmet et al., 2004).

Chu, Bodell, Ribeiro & Joiner (2015) hypothesised that self-disgust may contribute to the evidenced link between EDs and suicidality. To test their hypothesis, cross sectional self-report data was collected from a non-clinical sample of 341 young adults (66% female) on self-disgust (assessed via a subscale of the Disgust with Life Scale; Ribeiro, Bodell, & Joiner, 2012), ED symptoms (Eating Disorder Inventory; EDI; Garner, Olmstead, & Polivy, 1983) and suicidal ideation (Beck Scale for Suicide Ideation; BSS; Beck, Kovacs & Weissmann, 1979).

Regression analyses revealed that ED symptoms were significantly associated with self-disgust and that self-disgust was associated with higher levels of suicidal ideation ( $\beta=0.14$ ,  $p=.04$ ,  $pr^2=.017$ ). ED symptoms interacted with self-disgust to predict suicidal ideation, controlling for age, gender, depression and anxiety symptoms ( $\beta=0.14$ ,  $p=.03$ ,  $pr^2=.021$ ) such that self-disgust was only associated with suicidal ideation in those with high levels of ED symptoms and not among those with low levels ( $\beta = 0.23$ ,  $p = .012$ ,  $pr^2 = .027$ ). This suggests that individuals with ED symptoms and high levels of self-disgust may be at increased risk of suicide, beyond the known risk factors of depression and anxiety.

A limitation of the study relates to the non-clinical sample employed where only 2.4% of the sample endorsed significant symptoms of suicidal ideation. Given that the main outcome variable of the study was suicidal ideation, the conclusions drawn from the data need to be interpreted with caution. Replication with a clinical sample of ED patients who have increased levels of suicidal ideation is necessary. The study therefore received a QyalSyst (Kmet et al., 2004) rating of 0.85.

Espeset, Gulliksen, Nordbø, Skårderud & Holte (2012) conducted semi-structured interviews with 14 females who met criteria for Anorexia Nervosa (AN) (either restrictive or bulimic subtypes). Grounded theory analysis indicated that participants reported high levels of self-disgust, which was described as a ‘strong’, ‘intense’ and ‘invading’ emotion associated with feelings of nausea or sickness. Self-disgust was triggered when participants were reminded of their physical appearance such as when taking a shower, looking in the mirror or being touched. Other triggers for self-disgust included threatening social situations where participants felt judged or when they received negative feedback from others. Participants used avoidance strategies to manage self-disgust (e.g. avoiding food, body awareness and exposing their body in front of others). Participants also avoided physical closeness and sexual activity. Self-disgust was reported to automatically trigger different eating disorder behaviours such as restrictive eating and purging. This qualitative data derived from

an ED clinical sample lends weight to the quantitative finding that self-disgust partially mediated the relationship between shame and symptoms of Bulimia in a non-clinical sample (Olatunji, Cox & Kim; 2015) and suggests that self-disgust may be an important emotional driver in EDs. A strength of the study was the use of highly rigorous coding procedures (open, axial, confirmatory and selective coding) in order to develop concepts that were grounded in the data (Corbin & Strauss, 2008). However, the authors described using a ‘descriptive’ version of grounded theory rather than the original theory-building version, but did not explain or justify this further which lead to uncertainty around the specific techniques and methodological approach adopted. Participants were also not screened for co-morbid mental health disorders, which limits the specificity of the findings. No reflexivity of the account was considered in the study. In view of the strength and weakness outlined, the study received a QualSyst rating of 0.70 (Kmet et al., 2004).

### **3.6 Obsessive compulsive and related disorders**

Olatunji, Cox & Kim, (2015) suggest that shame may be implicated in the development of Obsessive Compulsive Disorder (OCD) and that self-disgust may account for this association. In a large undergraduate sample, they found that self-

disgust correlated with symptoms of OCD ( $r = .30, p < .01$ ) and partially mediated the relationship between shame proneness and symptoms of OCD ( $z = 2.58, p = .009$ ) after controlling for disgust sensitivity and depression. The findings suggest that self-disgust may be a distinct path by which shame confers risk for symptoms of OCD. This is a high quality study that employed multiple mediators in order to control for relevant confounding variables.

According to the DSM-5, Body Dysmorphic Disorder is classified under 'Obsessive compulsive and related disorders' and refers to 'repetitive behaviours or mental acts in response to preoccupations with perceived defects or flaws in physical appearance' (APA, 2013). Neziroglu, Hickey, & McKay (2010) compared levels of self-directed disgust among participants diagnosed with BDD ( $n=6$ ) and a community control group ( $n=6$ ). Following a mirror-staring task over five 1-minute trials, BDD participants had higher baseline disgust reactivity and significant decreases in disgust (as assessed by heart rate and skin temperature) across the trials compared to community controls when focusing on their perceived defects. BDD participants also reported significantly higher levels of self-reported self-disgust during the task on a visual analogue scale (VAS). The results suggest that self-directed disgust may be a salient emotion in BDD, but that repeated exposure may help to alleviate disgust responding in BDD. Methodological limitations relate to the

very small sample size ( $n=12$ ), which resulted in the study being under-powered when making between-group comparisons. There was also a lack of detail in the reporting of the results and the interpretation of the data was negligible given the mixed and limited research on using heart rate and skin temperature to infer disgust responding. The study therefore received a Quallsyst rating of 0.56 (Kmet et al., 2004).

### **3.7 Schizophrenia**

Ille et al., (2014) compared self-disgust (QASD) between various clinical groups and matched healthy controls. Patients with schizophrenia ( $n=15$ ) had the lowest levels of self-disgust relative to those with MDD ( $n=21$ ), EDs ( $n=40$ ) and BPD ( $n=17$ ). Patients with schizophrenia only differed from matched control on the personal disgust sub-scale (personality and appearance), while there was no significant difference on the behavioural disgust subscale. Personal disgust was also more elevated than behavioural disgust in the total clinical sample. This finding is in line with the finding of Powell et al., (2013) who also found increased self-disgust at physical aspects of the self rather than ones' behaviour.

The symptom dimensions of hostility ('Having urges to break or smash things') and psychoticism (The idea that something is wrong with your mind) best predicted personal disgust in patients with schizophrenia (corrected  $R^2 = .79$ ). These two symptom dimensions were also the strongest predictors of personal disgust among the total clinical sample. The authors suggest that when hostile feelings become turned upon the self and are combined with a sense of being 'wrong' or 'different' to others, that this adopts the form of self-disgust. The study is limited by the small sample size ( $n=15$ ) meaning group comparisons are likely to be underpowered. As outlined previously, the study received a QualSyst rating of 0.55 (Kmet et al., 2004) due to other substantial methodological flaws and poor reporting of results.

#### **4. Discussion**

Despite the fact that research on self-disgust is in its infancy, a growing number of studies have highlighted an association between self-disgust and psychopathology. The quality of research and reporting of the studies included in this review was mixed with eight studies receiving a rating classified as strong ( $>.80$ ) and nine studies classified as adequate (.50-.70; Lee, Packer, Tang, & Girdler, 2008).



#### **4.1 Conceptualisation of self-disgust**

This review highlighted that self-disgust appears to be associated with a wide range of mental health disorders including: MDD, BDD, BPD, PTSD, OCD, NSSI and ED's. Self-disgust may therefore represent a trans-diagnostic construct that influences the development, course and maintenance of psychopathology. However, the majority of the studies in the review lacked a clear theoretical framework or operational definition of self-disgust. In theorising on the construct of self-disgust, Powell et al., (2015) have generated a trans-diagnostic framework to consider the impact of self-disgust across various disorders and characterise self-disgust as an enduring, dysfunctional emotion schema (see Figure 2).

Powell et al., (2015) suggest that the higher order content of the self-disgust schema involves a lasting appraisal of some feature of the self as repulsive. When triggered, this leads to emotional responses of disgust, congruent visceral physiological reactions (repulsion and nausea), disgust driven behavioural responses of avoidance and rejection, and a range of negative cognitions (e.g., 'my body is revolting', 'the way I act makes me feel sick'). The authors suggest that it is this specific disgust based cognitive-affective content that distinguishes self-disgust from potentially overlapping constructs such as self-hatred and contempt.

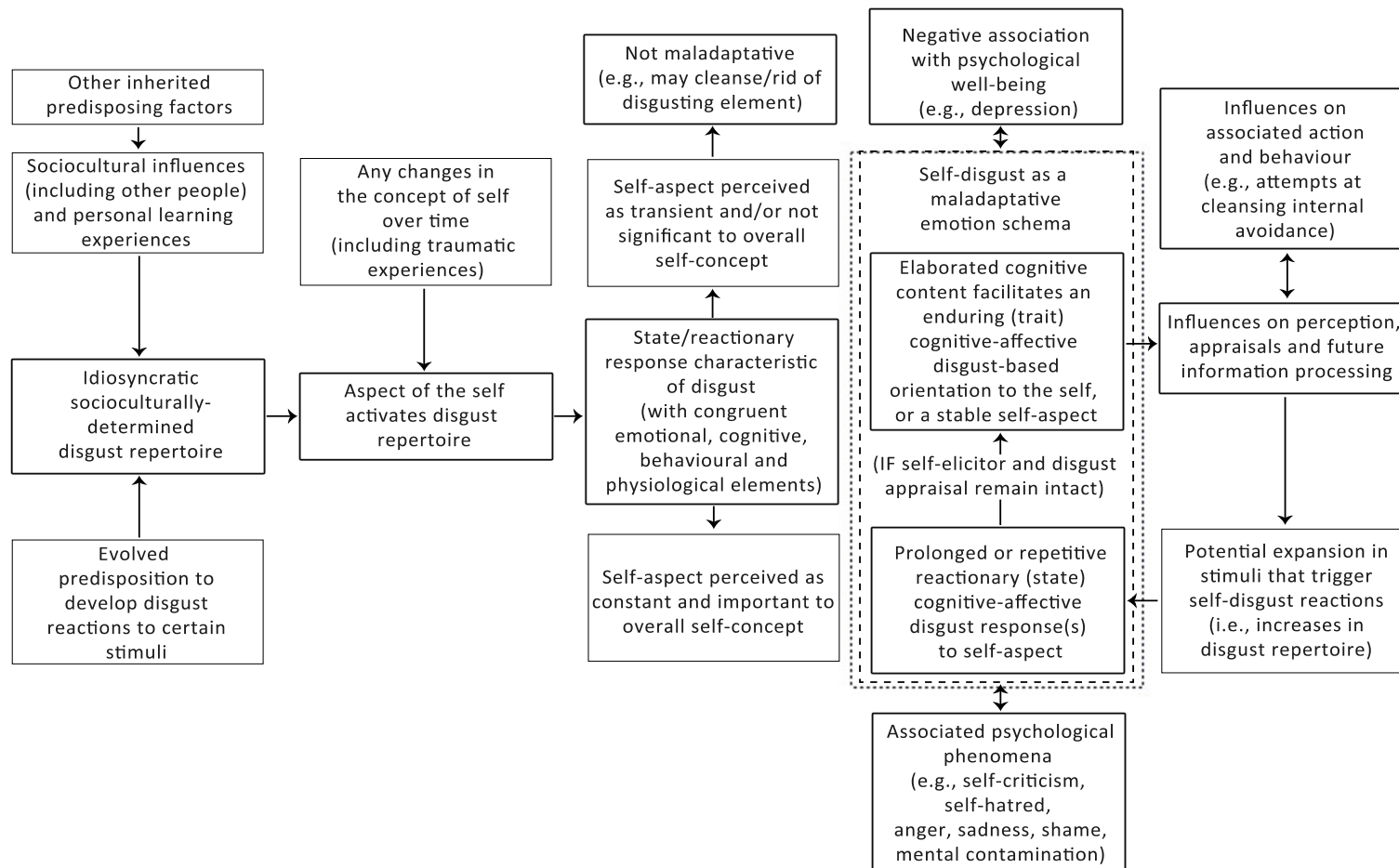


Figure 2 : Illustrative diagrammatic model of self-disgust as an emotion schema (Powell, Simpson & Overton, 2015)

As previously noted, the typical action tendency associated with disgust is avoidance and rejection (Rozin, Haidt, & McCauley, 1999), however these behaviours may be limited when the disgusting object is internal or part of the self, leaving the individual perpetually confronted with aspects of themselves which they find disgusting. This is thought to lead to a number of compensatory behavioural strategies such as avoiding touching or looking at oneself, masking aspects of the self that are deemed disgusting, and engaging in techniques to rid the self of one's revulsive attributes (Powell et al., 2015). Indeed, qualitative findings in the current review highlighted that patients with ED's often used avoidance as a strategy to manage self-disgust (e.g. avoidance of the body, food, physical closeness and sexuality; Espeset et al., 2012). The desire to expel ones revulsive attributes may also take the form of the purging behaviour that is commonly observed among patients with Bulimia or the excessive washing or neutralizing that is exhibited in OCD (Olatunji et al., 2015). Other authors in the review have argued that intolerable and inescapable feelings of self-disgust may trigger self-harming behaviours and suicidal thoughts (Abdul-Hamid et al., 2014; Chu et al., 2015; Smith et al., 2015).

The theoretical view of self-disgust as an enduring, emotion schema is consistent with longitudinal data in the current review, which highlighted the stability of self-disgust over time in predicting depression (Powell et al., 2013).

Moreover, ‘personal disgust’ (personality and appearance) was more pronounced than ‘behavioural disgust’ in a mixed clinical sample compared with controls (Ille et al., 2014) and was more important as a predictor of depression (Powell et al., 2013). This suggests that personal disgust may be more associated with psychopathology than behavioural disgust. This is consistent with the schematic view of self-disgust which is linked to a more intrinsic, enduring view of the self as an object of disgust, as disgust with one’s behaviour may be more easily appraised as transient or changeable.

Qualitative data further highlighted that self-disgust can be experienced as an enduring and persistent mood state but also as a more reactionary feeling in response to particular elicitors (Powell et al., 2013). Self-disgust may thus incorporate trait and state like components, which is consistent with a schematic view of self-disgust.

Self-disgust may operate on an implicit-automatic level outside of conscious awareness (Rüsch et al., 2011). This also fits with the schematic view of self-disgust which suggests that disgust reactions need not be conscious or appraisal driven but may alternatively involve other more automatic mechanisms, including associative and conditioning routes (Power & Dalgliesh, 2008). Interestingly, in the schematic model of self-disgust, the authors argue that when disgust directed at the self is perceived as transient and/or not significant to one’s overall self-concept, it can be

considered adaptive and that it is only when disgust is directed at an enduring or important part of the self that it is considered to be maladaptive. Indeed, in the present review self-disgust was found to be normally distributed in a non-clinical sample (Overton et al., 2008) suggesting that healthy individuals may exhibit mild levels of self-disgust.

## **4.2 Measurement of self-disgust**

In the current review, a large proportion of studies (11) assessed trait self-disgust via self-report using the Self-Disgust Scale (Overton et al., 2008) or the German equivalent of this scale (QASD; Schienle et al., 2014). Although the SDS has been shown to be reliable (Overton et al., 2008), the validity of the scale has not been firmly established. The SDS includes terms such as ‘hate’ and ‘dislike’, which are likely to tap into other negative self-directed constructs such as ‘self-hate’ and ‘self-criticism’. A recent qualitative study also concluded that the SDS does not cover some core aspects of self-disgust such as the visceral bodily sensations and certain behavioural consequences associated with self-disgust (Powell et al., 2014). This raises concerns as to the validity of these measures in capturing the construct of self-disgust and accordingly to the findings presented in this review. Recent attempts

have been made to modify the existing SDS in order to refine self-disgust as a primarily disgust based construct and to incorporate additional items to improve its face validity. A revised self-disgust scale has been developed (SDS-R), however the scale is awaiting psychometric evaluation (Powell et al., 2015).

#### **4.3 Gaps in the literature and directions for future research**

Only two qualitative studies were identified in the review investigating the role of self-disgust in psychopathology and only one of these focused explicitly on participants' experiences of self-disgust. Given that self-disgust is a relatively new construct in psychological research, and one that is conceptually similar to constructs such as shame and contempt, it seems pertinent to conduct further qualitative research to gain a richer, in-depth and nuanced understanding of the phenomenology of self-disgust. Powell et al's (2015) emotion schema model of self-disgust has been largely generated in the context of depression; further qualitative research may therefore help to shed light on how self-disgust may manifest differently across various disorders and accordingly, contribute to the development of a more refined, integrated theoretical framework for self-disgust. This in turn may help to inform and improve the psychometric assessment of self-disgust, as at present, there is a

lack of clarity regarding the theoretical framework that underpins existing self-disgust instruments.

In view of the limitations regarding the validity of current self-report instruments to assess self-disgust, it is imperative that future research utilises the latest, revised self-disgust scale (SDS-R) in order to improve the psychometric assessment of self-disgust (Powell et al., 2015). The continued use of the SDS or QASD may be serving to add to the confusion and ambiguity surrounding the self-disgust construct. Additional comparisons between the SDS and SDS-R may be necessary to gauge whether the SDS-R represents a definitive and worthwhile improvement.

Future research would benefit from combining both explicit and implicit measures of self-disgust to ascertain the strength of the association between the different measurement tools. One study identified that self-disgust can operate on an unconscious level outside of awareness (Rüsch et al., 2011). As such, self-report tools alone may be limited in assessing the construct of self-disgust. Self-report instruments could be complemented with more implicit measures of self-disgust including IAT's, affective priming tasks and psychophysiological indicators associated with disgust such as heart rate, skin temperature and muscle tension (Hickey, 2009). In addition, it may be of interest to determine the association

between trait and state levels of self-disgust (e.g. assessed via visual analogue scales) as the majority of papers included in the review explored trait levels of self-disgust using psychometric instruments. This may help to support the assertion that self-disgust represents an emotion schematic construct comprised of both trait and state like components.

The current evidence is limited by the largely cross-sectional, correlational designs employed, which limits the ability to make causal inferences about the association between self-disgust and psychopathology. Future longitudinal designs may help to establish the role of self-disgust in predicting other mental health conditions over time. Given the early stages of empirical research into self-disgust, the majority of studies have utilised non-clinical samples which may have limited the strength of the associations between self-disgust and various psychopathologies. Further research using clinical samples is necessary to elucidate the prevalence and role of self-disgust across various mental health disorders. For example, as more quantitative data is accumulated, a meta-analytic study could estimate the strength of the association between self-disgust and psychopathology (by focusing on psychopathologies considered to involve high levels of self-disgust such as MDD, BPD and EDs). This may help to provide more robust evidence for the relationship between self-disgust and psychopathology.



The current review highlighted mixed findings in relation to the association between childhood maltreatment and self-disgust. This is most likely due to the various ways in which self-disgust and childhood abuse have been operationalised and measured, and/or the varying sample sizes utilised. In order to develop effective and appropriate interventions, it is important to understand the aetiological factors that may lead to the development of a self-disgust based schema. Further research could consider investigating not only sexual and physical abuse, but other forms of emotional abuse and parenting practices as potentially relevant to the emergence of a disgust-based emotion schema. For example, childhood neglect and emotional abuse have been largely implicated in the emergence of high levels of shame proneness and associated psychopathology (Bennett, Sullivan & Lewis, 2010; Shahar, Doron & Szepeswol, 2015). Given their over-lapping nature, it seems plausible that self-disgust may also be related to childhood experiences of emotional abuse and neglect.

#### **4.4 Clinical Implications**

The evidence emerging from the current review suggests that self-disgust may be a characteristic feature of a range of mental health problems. Indeed, a number of authors have called for the refined assessment of self-disgust, arguing that it should be introduced as a diagnostic tool for BPD (Schienle, et al., 2013) and

MDD (Zahn et al., 2015). A therapeutic awareness of self-disgust as a potential cognitive-affective phenomenon may therefore prove beneficial. Other authors have underlined the importance of developing appropriate therapeutic interventions for reducing feelings of self-disgust, particularly as severe forms of self-disgust may be associated with self-harming behaviour (Abdul-Hamid et al., 2014; Smith et al., 2015) and a risk factor for suicidal ideation (Chu et al., 2015).

A small number of studies have investigated interventions for reducing feelings of self-disgust. For example, exposure based interventions such as mirror confrontation with one's own body (which is often an object of disgust) and desensitisation procedures have been successfully used in Dialectical Behaviour Therapy with BPD patients (Bohus et al., 2004). Cognitive behavioural approaches have also been applied to address self-disgust across various disorders including OCD and Body Dysmorphia (Veale, 2015). However, it has been argued that disgust may not respond to behavioural interventions as readily as other emotional states such as anxiety (McKay, 2006) and there may be fewer cognitions accessible for direct targeting via cognitive therapy (McKay & Olatunji, 2010). Accordingly, mindfulness based techniques have been adopted to help normalise feelings of self-disgust (Reynolds et al., 2015) and imagery modification techniques have been used

to augment cognitive restructuring when treating individuals with persistent feelings of disgust following childhood sexual abuse (Jung & Steil, 2012).

#### **4.5 Limitations of the review**

The current review has a number of limitations. The first related to the lack of an operational definition of self-disgust at the time of conducting the review, which influenced the application of the inclusion/exclusion criteria. It was therefore a somewhat subjective process for the author to determine whether certain studies assessed 'self-disgust'. For example, although the study by Neziroglu et al., (2010) was included in the review, they investigated disgust specifically in relation to aspects of one's body. While this may be considered a form of 'self-disgust'; this may not fit with the recent conceptualisation of 'self-disgust' as an emotion schema whereby an individual experiences an enduring and pervasive sense of self-disgust. Future reviews may benefit from specifying an operational definition of self-disgust to help determine the inclusion and exclusion criteria. In addition, inter-rater reliability checks were not performed in order to reach a consensus regarding the quality appraisal of relevant studies, which may have led to bias in the review.

## **4.6 Conclusion**

In summary, self-disgust appears to be associated with a wide range of mental health disorders and particularly with ED's, BPD, and MDD. The evidence is limited by the relatively small number of studies conducted and by the use of largely non-clinical samples and cross-sectional correlation designs. Before further research advances, issues concerning the conceptual and operational aspects of self-disgust need to be addressed so that instruments can be improved and refined and questions concerning mediating role and mechanisms of action can be investigated.

## 5. References

- Abdul-Hamid, S., Denman, C., & Dudas, R. B. (2014). Self-relevant disgust and self-harm urges in patients with borderline personality disorder and depression: A pilot study with a newly designed psychological challenge. *PLoS ONE*, 9 (6).
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. Washington, D.C: American Psychiatric Association.
- Bachtelle, S. E., & Pepper, C. M. (2015). The physical results of non-suicidal self-injury: the meaning behind the scars. *The Journal of nervous and mental disease*, 203(12), 927-933.
- Badour, C. L. & Adams, T. G. (2015). Contaminated by Trauma: understanding the links between self-disgust, mental contamination and post-traumatic stress disorder. In: P. A. Powell, P. G. Overton & J. Simpson (Eds.), *The Revolting Self: Perspectives on the psychological, social and clinical implications of self directed disgust* (127–151). London: Karnac.
- Badour, C. L., Ojserkis, R., McKay, D., & Feldner, M. T. (2014). Disgust as a unique affective predictor of mental contamination following sexual trauma. *Journal of anxiety disorders*, 28, 704-711.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Beck, A. T., Kovacs, M., & Weissman, A. (1979). Assessment of suicidal intention: The Scale for Suicide Ideation. *Journal of Consulting and Clinical Psychology*, 47, 343–352.
- Bennett, D. S., Sullivan, M. W., & Lewis, M. (2010). Neglected Children, Shame-proneness, and Depressive Symptoms. *Child Maltreat*, 15, (4), 305–314.

- Bohus, M., Haaf, B., Simms, T., Limberger, M. F., Schmahl, C., Unckel, C., Lieb, K., Linehan, M. M. (2004) Effectiveness of inpatient dialectical behavioral therapy for borderline personality disorder: a controlled trial. *Behav Res Ther*, 42, (5), 487-99.
- Bohus, M., Kleindienst, N., Limberger, M. F., Stieglitz, R. D., Domsalla, M., Chapman, A. L., Steil, R., Philipsen, A., Wolf, M. (2009) The short version of the Borderline Symptom List (BSL-23): Development and initial data on psychometric properties. *Psychopathology*, 42, 32-39.
- Borg, J. S., Lieberman, D., & Kiehl, K. A. (2008). Infection, incest, and iniquity: Investigating the neural correlates of disgust and morality. *Journal of cognitive neuroscience*, 20(9), 1529-1546.
- Chapman, H. A., & Anderson, A. K. (2013). Things rank and gross in nature: a review and synthesis of moral disgust. *Psychological Bulletin*, 139, 300-327.
- Chapman, H. A., Kim, D. A., Susskind, J. M., & Anderson, A. K. (2009). In bad taste: evidence for the oral origins of moral disgust. *Science*, 323, 1222-1226.
- Cho, M. K., & Bero, L. A. (1994). Instruments for assessing the quality of drug studies published in the medical literature. *Journal of the American Medical Association*, 272, (2), 101-104.
- Chu, C., Bodell, L. P., Ribeiro, J. D., & Joiner, T. E. (2015). Eating disorder symptoms and suicidal ideation: The moderating role of disgust. *European Eating Disorders Review*, 23, 545-552.
- Cisler, J. M., Olatunji, B. O., & Lohr, J. M. (2009). Disgust, fear, and the anxiety disorders: a critical review. *Clinical Psychology Review*, 29, 34-46.
- Clark, J. A. (2010) Relations of homology between higher cognitive emotions and basic emotions. *Biology and Philosophy*, 25, 75-94.
- Clark, J. A. (2015). Digging disgust out of the dumpster: a neuropsychological defence of self and other directed disgust as a moral virtue. In: P. A. Powell, P. G. Overton & J. Simpson (Eds.), *The Revolting Self: Perspectives on the*

*psychological, social and clinical implications of self directed disgust* (25–53). London: Karnac.

Consedine, N. S., & Magai, C. (2003). Attachment and emotion experience in later life: The view from emotions theory. *Attachment & Human Development*, (5), 165–187.

Corbin, J., & Strauss, A. (2008). *The basics of qualitative research* (3rd ed.) Los Angeles, CA: Sage.

Derogatis, L. R. (1993). Brief Symptom Inventory (BSI) administration, scoring, and procedures manual Minneapolis, NCS Pearson. *The Irish Journal of Psychology*, 59.

Eskine, K. J., Novreske, A., & Richards, M. (2013). Moral contagion effects in everyday interpersonal encounters. *Journal of Experimental Social Psychology*, 49, 947-950.

Espeset, E. M. S., Gulliksen, K. S., Nordbo, R. H. S., Skarderud, F., & Holte, A. (2012). The link between negative emotions and eating disorder behaviour in patients with anorexia nervosa. *European Eating disorders Review*, 20, 451-460.

Garner, D. M., Olmstead, M. P., & Polivy, J. (1983). Development and validation of a multi-dimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders*, (2), 15–34.

Green, S., Moll, J., Deakin, J. F. W., Hulleman, J., & Zahn, R. (2013). Proneness to decreased negative emotions in major depressive disorder when blaming others rather than oneself. *Psychopathology*, 46, 34-44.

Haidt, J., McCauley, C., & Rozin, P. (1994). Individual differences in sensitivity to disgust: A scale sampling seven domains of disgust elicitors. *Journal of Personal and Individual Differences*, 16, 701–713.

Haidt, J., Rozin, P., McCauley, C., & Imada, S. (1997). Body, psyche, and culture: the relationship between disgust and morality. *Psychology and Developing Societies*, 9, (1), 107-131.

- Hodson, G., & Costello, K. (2007) Interpersonal disgust, ideological orientations, and dehumanization as predictors of in-group attitudes. *Psychological Science*, 18, 691-698.
- Ille, R., Schoggl, H., Kapfhammer, H. P., Arendasy, M., Sommer, M., & Schienle, A. (2014). Self-disgust in mental disorders: symptom related or disorder specific? *Comprehensive psychiatry*, 4, 938-43.
- Ivan, C, E. (2015). On Disgust and Moral Judgments: A Review. *Journal of European Psychology Students*, 6, (1), 25-36.
- Izard, C. E. (2007). Basic emotions, natural kinds, emotion schemas, and a new paradigm. *Perspectives on Psychological Science*, 3, (2), 260-280.
- Jung, K., & Steil, R. (2012). The feeling of being contaminated in adult survivors of childhood sexual abuse and its treatment via a two session program of cognitive restructuring and imagery modification: a case study. *Behaviour Modification*, 36, (1), 67-86.
- Kmet, L.M., Lee, R.C., & Cook, L.S. (2004). *Standard quality assessment criteria for evaluating primary research papers from a variety of fields*. Alberta Heritage Foundation for Medical Research. Retrieved from: <http://www.ihe.ca/documents/HTA-FR13.pdf>
- Lee, L., Packer, T. L., Tang, S. H., & Girdler, S. (2008). Self-management education programs for age-related macular degeneration: A systematic review. *Australasian Journal on Ageing*, 27, (4), 170-176.
- Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological Methods*, 12, (1), 23-44.
- Mayr, E. and Tax, S. (1960). The emergence of evolutionary novelties In: Tax, S. Ed. *Evolution after Darwin: Vol. 1. The evolution of life*. Chicago, IL: University of Chicago Press, 349–380.
- Mays, N., & Pope, C. (2007). Quality in qualitative health research. *Qualitative Research in Health Care, Third Edition*, 82-101.



- McKay, D. (2006). Treating disgust reactions in contamination-based obsessive compulsive disorder. *Journal of Behaviour Therapy and Experimental Psychiatry*, 37, (1), 53-59.
- McKay, D., & Olatunji, B. O. (2010). Disgust and psychopathology: Introduction to part II of the special series. *International Journal of Cognitive Therapy*, 3, (1), 1-2.
- Moncrieff-Boyd, J., Byrne, S., & Nunn, K. (2013). Disgust and anorexia nervosa: confusion between self and non-self. *Advances in Eating Disorders. Theory, Research and Practice*, 2, (1), 4 – 18.
- Nemeroff, C., & Cavanaugh, C. J. (1999). The ethics of emaciation: moral connotations of the body, self, and diet. In: M. Siegal & C. C. Peterson (Eds.), *Children's understanding of Biology and Health* (183-206). New York: Cambridge University Press.
- Neziroglu, F., Hickey, M., & McKay, D. (2010). Psychophysiological and self-report components of disgust in body-dysmorphic disorder: the effects of repeated exposure. *International Journal of Cognitive Therapy*, 3, (1), 40-51.
- Olatunji, B. O., Cox, R., & Kim, E. H. (2015). Self-Disgust Mediates the Association Between Shame and Symptoms of Bulimia and Obsessive-Compulsive Disorder. *Journal of Social and Clinical Psychology*: 34, (3), 239-258.
- Olatunji, B. O., David, B., & Ciesielski, B. G. (2012). Who am I to judge? Self-disgust predicts less punishment of severe transgressions. *Emotion*, 12, (1), 169-173.
- Olatunji, B.O., & McKay, D. (2007). Disgust and psychiatric illness: have we remembered? *British Journal of Psychiatry*, 190, (6), 457-459.
- Olatunji, B. O., & Sawchuck, C. N. (2005). Disgust: characteristic features, social manifestations, and clinical implications. *Journal of Social and Clinical Psychology*, 24, (7), 932-962.

- Olatunji, B. O., Williams, N. L., Tolin, D. F., Abramowitz, J. S., Sawchuk, C. N., Lohr, J. M., & Elwood, L. S. (2007). The disgust scale: item analysis, factor structure, and suggestions for refinement. *Psychological Assessment*, 19, (3), 281-297.
- Overton, P. G., Markland, F. E., Taggart, H. S., Bagshaw, G. L., & Simpson, J. (2008). Self-disgust mediates the relationship between dysfunctional cognitions and depressive symptomatology. *Emotion*, 8, (3), 379-385.
- Popay, J., Rogers, A., & Williams, G. (1998). Rationale and standards for the systematic review of qualitative literature in health services research. *Qualitative health research*, 8(3), 341-351.
- Powell, P. A., Overton, P. G., & Simpson, J. (2014). The revolting self: An interpretative phenomenological analysis of the experience of self-disgust in females with depressive symptoms. *Journal of Clinical Psychology*, 70, (6), 562-578.
- Powell, P., Simpson, J., & Overton, P. (2013). When disgust leads to dysphoria: a three-wave longitudinal study assessing the temporal relationship between self-disgust and depressive symptoms. *Cognition and Emotion*, 27, (5), 900-913.
- Powell, P., A., Simpson, J., & Overton, P, G. (2015) An introduction to the revolting self: self-disgust as an emotion schema. In: P. A. Powell, P. G. Overton & J. Simpson (Eds.), *The Revolting Self: Perspectives on the psychological, social and clinical implications of self directed disgust* (1 – 25). London: Karnac.
- Power, M, J., & Dalgleish, T. (2008). *Cognition and Emotion: From Order to Disorder* (2<sup>nd</sup> edn.). Hove: Psychology Press.
- Power, M, J., & Dalgleish, T. (2016). *Cognition and Emotion: From Order to Disorder* (3<sup>rd</sup> edn.). Hove: Psychology Press.
- Pyszczynski, T., Greenberg, J., & Solomon, S. (1999). A dual process model of defense against conscious and unconscious death-related thoughts: an extension of terror management theory. *Psychological Review*, 106, (4), 835-845.

- Reeve, D. (2015). Disgust and self-disgust: a disability studies perspective. In: P. A. Powell, P. G. Overton & J. Simpson (Eds.), *The Revolting Self: Perspectives on the psychological, social and clinical implications of self directed disgust* (53 – 75). London: Karnac.
- Reynolds, L. M., McCambridge, S. A., Bissett, I. P., & Consedine, N. S. (2014). Trait and state disgust: an experimental investigation of disgust and avoidance in colorectal cancer decision scenarios. *Health Psychology*, 33, (12), 1495-1506.
- Reynolds, L. M., McCambridge, S. A., & Consedine, N. S. (2015). Self-disgust and adaptation to chronic physical health conditions: implications for avoidance and withdrawal. In: P. A. Powell, P. G. Overton & J. Simpson. (Eds.), *The Revolting Self: Perspectives on the psychological, social and clinical implications of self directed disgust* (75- 89). London: Karnac.
- Ribeiro, J. D., Bodell, L., & Joiner, T. E. (2012). *Disgust with self, others, and world in suicidality*. Poster Presented at the 46th Annual Meeting of the Association for Behavioral and Cognitive Therapies, National Harbor, MD.
- Roberts, T. A., & Goldenberg, J. L. (2007). Wrestling with nature: an existential perspective on the body and gender in self-conscious emotions. In: J. L. Tracy, R. W. Robins, & J.P. Tangney (Eds.), *The Self-Conscious Emotions: Theory and Research* (389-406). New York: Guilford Press.
- Rozin, P., Haidt, J., & McCauley, C. R. (2000) Disgust. In: M. Lewis & J. Haviland-Jones (Eds.), *Handbook of Emotions* (2<sup>nd</sup> edn., 637-653). New York: Guilford Press.
- Rozin, P., Haidt, J., & McCauley, C. R. (2008). Disgust. In: M. Lewis & J. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of Emotions* (3<sup>rd</sup> edn, 757-766). New York: Guilford Press.
- Rozin, P., Markwith, M., & McCauley, C. (1994). Sensitivity to indirect contacts with other persons: aids aversion as a composite of aversion to strangers, infection, moral taint, and misfortune. *Journal of Abnormal Psychology*, 103, (3), 495-505.

- Rüsch, N., Schulz, D., Valerius, G., Steil, R., Bohus, M., Schmahl, C. (2011). Disgust and implicit self-concept in women with posttraumatic stress disorder and border-line personality disorder. *Eur. Arch. Psychiatry Clin. Neurosci.*, 261, (5), 369–376.
- Scherer, K. R., & Wallbott, H. G. (1994). Evidence for universality and cultural variation of differential emotion response patterning. *Journal of Personality and Social Psychology*, 66, (2), 310-328.
- Schienle, A., Haas-Krammer, A., Schoggl, H., Kapfhammer, H. P., Ille, R. (2013). Altered state and trait disgust in borderline personality disorder. *J Nerv Ment Dis.* 201, (2), 105-8.
- Schienle, A., Ille, R., Sommer, M., Arendasy, M. (2014). Diagnostik von Selbstekel im Rahmen der Depression. *Verhaltenstherapie* 24, (1), 15–20.
- Schienle, A., Leutgeb, V., Wabnegger, A. (2015). Symptom severity and disgust-related traits in borderline personality disorder: The role of amygdala subdivisions. *Psychiatry Research: Neuroimaging*, 232, (3): 203-207.
- Schienle, A., Wabnegger, A., Schöngassner, F., & Leutgeb, V. (2015). Effects of personal space intrusion in affective contexts: an fMRI investigation with women suffering from borderline personality disorder. *Social cognitive and affective neuroscience*, 10(10), 1424-1428.
- Shahar, B., Doron, G., & Szepeswol, O. (2015) Childhood Maltreatment, Shame Proneness and Self-Criticism in Social Anxiety Disorder: A Sequential Mediation Model. *Clinical Psychology & Psychotherapy*, 22, (6), 570 – 579.
- Simpson, J., Hillman, R., Crawford, T., & Overton, P. G. (2010). Self-esteem and self-disgust both mediate the relationship between dysfunctional cognitions and depressive symptoms. *Motivation and Emotion*, 34, (4), 399-406.
- Smith, N. B., Steele, A. M., Weitzman, M. L., Trueba, A. F., & Meuret, A. E. (2015). Investigating the Role of Self-Disgust in Non-suicidal Self-Injury. *Archives of Suicide Research*, 19, (1), 60–74.

- Thalheimer, W., & Cook, S. (2002). How to calculate effect sizes from published research: A simplified methodology. *Work-Learning Research*, 1-9.
- Timmer, A., Sutherland, L. R., & Hilsden, R. J. (2003). Development and evaluation of a quality score for abstracts. *BMC Medical Research Methodology*, 3, (2).
- Tracy, J. L., Robins, R. W., & Schriber, R. A. (2009). Development of a FACS verified set of basic and self-conscious emotion expressions. *Emotion*, 9, (4), 554-559.
- Tybur, J. M., Lieberman, D., & Griskevicius, V. (2009). Microbes, mating, and morality: individual differences in three functional domains of disgust. *Journal of Personality and Social Psychology*, 97, (1), 103-122.
- Veale, D. (2015) Treating Disgust Across the Disorders. Irish Association for Behavioural and Cognitive Psychotherapies. Training Workshop Poster. Retrieved from: [babcp.com/files/Branch/IABCP/IABCP115-Disgust-reg-form.doc](http://babcp.com/files/Branch/IABCP/IABCP115-Disgust-reg-form.doc)
- Vrana, S. R. (1994). Startle reflex response during sensory modality specific disgust, anger, and neutral imager. *Journal of Psychophysiology*, 8, 211-218.
- Yardley, L. (2008). Demonstrating validity in qualitative psychology. *Qualitative psychology: A practical guide to research methods*, 2, 235-251.
- Yartz, A. R., & Hawk, L. W. (2002). Addressing the specificity of affective startle modulation: fear versus disgust. *Biological Psychology*, 59, 55-68.

## **Part 2: Empirical Paper**

### **Self-disgust in personality disorders:**

**The role of childhood abuse and trauma, emotional invalidation and shame.**

## **Abstract**

**Aim:** Research suggests that self-disgust is associated with various forms of psychopathology, including BPD. However, no studies have explored whether self-disgust is elevated in a general sample of personality disorders (PD's). The aim of the current study was to examine the predictors of self-disgust among those who screen positive for PD using a new self-disgust scale.

**Method:** A cross-sectional, online questionnaire design was used. Of the participants, 58% screened positive for PD (n=188) and 42% (n=133) screened negative according to a brief PD screening tool.

**Results:** Self-disgust was elevated in those who screened positive for PD. Childhood abuse and trauma, and shame predicted self-disgust, when controlling for gender and emotional invalidation. The association between childhood abuse and self-disgust was mediated by shame, and self-disgust mediated the relationship between childhood abuse and PD status score.

**Conclusions:** Self-disgust may play an important role in PD's and require targeted therapeutic interventions. Childhood abuse may lead to the development of shame, which in turn leads to self-disgust. The high instances of childhood abuse and trauma in PD may account for the increased incidence of self-disgust in this clinical group.

## **1. Introduction**

Over the last ten years, there has been a burgeoning interest in the empirical investigation of self-disgust and its role in various forms of psychopathology. Self-disgust is a distressing emotional experience associated with among others, Major Depressive Disorder, (MDD), Borderline Personality Disorder (BPD), Post-Traumatic Stress Disorder (PTSD), and Eating Disorders (ED's) (for a review, see Drea, 2016). Moreover, self-disgust has been shown to be a risk factor for Non-Suicidal Self-Injury (NSSI; Smith, Steele, Weitzman, Trueba, & Meuret, 2015) and suicidal ideation (Chu, Bodell, Ribeiro, & Joiner, 2015).

Despite increasing clinical interest in the role of self-disgust in mental health disorders, considerable ambiguity exists regarding the conceptualisation of self-disgust. For example, self-disgust has often been referred to in the literature as a synonym for self-hate and contempt (Green, Moll, Deakin, Hulleman, & Zahn, 2013) however, it has been argued that it is possible for individuals to dislike or hate aspects of themselves and be self-critical, without experiencing a self-disgust reaction (Gilbert, Clarke, Hempel, Miles & Irons, 2004). Moreover, it has been demonstrated empirically that disgust and contempt can be separated on a range of criteria including their discrete physiological and neurological profiles (Simpson, Hillman, Crawford, & Overton, 2010). Self-disgust has similarly been strongly



associated with shame, however, disgust and shame are emotions which have been shown to vary independently (Consedine & Magai, 2003) and are accompanied by different facial expressions and physiological responses (Tracy, Robins, & Schriber, 2009; Scherer & Wallbott, 1994). The empirical distinctions between disgust, shame and hate suggest that when disgust is directed at the self, the emotion involved, self-disgust, is a unique psychological phenomenon. In view of the lack of clarification surrounding the self-disgust construct, Powell, Simpson & Overton (2015) recently outlined a conceptual framework for self-disgust as a distinct cognitive-affective construct, or emotion schema. The authors suggest that self-disgust involves an enduring appraisal of some feature of the self as repulsive, which when triggered leads to emotional responses of disgust, congruent physiological (repulsion and nausea) and behavioural responses (avoidance and rejection), and a range of negative cognitions (e.g., ‘my body is revolting’).

The most widely used psychometric scale for assessing self-disgust is the Self-Disgust Scale (SDS; Overton, Markland, Taggart, Bagshaw, & Simpson, 2008). However, due to problems with the validity of the scale, it’s overlap with closely related but distinct constructs such as ‘self-hate’ and ‘self-dislike’, and it’s failure to capture the visceral bodily sensations that are considered central to the experience of disgust; a revised version of the scale has been developed (The Self-Disgust Scale

Revised, SDS-R; Powell, Overton & Simpson, 2015). Preliminary analysis of the SDS-R on a non-clinical sample revealed a three factor structure including physical disgust, behavioural disgust and general disgust and the scale was shown to be highly internally consistent ( $\alpha = .92$ ). The SDS-R may therefore represent a more valid assessment tool for self-disgust, however, further exploration of the psychometric properties of the scale using clinical samples is necessary.

There are currently limited therapeutic interventions designed for working with self-disgust. It has been argued that beliefs associated with disgust are often inaccessible and that disgust reactions are either resistant to treatment or less amenable to exposure techniques (Mason & Richardson, 2012; McKay, 2006). Nonetheless, cognitive restructuring, combined with imagery modification techniques have demonstrated promising results for reducing feelings of self-disgust in a relatively short number of sessions (Jung & Steil, 2012; Wilson, Veale & Freeston, 2016). Mindfulness and compassionate mind approaches have additionally been applied in order to regulate the threat system for disgust with promising findings (Powell, Simpson & Overton, 2015; Reynolds, McCambridge & Consedine, 2014; Krawitz, 2012).

## **1.1 Personality Disorders**

Personality Disorders are associated with impaired social functioning; high rates of mental disorder and are relatively common within NHS mental health settings with a prevalence of approximately 20 – 29% in primary care settings (Moran, Jenkins, Tylee, Blizard, & Mann, 2000) and up to 60 – 80% in forensic settings (Blackburn, Crellin, Morgan & Tulloch, 1990). Individuals with BPD require more treatment services than patients with other personality disorders (Bender et al., 2001) and BPD is therefore regarded as one of the most expensive mental health disorders to treat (Soeteman, Hakkaart-van Roijen, Verheul, & Busschbach, 2008).

There are well-established associations between a reported history of childhood sexual, physical or emotional abuse and the development of personality disorders including Avoidant PD (Yen et al., 2002), Antisocial PD (Luntz & Widom, 1994) and BPD (Sansone, Gaither & Songer, 2002; Trull, 2001). Up to 91% of individuals with a BPD diagnoses report experiencing some form of childhood abuse (Zanarini, Williams & Lewis, 1997). When exploring the distinct impacts of trauma in BPD, emotional abuse and neglect have been shown to be the most significant predictors of BPD (Bierer et al., 2003). Low levels of parental affection and nurturing, and aversive parental behaviours, such as harsh punishment have also been shown to predict BPD as well as antisocial, avoidant and paranoid PD

(Johnson, Cohen, Chen, Kasen, & Brook, 2006). Regarding the relationship between childhood sexual abuse and BPD, there is on-going controversy; however there does seem to be some agreement that CSA is a risk factor for BPD (Katerndahl et al., 2005; McLean & Gallop, 2003).

## **1.2 Self-disgust in Personality Disorders**

To date, the clinical literature linking self-disgust with Personality Disorders has only been investigated in Borderline Personality Disorder (BPD). Clients with BPD frequently report intense experiences of chronic self-hating, self-disgust and self-contempt. Such experiences are thought to be characterised by deep feelings of self-disgust and revulsion, and a pervasive sense of shame which may involve the individual referring to the self as an animal (pig), as offensive matter (scum) or as deserving punishment (Krawitz, 2012). A number of empirical studies indicate that self-disgust may be a particularly salient emotion in BPD. Patients with BPD demonstrated the highest levels of self-reported self-disgust, relative to a number of other clinical groups (depression, eating disorders and schizophrenia; Ille et al., 2014). The self-concept of women with BPD has also been shown to be more strongly associated with disgust relative to controls using an implicit association test (Rüsch et al., 2011). A BPD sample was additionally shown to have heightened self-

disgust relative to a depressed control group, and this was associated with increased probability of self-harm (Abdul-Hamid, Denman & Dudas, 2014). While a minority of studies have identified a link between self-disgust and BPD, no studies to date have explored whether self-disgust is elevated in PD's more generally. Self-disgust has been defined as an emotion based schema (Powell et al., 2015) and is associated with a general sense of the self as an object of disgust. People with a PD are thought to have more enduring and stable disturbances in their sense of self and therefore may be particularly susceptible to the development of maladaptive self-disgust.

### **1.3 Predictors of self-disgust in PD**

Power & Dagleish (2016) suggest that factors such as culture, religion and the views of significant others may influence the turning of disgust towards the self. Consistent with a schematic view of self-disgust, the authors have hypothesised that feelings of self-disgust may develop during childhood, as disgust-based disapproval is utilised by caregivers to socialize the child to permitted activities and behaviour. Qualitative data in the current review lends support to this theory as participants' indicated that feelings of self-disgust tended to emerge between childhood and adolescence and that disgust-based criticism from significant family members played a significant role in the emergence of feelings of self-disgust (Powell, Overton &

Simpson, 2014).

### *Childhood Abuse and Trauma*

A handful of empirical studies have explored the associations between childhood abuse and trauma and self-disgust, revealing a mixed pattern of findings. In unpublished work, Powell, Simpson & Overton (2015) reported a moderate association ( $r = .42$ ) between the Self Disgust Scale (Overton et al., 2008) and the Child Abuse and Trauma Scale (CATS; Sanders & Becker-Lausen, 1995) in a non-clinical sample. With regards to the association between sexual abuse and self-disgust, a small but significant association was reported in a non-clinical sample ( $r = .15$ ,  $p < .001$ ; Smith et al., 2015) and in a mixed clinical sample; those who experienced physical and/or sexual abuse during childhood reported significantly more self-disgust than those who did not (Ille et al., 2014). However, two further studies using clinical samples found no evidence of an association between sexual abuse (or physical disgust) and self-disgust (Rüsch et al., 2011; Schienle, Haas-Krammer, Schoggl, Kapfhammer, & Ille, 2013).

Qualitative data indicates that self-reports of disgust are common among victims of sexual assault who frequently report disgust in relation to fluids associated with traumatic events, or to their own body (Isac & Schneider, 1992; Rahm, Renck & Rinsberg, 2006). A facial coding study also indicated that women recalling

instances of childhood sexual abuse (CSA) displayed heightened facial expressions of disgust and that these expressions of disgust were more pronounced when sexual abuse was accompanied by violence (Bonanno et al., 2002). This suggests that childhood sexual abuse may be implicated in the development of self-disgust.

The current evidence regarding the link between childhood abuse and trauma and self-disgust remains inconclusive. Studies have utilised small sample sizes and have tended to focus on physical and sexual abuse (at times combining the two) while failing to explore the association between emotional abuse/ neglect and self-disgust. The increased incidence of self-disgust among individuals with BPD may be accounted for by the evidenced link between childhood maltreatment and BPD and it is of clinical interest to determine which forms of childhood abuse and trauma may predict self-disgust in a wider PD sample.

### *Childhood Emotional Invalidation*

According to Linehan's biosocial model (1993), people with BPD may have been exposed to an early 'invalidating environment', which is considered a significant risk factor for the development of the disorder. The theory suggests that children who have a biological vulnerability to experience intense emotions, and who have had their emotions pervasively invalidated, develop difficulties regulating

their emotions. Invalidating parental behaviours can include distress reactions (becoming angry, anxious, or upset when the child expresses negative affect), punitive reactions (punishing the child), and minimisation reactions (devaluing or trivializing the child's reactions) (Sauer & Baer, 2010). Childhood emotional invalidation has been associated with the development of adult psychological distress (Krause, Mendelson & Lynch, 2003), depression (Valentin et al., 2015) and eating disorders (Mountford, Corstorphine, Tomlinson & Waller, 2007) and is common in the early experience of individuals with personality disorders. It is possible that the higher levels of self-disgust in BPD may be accounted for by greater exposure to an invalidating environment. For example, McGinn & Young (1996) speculate that self-hatred, self-blame and self-disgust are common in BPD and that this is related to early experiences with parents who punished the child for expressing feelings and needs. It is therefore plausible that childhood emotional invalidation may predict self-disgust in a PD sample.

### *Shame*

Self-disgust is closely linked to the self-conscious emotion of shame, though they are considered empirically separable constructs in terms of their unique physiological and facial expression profiles (Consedine & Magai, 2003; Scherer &



Wallbott, 1994; Tracy et al., 2009). Previous research has explored the correlation between self-disgust (SDS, Overton et al., 2008) and shame (OAS; Other as Shamer Scale; Goss, Gilbert & Allan 1994) and found a moderately strong positive association ( $r=.50$ ) suggesting that they are closely related yet distinct constructs (Olatunji, Cox & Kim, 2015). Children are considered to have a capacity to experience shame by around age two (Lansky & Morrison, 1997), while self-disgust is thought to emerge later on in development. It has been proposed that shame may lead to the experience of self-disgust, which may then influence the development of some disorders (Power & Dalgleish, 1997). Indeed a recent cross-sectional study finds that self-disgust mediated the relationship between shame and bulimia symptoms (Olatunji, Cox & Kim, 2015). It is therefore plausible that a tendency to experience shame might be a predictive factor in the development of self-disgust.

#### **1.4 Focus of current study**

A small number of studies have demonstrated heightened self-disgust in a range of mental health disorders including BPD however, no studies to date have investigated the relevance of self-disgust in PDs more generally. The majority of studies conducted have utilised an existing self-disgust scale (SDS) that has poor face validity and likely taps into overlapping, but related constructs such as self-hate

and self-dislike. The current review therefore aims to compare rates of self-disgust between a large clinical sample who screen positive for PD and a community control sample using a revised self-disgust scale (the SDS-R).

Moreover, little is known about the factors that might predict self-disgust in a PD sample. The high instances of childhood abuse and emotional invalidation in clients with PD may represent risk factors for the development of self-disgust. The study therefore additionally aimed to determine whether childhood abuse and trauma, childhood emotional invalidation and/or shame predict self-disgust in those at high risk of PD. The study also aimed to control for the effects of gender as it has been reported that women display higher levels of self-disgust (Ille et al., 2014) and disgust sensitivity than men (Power & Dalgleish, 2016; Marzillier & Davey, 2004).

The current study addressed the following research hypotheses:

1. It is hypothesised that participants who screen positive for PD will report greater levels of self-disgust on the SDS-R, relative to those who screen negative for PD.
2. It is hypothesised that women will report increased levels of self-disgust on the SDS-R compared to men.

3. It is hypothesised that shame will predict self-disgust in participants who screen positive for PD, when included in a model with gender, childhood abuse and trauma and childhood emotional invalidation.
4. If childhood trauma and/or emotional invalidation predict self-disgust, it is hypothesised that shame will mediate this relationship.
5. If self-disgust is found to be elevated in participants who screen positive for PD, it is hypothesised that self-disgust will mediate the relationship between childhood trauma and PD screen score.

## **2. Method**

The current study formed part of a joint research project: *‘The role of self-disgust in non-suicidal self-injury among individuals with personality disorder’* (Schwaiger, 2016).

### **2.1 Design**

The current study employed a cross-sectional, web-based questionnaire design. Web-based questionnaires are increasingly employed in psychological

research as they enable the collection of large amounts of data from diverse geographical regions, efficiently and economically (Lefever, Dal, & Matthíasdóttir, 2007). Participants were deemed to be eligible to take part in the study if they were over 18 and fluent in reading English.

## **2.2 Public and patient involvement (PPI)**

The research design was informed by consultation with clinicians and service users from (IMPART) personality disorder service (North East London Foundation Trust; NELFT). One focus group was conducted with clinicians who provide therapeutic interventions to people with personality disorders. A second focus group was conducted with service users who reported experiencing high levels of self-disgust. The focus groups aimed to explore the construct of self-disgust, to seek advice on how the construct could be researched and measured and whether participants felt that the existing self-disgust scale adequately captured the construct.

Service users and clinicians felt that the existing self-disgust scale (SDS; Overton et al., 2008) had poor face validity and lacked important items related to the physical and visceral sensations that accompany feelings of self-disgust such as feeling nauseous or physically repulsed by the self. They suggested that the behavioural consequences in response to feelings of self-disgust including avoidance

of others and hiding the self were missing and they emphasised the enduring and all encompassing nature of self-disgust which was seen as core to one's identity.

Service users and clinicians suggested that self-disgust could be measured via a self-report measure and that a new scale should be developed in order to improve the measurement of the construct. The initial plan of the researchers was to develop a new psychometric self-disgust scale, however a revised version of the SDS was made accessible to the researchers in January 2015 (SDS-R; Powell, Overton & Simpson, 2015). When this was cross-referenced with the new scale that the researchers had started to develop, it was decided that due to the considerable overlap between the two scales, to utilise the SDS-R in the current study as a measure of self-disgust.

### **2.3 Ethics and Informed Consent**

Ethical approval for the study was granted by the Hampstead Research Ethics Committee (REC reference 15/LO/103; Appendix C). Prior to completing the survey online, participants were informed of the study's objectives, their right to withdraw from the study and all potential harms and benefits were communicated to them (Appendix D). Informed consent was then obtained online (Appendix E).

Participants were informed where to seek help should they become distressed and

were provided with a range of contact details and distress tolerance techniques that were easily accessible by clicking a ‘get help’ icon at any time during the survey (Appendix F).

## **2.4 Payment and Data Protection**

As an incentive for taking part, participants were able to make a donation of £1 to one of three charities, following completion of the survey (Emergence PD Charity, NSPCC, Mind). No identifying information was held due to the anonymous design of the study. A unique study-specific participant code was assigned to each participant. All anonymous data was stored on an encrypted, password protected and secure ‘Patient Outcome Database’ (POD). All anonymised data was subject to good practice as laid down in the Data Protection Act and local policies of University College London.

## **2.5 Recruitment**

A recruitment strategy was devised in order to target participants at high and low risk of PD. To recruit participants who have a high likelihood of PD, the researchers conducted brief presentations at a number of services in North East London Foundation Trust including IMPART Personality Disorder services, and

Improving Access to Psychological Therapies (IAPT) services. The researchers provided clinical teams with flyers and posters directing potential participants to the online survey via a web-link address. In addition, a social media campaign was devised in order to recruit the clinical sample. A website was built as a landing page for potential participants that provided information on the study and was designed to be engaging and aesthetically appealing (see [www.research-selfdisgust.com](http://www.research-selfdisgust.com)). The research was promoted via social media platforms including Facebook, Twitter and Instagram. Mental health charities and blogs were targeted to aid recruitment of the clinical sample (i.e. BPD world, Emergence Plus, MIND).

The recruitment of the community sample was largely obtained via the social media campaign. The sample was targeted via specific websites such as [www.callforparticipants.com](http://www.callforparticipants.com) and [www.onlinepsychresearch.co.uk](http://www.onlinepsychresearch.co.uk). Additionally, a purposive sampling approach was adopted whereby posters and other advertising material were distributed in cafes, shops and university campus's providing study information and the web-link to the online survey (see Appendix G).

## **2.6 Measures**

Participants completed a brief demographic questionnaire, capturing their age, gender, ethnicity and region of residence. Six psychometric questionnaires were

administered (two additional questionnaires were administered relevant to the joint thesis by Schwaiger; 2016):

*1. The Self-Report Standardised Assessment of Personality – Abbreviated Scale*  
*(SAPAS-SR, (Germans, Van Heck, Moran, & Hodiament, 2008) – Appendix H*

In order to screen for personality disorders, participants completed the self-report version of the Standardised Assessment of Personality – Abbreviated Scale (SAPAS; Moran et al., 2003) online. The SAPAS-SR is a rapid 8-item screen for likelihood of PDs. Participants respond ‘yes’ or ‘no’ to questions including; “In general, do you have difficulty making and keeping friends?” and “In general, are you a perfectionist?” producing a dimensional score (from 0 – 8). In a clinical sample, a score of 4 or more on the SAPAS-SR correctly classified the presence of personality disorder in 81% of the cases, while showing a sensitivity of .83 and a specificity of .80 (Germans, Van Heck, Moran, & Hodiament, 2008). Although the SAPAS-SR has not yet been administered in a community sample, the SAPAS provided the optimal balance between sensitivity and specificity using a cut off score of four or more (Fok et al., 2015) in a community sample where the prevalence of PD is assumed to be lower. Participants in the current study therefore received a positive screen for PD if they scored four or more on the SAPAS-SR.



## *2. The Self-Disgust Scale-Revised (SDS-R: Powell, Overton & Simpson, 2015) –*

### *Appendix I*

The SDS-R is a revised version of the most widely used self-disgust scale (SDS; Overton et al., 2008). The SDS-R consists of 15 items assessing three domains of self-disgust including physical disgust (5 items), behavioural disgust (5 items) and general disgust (5 items) in addition to seven filler items. Questions include ‘I find the way I look nauseating’ and ‘my behaviour repels people’ and are rated on a seven point Likert scale (1 = ‘strongly disagree’ to 7 = ‘strongly agree’). A full psychometric evaluation of the SDS-R is pending, however preliminary analysis on a non-clinical sample of 293 participants found that the SDS-R was highly internally consistent ( $\alpha=.92$ ).

### *Factor Structure of the SDS-R*

Although the authors of the SDS-R proposed a three-factor structure (Powell, Overton & Simpson, 2015) the extent to which this was actually reflected in the PD screen positive group was assessed by principal component analysis. A principal components analysis with an Oblimin rotation was utilized to examine the structure of the 15-item SDS-R. Analysis was conducted on all participants who screened

positive for PD, whether they completed the survey or not (n=280). Principal components analysis is a reliable method for obtaining a factor solution (Munro, 2005; Nunnally & Bernstein, 1994) and Oblimin rotation is recommended when items are homogeneous and highly correlated with each other (Tabachnick & Fidell, 2001).

All 15-item correlations exceeded 0.4, suggesting good factorability; the Kaiser-Meyer-Olkin measure of sampling adequacy was .94, above the recommended value of .6, and Bartlett's test of sphericity was significant ( $\chi^2(105) = 3100.53, p < .001$ ). The communalities were all above .3, indicating that each item shared some common variance with other items. Given these overall indicators, factor analysis was conducted with all 15 items. Following principal component analysis, inspection of the eigenvalues revealed two components (factors) (using Kaisers criterion) with values  $>1$  (8.5 and 1.3). In addition, the scree plot indicated a single inflection at factor two, suggesting that two factors should be extracted (according to Catell's criterion; 1966; see Appendix N). The two factors together accounted for 66% of the total variance with the first factor accounting for 57% and the second factor an additional 9%. The Oblimin pattern matrix found that six items loaded onto factor one, five items loaded onto factor two and four items cross-loaded onto both factors (see Appendix O for component loadings of the 15-item SDS-R).

Three of the cross-loading items were eliminated from the scale, as they did not contribute to a simple factor structure. Item two; 'I am proud of who I am' substantially cross-loaded and had a relatively low loading on both factor one (.40) and two (.48). Item five 'I can't stand being me' was eliminated due to substantial cross-loading on factor one (.50) and factor two (.43). The wording of the item was also thought to be more theoretically consistent with self-dislike or hatred, rather than self-disgust. Item nine 'People avoid me' was removed as it failed to meet a primary factor loading minimum criteria of .4 or above (.35 and .34) (Matsunaga, 2010). Item seven 'I am revolting for many reasons' cross-loaded on both factors, however this item was retained due to its substantially higher loading on factor one (.58) than factor two (.35) where it did not meet the minimum criteria of .4

Finally, a principal component analysis of the remaining 12 items, using Oblimin rotations was conducted, with the two factors explaining 68% of the variance. All items had primary loadings over .57. Factor one, labeled 'physical disgust' (concerned with evaluation of one's physical appearance), explained 57.5% of the variance and included six items. Factor two-labeled 'behavioural disgust' (concerned with disgust at one's behavior) explained 10.8% of the variance and consisted of five items. Only one item cross-loaded (Q7; 'I am revolting for many reasons'), though this item was retained due to the reasons outlined above. The factor-loading matrix

for the final solution is presented in Table 1.

**Table 1:** *Component loadings in the 12-item SDS-R*

Item no	Content of item	Component 1	Component 2
19.	It bothers me to look at myself	.947	
21.	I find the way I look nauseating	.880	
15.	I avoid looking at my reflection	.862	
8.	I consider myself attractive	.836	
1.	I find myself repulsive	.678	
7.	I am revolting for many reasons	.581	.363
12.	I do not want to be seen	.576	
18.	I behave as well as everyone else		.891
11.	I feel good about the way I behave		.820
3.	I am sickened by the way I behave		.819
22.	My behaviour repels people		.712
14.	I often do things I find revolting		.624

*Note:* Factor loading <.3 are suppressed

#### *Reliability and Validity of the SDS-R*

Cronbach's alpha for the 15 items was very high ( $\alpha = .93$ ) suggesting excellent internal consistency within the scale. Following principal component analysis, the revised 12-item SDS-R had excellent internal consistency ( $\alpha = .93$ ), as did each of the respective factors (Physical disgust;  $\alpha = .92$ ; Behavioural disgust;  $\alpha = .86$ ). The concurrent validity of the 12-item SDS-R was examined by assessing its correlation with the Disgust Sensitivity subscale of the Disgust Propensity and Sensitivity Scale-Revised (DPSS-R; van Overveld, de Jong, Peters, Cavanagh, &

Davey, 2006) and the Experience of Shame Scale (ESS; Andrews, Quian, Valentine, 2002). A strong and positive correlation has previously been demonstrated between the SDS-R and the DPSSR using a non-clinical sample ( $r_s(291) = .41, p < .001$ ) and the current clinical sample revealed a similar association;  $r_s(200) = .46, p < .001$ ). In addition, the SDS-R was highly correlated with the Experience of Shame Scale (ESS;  $r_s(195) = .75, p < .001$ ). The 12-item SDS-R was used for all subsequent analyses in the study.

### *3. The Disgust Propensity and Sensitivity Scale-Revised (DPSS – R; van Overveld et al., 2006) – Appendix J*

The DPSS-R is a 16-item self-report measure designed to assess the frequency of disgust experiences (disgust propensity) and the emotional impact of disgust experiences (disgust sensitivity). The DPSS-R has previously demonstrated strong positive correlations with the SDS/SDS-R and was used to corroborate the validity of the SDS-R. Participants respond on a 5-point likert scale (0 = never, 5 = always) to statements including; ‘I become disgusted more easily than other people’ and ‘I think feeling disgust is bad for me’. The DPSS-R has demonstrated high internal consistency (.78 for propensity, .77 for sensitivity; Olatunji, Cisler, Deacon, Connolly, Lohr, 2007), acceptable test-retest reliability (.69 for propensity and .77

for sensitivity; van Overveld et al., 2006), predictive validity (van Overveld, de Jong & Peters, 2010) and overall, is considered a reliable and valid measure of disgust reactions.

#### *4. The Experience of Shame Scale (ESS; Andrews et al., 2002) – Appendix K*

The ESS is a 25-item questionnaire comprised of three subscales.

Characterological shame is comprised of four shame domains: (1) shame regarding personal habits, (2) manner with others, (3) the sort of person one is and (4) personal ability; behavioural shame is comprised of three domains: (5) shame about doing something wrong, (6) saying something stupid and (7) failing in competitive situations and bodily shame is comprised of one domain: (8) feeling ashamed of your body. Each of these eight domains of shame is assessed by questions that tap into experiential (e.g. ‘Have you felt ashamed of the sort of person you are’), cognitive (e.g. ‘Have you worried about what other people think of you when you do something wrong’) and behavioural elements (e.g. ‘Have you tried to cover up or conceal things you felt ashamed of having done’). Each item is rated on a 4-point scale in response to how the participant felt during the past year (1 = ‘not at all’ to 4 = ‘very much’). The ESS was found to demonstrate high internal consistency ( $\alpha =$

0.92) and test –retest reliability (0.83) in a non-clinical sample (Andrews et al., 2002).

*5. The Invalidating Childhood Environment Scale (ICES; Mountford et al., 2007) –*

*Appendix L*

The ICES is an 18-item retrospective measure of parental and family invalidation experienced during childhood. The first part is comprised of fourteen items assessing specific parental behaviours such as ‘My parents would become angry if I disagreed with them’ and ‘When I was anxious, my parents ignored this’. Respondents are instructed to retrospectively rate each parent using a Likert scale (1 = ‘never’ to 5 = ‘all of the time’) yielding a score from 14 – 70 with higher scores reflecting a higher perception of emotional invalidation by each parent. The second part of the ICES asks respondents to rate descriptions that depict four types of family environments (typical, perfect, chaotic and validating) on a 5-point Likert scale ranging from (1 = ‘not like my family’ to 5 = ‘like my family all of the time’). The second part of the ICES therefore only yields a single score for each of the family subtypes and as such, only the first section of the ICES related to maternal/paternal invalidation was used for the purpose of the current study in order to provide a continuous measure of parental emotional invalidation.

The first section of the ICES has demonstrated excellent internal consistency and discriminant validity in both clinical (maternal invalidation  $\alpha = .90$ ; paternal invalidation  $\alpha=.91$ ; Haslam, Mountford, Mayer & Waller, 2008) and non-clinical samples (maternal invalidation  $\alpha =.88$ ; paternal invalidation  $\alpha=.90$ , ) as well as good concurrent validity ( $r=.45$ ) with BPD symptomology (Robertson, Kimbrel & Nelson-Gray, 2013).

*6. The Child Abuse and Trauma Scale (CATS; Sanders & Becker-Laussen, 1995) –*

*Appendix M*

The CATS is a 38-item scale comprised of three subscales measuring adverse childhood experiences (neglect, punishment, and sexual abuse). Participants rate how frequently a particular abusive experience occurred during their childhood and adolescence, using a scale of 0 - 4 (0 = ‘never’ to 4 = ‘always’). Questions include; ‘As a child did you feel unwanted or emotionally neglected?’ and ‘Did you have traumatic sexual experiences as a child or teenager?’ The CATS has demonstrated high internal consistency ( $\alpha = 0.63$  to  $.90$ ) test-retest reliability ( $r = 0.71$  to  $0.91$ ) and has been positively correlated with measures of dissociation, depression and interpersonal difficulties (Sanders & Becker-Laussen, 1995).



## **2.7 Participants**

Data was obtained from 526 participants however, 205 participants did not complete the survey. A completion rate of 61% was therefore achieved with 321 participants completing the entire survey. Of the participants who completed the survey, 58% screened positive for PD (n=188) and 42% screen negative for PD (n=133) according to the SAPAS-SR. The vast majority of the sample were female, under the age of 35, of White British/White Other ethnicity and residing in either Western Europe or North America. See Table 2 for participant characteristics.

**Table 2.** *Participant Characteristics for PD screen positive and negative groups*

Characteristic	Positive PD Screen (n=188)	Negative PD Screen (n=133)
<b>Age</b>		
18 – 34	77%	73%
34 and above	23%	27%
<b>Gender</b>		
Male	16%	19%
Female	81%	80%
Transgender	3%	1%
<b>Ethnicity</b>		
White British/other white background	81%	75%
Other	19%	25%
<b>Region</b>		
Western Europe	52%	58%
North America	31%	33%
South East Asia	8%	6%
Other	8%	3%

## 2.8 Statistical Plan

### 2.8.1 Missing Data

The online survey was designed to prevent participants from skipping questionnaire items in order to maximise item responsiveness and reduce the occurrence of missing data. Therefore, there was no ‘item non-responsiveness’ within individual questionnaires. However, inspection of the dataset revealed that a large proportion of the sample exited the study towards the end of the survey (possibly due to fatigue). In total, 321 participants completed the survey, however 205 participants exited the survey before completion (39% survey attrition rate). A

listwise deletion procedure (complete case analysis) was used whereby only completed cases were included in the analysis ( $n=321$ ) in order to minimise possible errors induced by missingness and to maximise comparability across analyses (Field, 2016). The exception was five participants who completed the survey but did not state their sex. These participants were included in statistical analyses despite their single missing data point in order to retain valuable data.

To assess for potential sample bias, the difference between participants who completed the survey (61%) and those who did not (39%) was explored. Group comparisons were evaluated using t-tests for continuous variables and Pearson's Chi Squared for categorical variables. There was a significant difference in age;  $t(501) = -2.10$ ,  $p < .05$  and self-disgust scores;  $t(476) = -2.08$ ,  $p < .05$ , with the completers being marginally older and having higher self-disgust scores (on the 15-item SDS-R prior to PCA). However, no significant differences were observed for PD (SAPAS-SR) score  $t(500) = -.43$   $p = .66$ , gender;  $\chi^2(2) = 1.87$ ,  $p = .392$ ; or ethnicity;  $\chi^2(14) = 22.62$ ,  $p = .06$ .

## 2.8.2 Distribution of Data

Assumptions of normality were tested for the main study variables. Across the whole sample, The Kolmogorov-Smirnov tests for normality (Field, 2013) indicated that all study variables were non-normal except for shame in the PD screen negative group. There was a significant level of skewness and/or kurtosis for all study variables, particularly for the sexual abuse subscale of the childhood abuse and trauma scale (CATS; see Table 3). However, observation of the histogram and normal QQ plots revealed that several variables appeared to be relatively normally distributed including self-disgust (SDS-R), shame (ESS) and the neglect and punishment subscale of the CATS.

**Table 3:** *Skewness and Kutosis (Z score) for the study variables*

	Positive PD screen		Negative PD screen	
	Skewness	Kurtosis	Skewness	Kurtosis
SDS-R	-0.33	2.75*	3.04*	1.16
ICES	5.54*	7.92*	4.21*	6.59*
CATS	3.43*	0.67	6.64*	6.64*
<i>Neglect</i>	1.32	-2.59	4.54*	0.87
<i>Sexual Abuse</i>	12.76*	16.32*	16.21*	35.30*
<i>Punishment</i>	1.45	-5.8*	2.43	-2.07
Shame	-3.46*	-1.06	0.76	-2.07

\*Sig at  $p=.01$ , Z score  $\geq 2.5$

In order to address issues of non-normality it was decided to employ a bootstrapping method to all statistical analyses; this method estimates statistics that

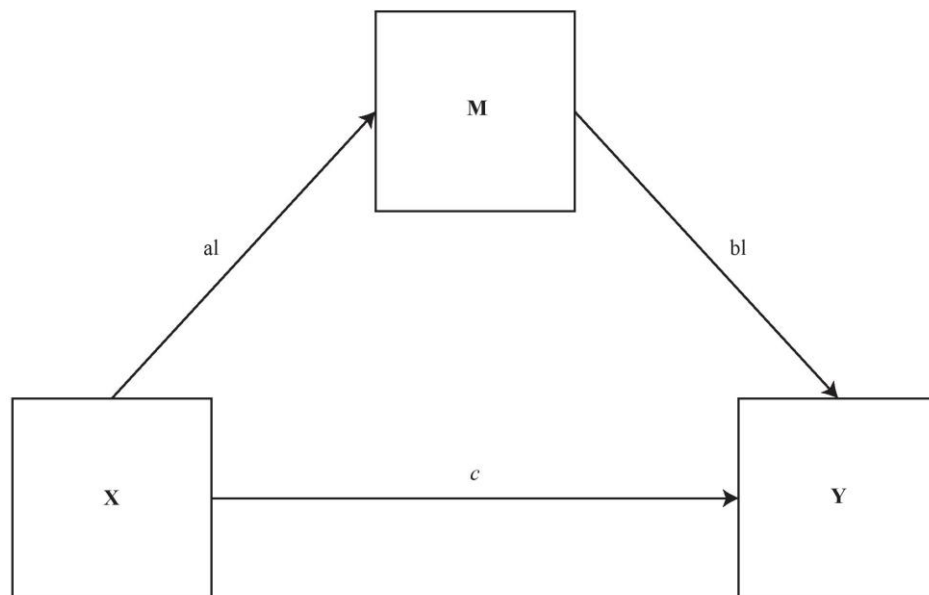
are reliable even when the normal assumptions of the statistic are not met (Field, 2013). This resampling method is based on confidence interval (CI's) estimated from 1000 bootstrapped samples and is a useful alternative to parametric estimates.

### **2.8.3 Study Hypotheses**

Independent t-tests were used to determine whether self-disgust was elevated in participants who screened positive for PD, compared with those who screened negative. A hierarchical multiple regression was employed to test the relative importance of gender, childhood trauma, parental invalidation and shame in predicting self-disgust in the PD screen positive group in a sequential way.

Mediation analyses were carried out using the PROCESS computational tool for path analysis-based moderation and mediation analysis (Hayes, 2012). In this model, a variable X is modelled to influence Y directly as well as indirectly through a single intermediary or mediator variable M causally located between X and Y (the conceptual meditational model is presented in Figure 1; Hayes, 2012). This approach for testing hypotheses about indirect effects was selected as it makes fewer assumptions than does the Sobel test about the shape of the sampling distribution of the indirect effect and is also more powerful (Briggs, 2006; MacKinnon, Lockwood & Williams, 2004). The significance of indirect effects was tested using

bootstrapping procedures. Bootstrapping is a non-parametric method that estimates the indirect effect, including a 95% confidence interval. When zero is not in the 95% confidence interval, it can be concluded that the indirect effect is significantly different from zero at  $p > 0.05$  and that variable X, affects variable Y, through M. The Statistical Package for the Social Sciences (SPSS V23) was used to perform all statistical analyses.



*Figure 1: Conceptual mediation model*

X = predictor variable

Y = criterion variable

M = mediating variable

a1 b1 = Indirect effects of X on Y, c = direct effect of X on Y.

### **3. Results**

#### **3.1 Hypothesis 1: Participants who screen positive for PD will report greater levels of self-disgust on the SDS-R than participants who screen negative for PD.**

Participants who screened positive for PD reported greater levels of self disgust (mean score 48 out of a possible 84) compared to those who screened negative (mean score 34 out of 84) (see Table 4) and independent t-tests revealed that this difference was significant;  $t=-8.26$  (321),  $p<.001$ . Both groups (positive PD screen/negative PD screen) reported higher scores on ‘personal disgust’ compared with ‘behavioural disgust’ based on comparisons between average mean scores. The positive PD screen group had significantly elevated scores on all other study variables relative to the negative PD screen group with the largest mean differences observed for shame (16.95), childhood abuse and trauma (15.51) and self-disgust (14.37). Mean, SD, t-values and bootstrap confidence intervals are presented in Table 4.

In order to assess whether the differences observed could be driven by a BPD sub-sample, a frequency analysis was run on the SAPAS-SR to ascertain the most frequent positive responses to individual items. Arguably, item 1 (in general, do you

have difficulty making and keeping friends?), item 3 (in general do you trust other people i.e. most of the time in most situations?), item 4 (do you normally lose your temper easily) and item 5 (are you normally an impulsive sort of person) are most reflective of BPD traits. However, analyses revealed that these items had some of the least frequent positive responses, which indicates that the effects observed are potentially not driven by a BPD subsample. Interestingly the two items with the most frequent positive responses were item 6 (are you normally a worrier) and item 8 (in general, are you a perfectionist), both of which reflect DSM-5 Cluster C (anxious fearful) personality disorders which includes: Dependent Personality Disorder, Avoidant Personality Disorder, and Obsessive Compulsive Personality Disorder.



**Table 4.** Mean (*M*), Standard Deviation (*SD*) and *T* values (*T*) for the SDS-R, DPSR, ESS, CATS and ICES based on 1000 bootstrap samples.

Variable	Positive PD Screen (n=188)		Negative PD Screen (n=133)		T	Mean Difference	95% BS CI
	M	SD	M	SD			
SDS-R***	48.34	(17.62)	33.97	13.50	-8.26	-14.37	(-17.86 to -10.96)
<i>Physical</i> **	4.12	(1.63)	2.97	(1.35)	-6.70	-1.15	(-1.48 to -.83)
<i>Behavioural</i> ***	3.90	(1.54)	2.63	(1.09)	-8.07	-1.25	(-1.54 to -.95)
ESS***	74.55	(17.89)	57.60	(18.94)	-8.16	-16.95	(-21.25 to -12.67)
ICES **	72.16	(14.06)	67.60	(10.14)	-3.37	4.55	(-7.3 to -1.97)
CATS ***	55.65	(26.08)	40.10	(19.90)	-6.05	-15.51	(-20.45 to -10.80)
<i>Neglect</i> ***	23.06	(12.48)	15.80	(10.86)	-5.54	-7.26	(-9.85 to -4.68)
<i>Punishment</i> ***	10.71	(4.85)	8.42	(4.29)	-4.45	-2.28	(-3.30 to -1.24)
<i>Sexual Abuse</i> **	2.69	(4.52)	1.47	(2.95)	-2.90	-1.21	(-2.09 to -.35)

*Notes.* SDS-R = Self-disgust scale revised; ESS = Experience of Shame Scale; CATS; Child Abuse and Trauma Scale; ICES = Invalidating Childhood Environment Scale

Significant difference between Positive PD screen and Negative PD screen group: *t* test, \*\*  $p < .01$ , \*\*\*  $p < .001$

Subscales of SDS-R based on average mean score

### **3.2 Hypothesis 2: Women will report increased levels of self-disgust on the SDS-R compared to men.**

In the positive PD screen group, women reported higher levels self-disgust ( $M=49.9$ ; 95% BS CI; 46.96 – 52.79) compared to men ( $M=42.6$ , 95% BS CI; 38.0 – 47.10) and this difference was significant ( $t(176)=-2.10$  (176),  $p=.037$ ). Women had significantly higher levels of physical disgust than men ( $t(176)=-2.57$ ,  $p=.01$ ) however, there was no significant difference for behavioral disgust ( $t(176)=-1.18$ ,  $p=.30$ ).

### **3.3 Hypothesis 3: Shame will predict self-disgust in participants who screen positive for PD, when included in a model with gender, childhood trauma and childhood emotional invalidation.**

Prior to conducting a hierarchical multiple regression, the relevant assumptions of this statistical analysis were tested. Firstly, the software program G\*Power 3.1.3 (Faul, Erdfelder, Lang, & Buchner, 2007) was used to calculate the sample size required to detect a small to medium effect size ( $f^2=.15$ ) for linear multiple regression analysis when entering four independent variables. A conventional alpha level was set at .05 and a desired power of 80%. The required sample size was estimated at 80 participants, which was well within the resources of

the study. An analysis of standard residuals was carried out, which indicated that outlier effects were within an acceptable range (Std. Residual Min = -2.51, Std. Residual Max = 2.09; Field, 2013) and the data met the assumption of independent errors (Durbin-Watson value = 2.04). The collinearity statistics (i.e., Tolerance and VIF) were all within accepted limits, (Coakes, 2005) and residual and scatter plots indicated the assumptions of normality, linearity and homoscedasticity were all satisfied (Hair et al., 1998; Pallant, 2001).

Pearson's product moment correlations were used to assess for associations between the primary outcome variable and the predictor variables. Inter-correlations between the multiple regression variables are presented in Table 5 for the total sample, and Table 6 for the positive PD screen group. In the positive PD screen sample, all predictor variables were positively associated with self-disgust with the strongest associations observed for shame  $r = .75$ ,  $p < .001$ , childhood abuse and trauma  $r = .36$ ,  $p > .001$ , childhood invalidation  $r = .32$ ,  $p > .001$ , and gender  $r = .15$ ,  $p > .05$  respectively.

**Table 5.** *Correlation matrix of the SDS-R, DPSS, ESS, ICES, CATS for total sample (n=321)*

	1	2	3	4	5	6	7	8
1. Self-disgust (SDS-R)								
2. Shame (ESS)	.77***							
3. Childhood Invalidation (ICES)	.33***	.32***						
4. Child Abuse and Trauma (CATS)	.42***	.39***	.60***					
5. <i>Neglect</i>	.40***	.41***	.52***	.94***				
6. <i>Physical abuse</i>	.27***	.23***	.56***	.78***	.64***			
7. <i>Sexual abuse</i>	.28***	.16**	.30**	.61***	.49***	.34***		
8. PD score (SAPAS-SR)	.49***	.50***	.18*	.33***	.32***	.25***	.16*	
9. Gender	.10	.10	.05	.13*	.08	.05	.15*	.09

\*\*Correlation significant at the 0.001 level \*\* Correlation is significant at the 0.01 level; \* Correlation is significant at the 0.05 level

**Table 6.** *Correlation matrix of the SDS-R, DPSS, ESS, ICES, CATS for positive PD screen sample (n=188)*

	1	2	3	4	5	6	7	8
1. Self-disgust (SDS-R)								
2. Shame (ESS)	.75***							
3. Childhood Invalidation (ICES)	.32***	.36***						
4. Child Abuse and Trauma (CATS)	.36***	.29***	.62***					
5. <i>Neglect</i>	.33***	.31***	.55***	.94***				
6. <i>Physical abuse</i>	.27***	.20**	.58***	.80***	.67***			
7. <i>Sexual abuse</i>	.25***	.09	.31***	.60***	.48***	.32***		
8. PD score (SAPAS-SR)	.35***	.32***	.09	.15*	.16*	.15*	.06	
9. Gender	.15*	.19**	.06	.16*	.11	.09	.16*	.04

\*\*Correlation significant at the 0.001 level \*\* Correlation is significant at the 0.01 level; \* Correlation is significant at the 0.05 level

A hierarchical multiple regression was conducted to explore the relative contributions of the independent variables (ICES Parental Invalidation, CATS Childhood Abuse and Trauma, ESS Shame) in predicting self-disgust in the positive PD screen sample (see Table 7). A four-stage regression was conducted with self-disgust as the dependent variable, gender as a categorical predictor and CATS, ICES and ESS as continuous predictors. The analysis revealed that at stage one, gender accounted for only 1.9% (Adjusted  $R^2 = .019$ ) of the variation in self-disgust and contributed significantly to the regression model,  $F(1,176) = 4.41, p = .037$ .

Introducing CATS explained an additional 12.4% of the variation in self-disgust and this change in  $R^2$  was significant,  $F(1,175) = 15.20, p < .001$ . Adding ICES to the regression model explained an additional 2% of the variation in self-disgust and this change in  $R^2$  was significant,  $F(1,174) = 11.68, p < .001$ . Finally, the addition of shame to the regression model explained an additional 43.7% of the variation in self-disgust and this change in  $R^2$  square was significant,  $F(1,73) = 66.10, p < .001$ .

When all four independent variables were included in stage four of the regression model, the regression analysis resulted in a significant model  $F(1,173) = 66.10, p < 0.001$  and the four variables explained 59.5% of the variance in self-disgust. However, parental invalidation and gender were no longer significant predictors of self-disgust and only childhood abuse and trauma and shame remained

as independent predictors. The most important incremental predictor of self-disgust was shame which uniquely explained 43.7% of the variation in self-disgust.

As childhood abuse and trauma was a significant and independent predictor of self-disgust, a further regression analysis was conducted using the 'Enter' method to explore the contribution of the three CATS subscales (neglect, sexual abuse, punishment) in predicting self-disgust. The analysis yielded a significant model (Adjusted  $R^2 = .112$ ,  $F(3,184) = 8.87$ ,  $p < .001$ ) in which the three sub-scales accounted for 11.2% of the variance in self-disgust. However, sexual abuse ( $b = .48$ ,  $SE = .28$  BS CI  $[-.09, .1.04]$ ,  $p = .12$ ) and punishment ( $b = .29$ ,  $SE = .34$  CI  $[-.43, .95]$ ,  $p = .39$ ) failed to independently predict self-disgust and only neglect emerged as an independent predictor ( $b = .31$ ,  $SE = .14$  CI  $[.04, .59]$ ,  $p = .02$ ).

**Table 7:** Hierarchical Regression Model and statistics for Dependent variable (SDS-R), Confidence Interval and Standard error based on 1000 bootstrap samples.

Model	Unstandardized coefficients		Standardised coefficients	<i>t</i>	Sig.	R <sup>2</sup>	Adjusted R <sup>2</sup>	<i>F</i>	BS 95% CI
	B	BS Standard error							
1									
(Constant)	42.60	3.17		13.43	.00				(37.36/47.28)
Gender	7.30	3.47	.15*	2.10	.03	.02	.01	4.41	(2.03/13.28)
2									
(Constant)	31.75	3.67		8.56	.00				(25.24/38.16)
Gender	4.65	3.30	.10	1.41	.16				(-.68/10.23)
CATS	.23	.05	.36***	5.04	.00	.15	.14	15.20	(.15/.32)
3									
(Constant)	19.67	6.99		2.81	.01				(8.37/31.97)
Gender	5.04	3.28	.10	1.54	.13				(-.95/10.85)
CATS	.16	.06	.24**	2.71	.01				(.05/.27)
ICES	.22	.10	.18*	2.02	.04	.17	.15	11.68	(.04/.41)
4									
(Constant)	-6.93	5.20		-1.33	.18				(-17.18/2.20)
Gender	-.50	2.30	-.01	-.22	.83				(-4.12/2.85)
CATS	.13	.04	.20**	3.35	.01				(.05/.22)
ICES	-.07	.08	-.06	-.95	.35				(-.23/.08)
ESS	.72	.05	.73***	13.82	.00	.60	.59	66.10	(.63/.81)

CATS; Child Abuse & Trauma Scale; ICES; Invalidating Childhood Environment Scale; ESS; Experience of Shame Scale; \*\*\* p<.001, \*\* p>.01, \*p>.05

$\Delta R^2 = .12^{***}, .02^*, .44^{***}$  for step 2, 3, 4.



### 3.4 Hypothesis 4: If childhood trauma and/or emotional invalidation predict self-disgust, it is hypothesized that shame will mediate this relationship.

The regression analyses indicated that childhood abuse and trauma and shame both independently predicted self-disgust when controlling for other variables in the model. The mediational model is presented in Figure 1.

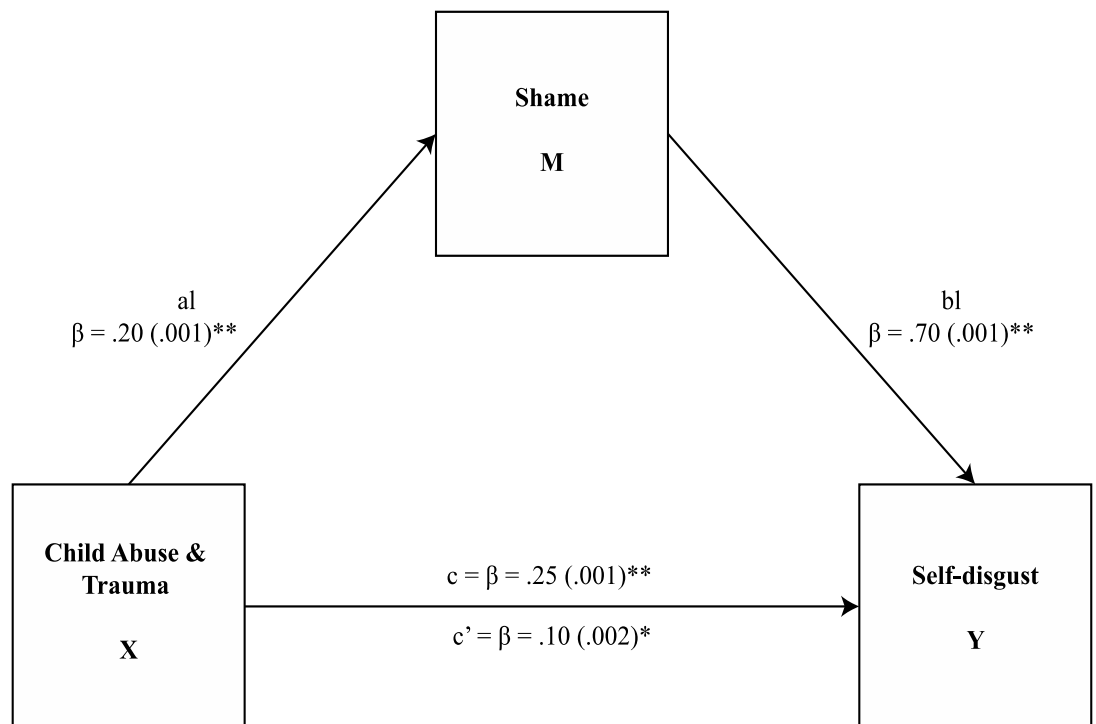


Figure 2. Shame as a mediator of the association between childhood abuse and trauma and self-disgust in the positive PD screen sample.  $n=188$ ; \*\* $p < .001$  \* $p < .01$ .

There were statistically significant total, direct and indirect effects of childhood trauma on self-disgust in the positive PD screen sample when shame was entered as the mediating variable. As shown in Figure 1, the un-standardised regression coefficient between shame and childhood trauma was statistically significant ( $b = .20$ ) as was that between shame and self-disgust ( $b = .70$ ). A bias-corrected bootstrap confidence

interval for the completely standardised indirect effect (.21) based on 1,000 bootstrapped samples was entirely above zero (.1128 to .2935) suggesting that childhood trauma indirectly effects self-disgust through shame. There was evidence that childhood trauma also influenced self-disgust independent of its effect on shame ( $c' = .10$ ,  $p = .002$ ). Shame accounted for over half of the total effect (ratio of indirect to total effect of x on y;  $P_M = .58$ ).

### 3.6 Hypothesis 5: If self-disgust is found to be elevated in participants who screen positive for PD, it is hypothesised that self-disgust will mediate the relationship between childhood trauma and PD screen score.

The second analysis explored whether self-disgust mediated the relationship between childhood abuse and trauma and PD SAPAS-SR score across the whole sample.

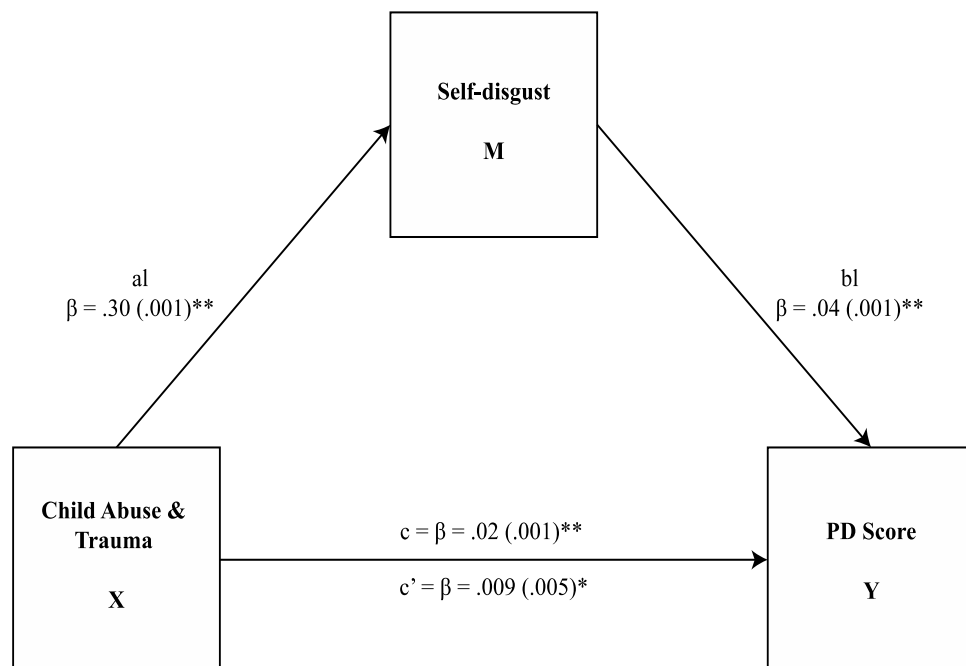
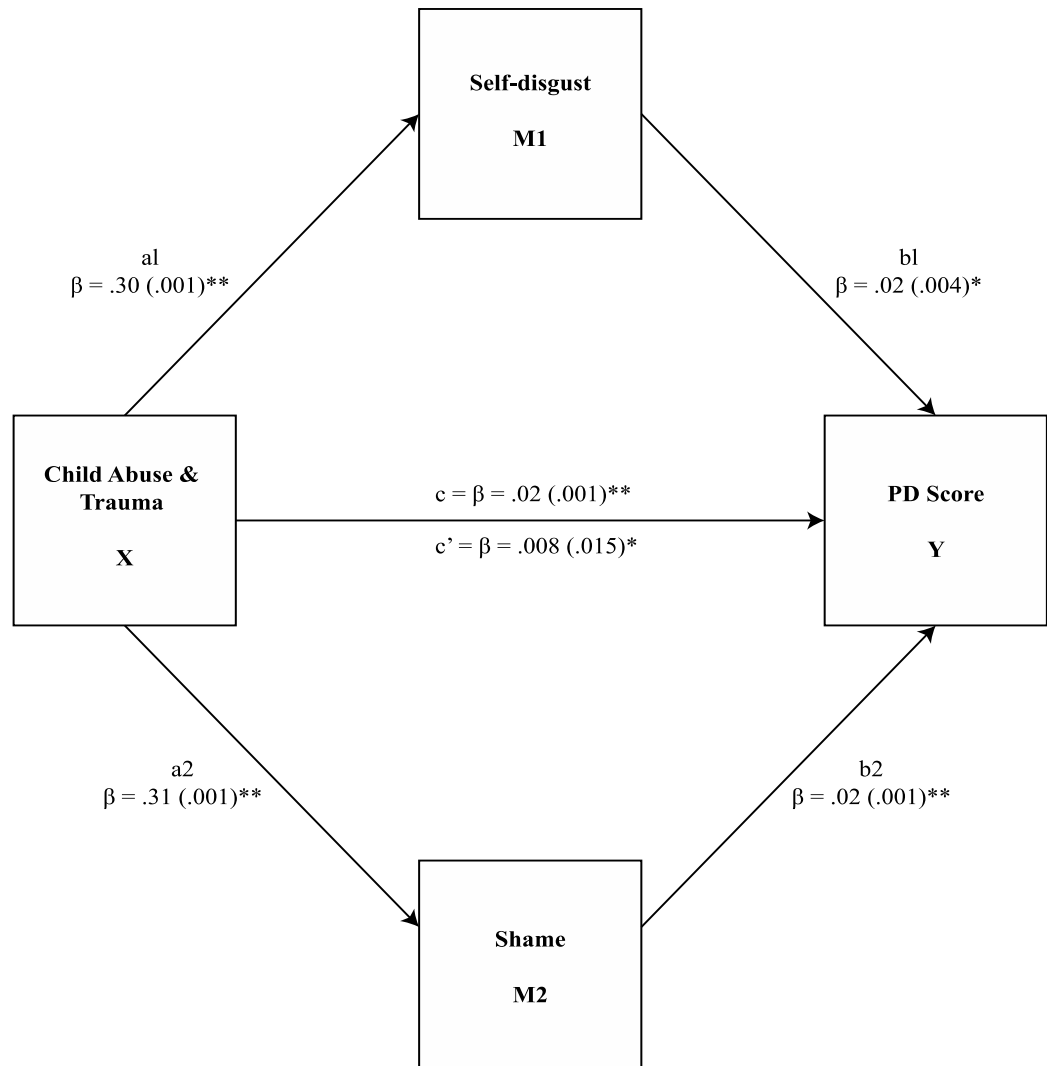


Figure 3. Self-disgust as a mediator of the association between childhood abuse & trauma and PD screen score in the total sample.  $n=321$ ;  $**p < .001$   $*p < .01$ .

There were statistically significant total, direct and indirect effects of childhood trauma on PD screen score when self-disgust was entered as the mediating variable. As shown in Figure 2, the un-standardised regression coefficient between childhood trauma and self-disgust was statistically significant ( $b=.30$ ) as was that between self-disgust and PD screen score ( $b= .04$ ). A bias-corrected bootstrap confidence interval for the completely standardised indirect effect (.1811) based on 1,000 bootstrapped samples was entirely above zero (.1314 to .2466). This suggests that childhood trauma indirectly effects PD score, through self-disgust. There was also evidence that childhood trauma influenced PD score independent of its effect on self-disgust ( $c'=.009$ ,  $p = .005$ ). Self-disgust accounted for over half of the total effect (ratio of indirect to total effect of  $x$  on  $y$ ;  $P_M = .55$ ).

Due to the strong association between shame and self-disgust and the conceptual overlap between the two constructs, a post-hoc analysis was conducted where shame was added to the mediation model. A parallel multiple mediation model allows for a simultaneous test of each mechanism while accounting for the shared variance between shame and self-disgust (Hayes, 2013).



*Figure 4.* Self-disgust and shame as mediators of the association between childhood abuse and trauma and PD screen score in the whole sample.  $n = 321$ ;  $**p < .001$ ,  $*P < .05$ .

There were statistically significant total, direct and indirect effects of childhood trauma on PD screen score when self-disgust and shame were both entered as the mediating variables. As shown in Figure 3, the unstandardised regression coefficient between childhood trauma and self-disgust was statistically significant ( $b = .30$ ) as was that between self-disgust and PD score ( $b = .02$ ). A similar pattern emerged for shame; the coefficients between childhood trauma and shame were significant ( $b = .31$ ) as well

as between shame and PD screen score ( $b = .02$ ).

A bias-corrected bootstrap confidence interval for the completely standardised indirect effect (.0936) of childhood trauma on PD score through self-disgust, based on 1,000 bootstrapped samples was above zero (.0346 to .1655). This suggests that self-disgust mediates the relationship between childhood trauma and PD screen score, while accounting for the shared association between shame and self-disgust. Similarly the indirect effect (.1079) of childhood trauma on PD score, through shame was above zero (.0513 to .1900). There was evidence that childhood trauma influenced PD screen score independent of its effect on self-disgust and shame ( $c' = .008$ ,  $p = .015$ ). Self-disgust and shame together, accounted for over half of the total effect (ratio of indirect to total effect of  $x$  on  $y$ ;  $P_M = .61$ ) with shame accounting for marginally more of the effect ( $P_M = .33$ ) than self-disgust ( $P_M = .28$ ). Around a third of the variance in PD screen score ( $R^2 = 0.29$ ) was accounted for by childhood abuse and trauma and both proposed mediators.

#### **4. Discussion**

Self-disgust has been shown to be relevant to various forms of psychopathology, including BPD. However, the aetiological factors that may predict self-disgust in a general PD sample have not been investigated.

##### **4.1 Comparisons between participants who screened positive or negative for PD**

The first hypothesis was confirmed; results indicated that self-disgust was elevated in those who screened positive for PD relative to those who screened negative, using the most recently developed psychometric tool for assessing self-disgust (SDS-R). This is consistent with previous research demonstrating elevated self-disgust in BPD

samples (Ille et al., 2014; Rüsch et al., 2011; Shienle, Leutged & Wabnegger, 2015) and lends support to clinical and anecdotal observations that individuals with BPD frequently report intense and chronic experiences of self-loathing and self-disgust (Cozolino, 2014; Krawitz, 2012). The current findings build on the existing literature and suggest that self-disgust may be relevant to other types of personality disorders and not only BPD. This is consistent with the notion that self-disgust represents a trans-diagnostic construct that is potentially implicated in a wide number of mental health disorders. Physical disgust was more pronounced than behavioural disgust across the total sample. Moreover, when exploring the factor structure of the SDS-R in participants' who screened positive for PD, physical disgust explained most of the variance. This is consistent with previous research, which found body-based disgust to be more prevalent in a BPD sample (Abdul-Hamid et al., 2014) and may indicate that self-disgust in PD is particularly linked to the body and stable features of one's character or identity rather than one's behaviour.

The second research hypothesis was confirmed with women reporting greater levels of self-disgust than men in the positive PD screen sample, particularly in the domain of physical disgust. This is consistent with previous research demonstrating elevated self-disgust in women (Ille et al., 2014). It is interesting to note that self-disgust has been shown to be particularly high in depression, eating disorders and BPD (Ille et al., 2014) and that these disorders are more commonly diagnosed in females (Piccinelli & Wilkinson, 2000; Fairburn & Harrison, 2003; Johnson et al., 2003). The body and gender may therefore be particularly relevant to self-disgust. According to objectification theory, it has been argued that women's bodies are held to more rigorous standards and that women are particularly apt to reflect on their own failures (Roberts & Goldenberg, 2007). It is possible that women may experience a greater propensity

towards self-disgust, particularly in relation to the body, and that cultural norms and standards may have a role in this gender bias. Indeed the disgust emotion is thought to regulate that which is and is not acceptable in ones socio-cultural environment (Clark, 2015).

#### **4.2 Predictors of Self-disgust in the positive PD screen sample**

The third hypothesis investigated the relative contributions of gender, childhood abuse and trauma, childhood emotional invalidation and shame in predicting self-disgust in participants at high risk of PD. The final model explained 60% of the variance in self-disgust, which is regarded as a large effect (Cohen, 1992). Despite being retained in the final regression model, gender did not independently predict self-disgust in the positive PD screen sample when controlling for other study variables. This suggests that although self-disgust was higher in females in the current sample, gender alone has low predictive value in the development of self-disgust. Although beyond the scope of this research, future research may benefit from investigating whether gender interacts with other moderating variables such as childhood maltreatment, in the development of self-disgust.

##### *Childhood Abuse and Trauma*

As expected, childhood abuse and trauma was a significant predictor of self-disgust in the positive PD screen sample when controlling for all other study variables. This extends previous correlational research demonstrating an association between childhood trauma and self-disgust (Ille et al., 2014; Smith et al., 2015; Powell, Simpson & Overton, 2015) and highlights the predictive utility of childhood abuse in the development of self-disgust. Indeed it has been suggested that individuals who have

experienced neglect or abuse in childhood are more vulnerable to develop poor self-esteem and the viewing of aspects of the self and the body with disgust or shame (Low, Jones, MacCleod, Power & Duggan, 2000). When exploring the unique predictive capacity of the three subscales of the child abuse and trauma scale, only neglect emerged as an independent predictor of self-disgust, while sexual abuse and physical abuse did not.

Emotional abuse and neglect have been shown to be associated with all ten PDs (Hengartner, Ajdacic-Gross, Rodgers, Müller & Rössler, 2013). Childhood neglect is characterised by a negative home environment and childhood experiences of feeling lonely, unwanted and rejected by caregivers (Becker-Laussen, 1995). In considering how experiences of early neglect may lead to the development of self-disgust, DeYoung (2015) draws on affect regulation theory and highlights the central role of shame in the development of self-disgust. Indeed the relationship between neglect, and the development of shame and later psychopathology has been well documented (Bennett, Sullivan, & Lewis, 2010; Vizin & Unoka, 2014).

DeYoung (2015) argues that disgust follows in response to ‘dysregulated shame’ that can occur in the context of early interactions with caregivers. She suggests that the expression of disgust often accompanies interpersonal rejection and avoidance behaviours and that if a parent expresses subtle (or non-subtle) disgust in relation to their child, the child will register the parent’s disgust, leading to the child’s state of shame resonating with the disgust they have seen in their parents’ eyes. Similarly, Cozolino (2014) argues that the early experiences of people with BPD may lead them to pair their sense of self with disgust and that this pairing can occur when feeling pushed away, abandoned, or seeing a look of disgust on a caretaker’s face (Cozolino, 2014). This theoretical hypothesis is consistent with observations by Lewis (1992) who found



that parents often use a ‘disgust face’ when disciplining their children or showing their displeasure, especially towards girls. The use of the disgust face may therefore signal to the child that there is something about them that elicits this emotion in the parent, and potentially others.

The current findings are consistent with qualitative data suggesting that familial, disgust-based disapproval and criticism is key in the genesis of self-disgust (Powell, Overton & Simpson, 2014). The expression of disgust by significant others towards aspects of the child’s self, needs and expression of emotions may therefore be an important contributor to the development of maladaptive and excessive self-disgust. This fits with the developmental hypothesis that self-disgust represents an emotion schematic construct that develops through learned associations with significant others (Izard, 2007).

#### *Childhood Emotional Invalidation*

Contrary to expectation, childhood emotional invalidation did not independently predict self-disgust in the positive PD screen sample when included in the final model with gender, childhood trauma and shame. Emotional invalidation was moderately associated with self-disgust ( $r=.32$ ) and it may be that this association is moderated by other factors, for example an emotionally invalidating environment, combined with experiences of physical and sexual abuse may give rise to the development of self-disgust. Given the limitations of this study and lack of existing research, further studies are necessary before drawing conclusions.

#### *Shame*

In line with theoretical formulations regarding the conceptual overlap between shame and self-disgust, the current study found a strong positive association between

the two emotions ( $r=.75$ ), higher than previously reported in a non-clinical sample ( $r=.50$ ; Olatunji et al., 2015). As hypothesised, shame was found to predict self-disgust in the positive PD screen sample and was the most important incremental predictor, controlling for all other study variables. In interpreting the current findings, it is important to consider the competing theories regarding the distinctions between shame and self-disgust in the literature. For example, Power & Dalgleish (2016) suggest that shame is a complex self-conscious emotion that is derived from the basic emotion of disgust (in addition to guilt, embarrassment and contempt). They suggest that shame involves disgust being focused on the self and therefore consider shame to be synonymous with self-disgust. However, there are limited studies that have examined this hypothesis and shame and disgust have been reliably distinguished according to their unique physiological and facial expression profiles (Consedine & Magai, 2003; Scherer & Wallbott, 1994; Tracy et al., 2009).

In support of the current findings, a number of authors have theorised that self-disgust is a unique emotional phenomenon in its own right that can meaningfully be distinguished from shame (Powell et al., 2014; Roberts & Goldenberg, 2007). For example, DeYoung (2015) argues that the experience of shame is distinct from, and may trigger, self-disgust and qualitative research indicates that the lived experience of self-disgust is quite unique from shame (Powell et al., 2014)

While disgust has been conceptualized as a basic core emotion, shame can be considered a self-conscious emotion as it involves an internal evaluation of the self against a set of rules, standards or goals in which the self or some aspect of the self is seen to have failed (Power & Dalgleish, 2016). According to this definition, self-disgust may best be considered a complex self-conscious emotion derived from the basic

disgust emotion. Self-disgust and shame may therefore represent distinct complex self-conscious emotions that are both derived from the core emotion of disgust.

In considering the development of self-disgust, DeYoung highlights the role of developmental and relational trauma and suggests that dysregulating experiences of shame easily trigger disgusted thoughts about oneself. She goes on to suggest that the more traumatic and objectifying a relationship is, the more likely it will be to produce feelings of shame and disgust. This is of relevance given the high rates of developmental trauma in individuals with PD (Hengartner et al., 2013). Furthermore, recent research has indicated that shame can be cued in a social context via the perception of facial expressions of disgust from others (Giner-Sorolla & Espinosa, 2011). This lends support to the hypothesis that the recognition of disgust in others' faces can trigger internal shame, which may then potentially trigger off a cascade of self-disgust reactions. However, there is likely to be a complex relationship between shame and self-disgust and much more research is necessary to delineate this relationship further.

#### **4.3 Mediation analyses**

As hypothesised, shame mediated the relationship between childhood trauma and self-disgust in the positive PD screen sample. This is consistent with previous findings, which suggest that shame leads to self-disgust which then confers risk for the development of psychopathology (Olutunji et al., 2015). Shame may give rise to feelings of self-disgust in a relatively automated fashion that becomes difficult to effectively regulate. The interpretation of the above findings are speculative given the lack of empirical data and limited theoretical literature regarding the distinctions between shame and self-disgust.

The fifth research hypothesis was confirmed; self-disgust was found to mediate the relationship between childhood trauma and PD screen score. The indirect effect explained a large proportion of the variance of the total effect (55%). Previous research has shown that self-disgust mediates the relationship between dysfunctional cognitions and depressive symptoms (Overton et al., 2008) and a more recent study found that self-disgust mediated the relationship between shame and OCD (Olatunji, Cox & Kim, 2015). The present findings suggest that self-disgust may serve a similar function in partially explaining the association between childhood trauma and PD screen score. One interpretation of the present findings is that high instances of childhood abuse result in experiencing disgust directed at the self, which then confers risk for the development of PD. Power & Dalgleish (2016) argue that the role of disgust has been largely unrecognised in the development of emotional disorders and that the chronic activation of self-disgust may provide one of the basis of mood disorders such as that found in depression. It is therefore possible that the chronic activation of self-disgust extends to PD.

Due to the conceptual overlap between self-disgust and shame, a post-hoc parallel mediation analyses was conducted whereby shame was added as a second mediator. The indirect effect of self-disgust was still significant while accounting for its shared association with shame. Thus self-disgust exerts a unique effect on mediating the relationship between childhood trauma and likelihood of PD when included in a model with shame. The parallel mediation model revealed that childhood abuse and trauma and both proposed mediators accounted for around a third of the variance in PD screen score ( $R^2 = 0.29$ ). This suggests that there may be other important mediators missing from the model.

#### **4.4 Study limitations**

Several study limitations should be considered when interpreting the current results. Firstly, the study sample lacks diagnostic specificity due to the use of a brief PD screening tool, which only indicates likelihood of presence of PD. Specifically, the SAPAS-SR has been shown to predict presence of PD in 81% of cases in a clinical sample using a cut off score of four or more (Moran et al., 2003). This predictive validity is likely to be lower in a community sample and suggests that a substantial proportion of the study sample may have been incorrectly classified in the current study. The study aimed to recruit a very large sample at the expense of a highly specific and ‘pure’ PD sample. It was thought that a brief measure might lessen the response burden to participants. Arguably, a more detailed assessment of personality disorder (e.g. the Personality Diagnostic Questionnaire; Hyler 1994) may have provided a more robust classification of the sample and enabled firmer conclusions to be drawn from the data.

Moreover, the SAPAS, on which the SAPAS-SR is based, is an interview schedule where participants are asked follow up questions; ‘is that true in general?’ if they indicate pathology. As the SAPAS-SR was completed online, these follow up questions were not asked. This may have led to an over-reporting of pathology on the SAPAS-SR. Confirmatory follow questions on the SAPAS-SR (e.g. ‘applies most of the time and in most situations?’) may have helped to improve the validity and predictive utility of the scale. The study also failed to assess functional limitations due to PD symptoms; future research may benefit from including an additional measure to assess functional limitations such as the Work and Social Adjustment Scale (WSAS; Mundt et al., 2002).

A further limitation relates to the cross-sectional data, which limits the ability to draw definitive inferences regarding the direction of the relationship between the study

constructs. Prospective longitudinal research is needed to determine temporal precedence; i.e. that shame precedes self-disgust and that self-disgust occurs prior to symptoms of PD. Thirdly, there was a notable degree of sample attrition (39%), which is similar to attrition rates observed in other online surveys (Meade & Pappalardo, 2013). There was therefore a substantial proportion of missing data, which can introduce bias into estimates derived from a statistical model and results in a loss of information and statistical power (Becker & Powers, 2001; Kim & Curry, 1977). For example, it is possible that non-respondents might have different response profiles compared to those who responded completely; as such the sample typically is less like the population it is assumed to represent (Peng, Harwell, Liou, & Ehman, 2006). Comparisons between the completers and non-completers revealed that participants who completed the survey had higher levels of self-disgust and were older in age than those who did not complete the survey, which may have biased the current results and impacted on the generalizability of the findings.

#### **4.5 Directions for future research**

Given the theoretical proposition that self-disgust operates on an implicit level, outside of conscious awareness (Tangney et al, 2007; Rüsçh et al, 2011), future studies could seek to complement self-report measures of self-disgust with other more implicit measures of self-disgust including implicit association tests (IAT's), facial coding studies, affective priming tasks and psychophysiological indicators associated with disgust such as heart rate and skin temperature (Hickey, 2009). Indeed recent studies have highlighted the value of assessing other self-conscious emotions such as shame, via an IAT (Clerkin et al., 2014). One suggestion would be to combine self-report measures of self-disgust with an analysis of BPD participants' facial expressions when

talking about their feelings towards themselves to detect disgust related expressions. These complementary methods of assessment could be correlated to see if those who report high levels of self-disgust via self-report, also express high facial expressions of disgust when talking about themselves. This may help to further corroborate the SDS-R as a valid psychometric measure of self- disgust.

#### **4.6 Clinical implications**

The current findings have important clinical implications. Self-disgust appears to be a distressing and prominent feature of PDs that may trigger self-harming behavior and suicidal ideation (Smith et al., 2015; Abdul-Hamid et al., 2014). An increased clinical awareness of self-disgust as a unique affective phenomena is therefore necessary to aid psychotherapeutic assessment and intervention. Clinicians may need an enhanced awareness of self-disgust in order to help clients identify, label and regulate this distressing emotion. Traditional behavioral approaches (e.g. skills training, cognitive challenging, exposure) for treating severe self-loathing and self-disgust in BPD have had limited success, potentially due to self-disgust being associated with a desire to distance or get rid of that which is repelling in oneself (Krawitz, 2012). Indeed it has been suggested that the dissociative defences commonly observed in BPD may be in part, a function of the need to escape an unbearable self (Schore & Norton, 2013). Gilbert (2015) suggests that self-disgust can be focused on the whole self or parts of the self but that fundamentally, the experience is characterised by a state of conflict and hostile self-relating. Compassion focussed therapy (CFT) has therefore been proposed as a promising approach for helping people with self-disgust to develop a different emotional relationship with oneself that is based on validation, compassion and affiliation. The premise of CFT is that although the content of people's thoughts is

important, it is the emotional texture of self-referenced thinking that is more relevant. A recent empirical study demonstrated that self-affirming trait kindness regulated disgust towards one's physical appearance (Powell, Simpson & Overton, 2014). However, more research is necessary to explore the effectiveness of CFT and other psychotherapeutic interventions for working with self-disgust.

#### **4.7 Conclusion**

The findings provide preliminary support for the increased incidence of self-disgust in individuals who are at high risk for PD. Childhood abuse and trauma, and specifically neglect may be risk factors for the development of self-disgust. Shame was found to mediate the relationship between childhood trauma and self-disgust and self-disgust mediated the relationship childhood trauma and likelihood of PD. However, more research is necessary to delineate the theoretical and empirical distinctions between shame and self-disgust, and to explore the role of self-disgust in more diagnostically robust clinical PD samples.



## 5. References

- Abdul-Hamid, S., Denman, C., & Dudas, R. B. (2014). Self-relevant disgust and self-harm urges in patients with borderline personality disorder and depression: A pilot study with a newly designed psychological challenge. *PLoS ONE*, 9, (6).
- Becker, W., & Powers, J. (2001). Student performance, attrition, and class size given missing student data. *Economics of Education Review*, 20, 377-388.
- Bender, D. S., Dolan, R. T., & Skodol, A. E., et al. (2001) Treatment utilization by patients with personality disorders. *American Journal of Psychiatry*.158, (2), 295–302.
- Benecke, C., & G, Dammann. (2004) Non-verbal behavior of patients with borderline personality disorder. In M. & H. G. Hermer Klinzing (eds) *Non-verbal processes in psychotherapy*. (p261 - 272). Tübingen: DGVt Publisher.
- Bennett, D. S., Sullivan, M. W., & Lewis, M. (2010). Neglected children, shame-proneness, and depressive symptoms. *Child maltreatment*, 15(4), 305-314.
- Bierer, L. M., Yehuda, R., Schmeidler, J., Mitropoulou, V., New, A. S., Silverman, J. M., & Siever, L. J. (2003) Abuse and Neglect in Childhood: Relationship to Personality Disorder Diagnoses. *CNS Spectrums*, (8), 737-754.
- Blackburn, R., Crellin, M., & Morgan, E. M., & Tulloch, R. M. (1990) Prevalence of personality disorders in a special hospital population. *J Forens Psychiatry*; 1, (1), 43–52.
- Briggs, N. (2006). Estimation of the standard error and confidence interval of the indirect effect in multiple mediator models. *Dissertation Abstracts International*, 37, 475B.
- Bonanno, G. A., Keltner, D., Noll, J. G., Putman, F. W., Trickett, P. K., LeJeune, J., Anderson, C. (2002). When the face reveals what words do not: facial expressions of emotion, smiling, and the willingness to disclose childhood sexual abuse. *J Pers Soc Psychol*. 83, (1), 94-110.
- Buchheim, V. A., George, C., Lieble, V., Moser, A., & Benecke, C. (2007). Affective facial Behaviour of borderline patients during the Adult Attachment Projective. *Z Psychosom Med Psychother*, 53, 339-354.
- Chu, C., Bodell, L. P., Ribeiro, J. D., & Joiner, T. E. (2015). Eating disorder symptoms and suicidal ideation: The moderating role of disgust. *European Eating Disorders Review*, 23, (6), 545-552.

- Clark, J. A. (2015). Digging disgust out of the dumpster: a neuropsychological defence of self and other directed disgust as a moral virtue. In: P. A. Powell, P. G. Overton & J. Simpson (Eds.), *The Revolting Self: Perspectives on the psychological, social and clinical implications of self directed disgust* (25–53). London: Karnac.
- Coakes, S. J. (2005) SPSS: Anlysis without Anguish: Version 12.0 for Windows, John Wiley & Son Australia Ltd.
- Cohen, J., L. (1992) A power primer. *Psychol Bull.* 112:155–159.
- Consedine, N. S., & Magai, C. (2003). Attachment and emotion experience in later life: The view from emotions theory. *Attachment & Human Development*, (5), 165–187.
- Cozolino, L. (2014). *The Neuroscience of Human Relationships: Attachment and the Developing Social Brain (Norton Series on Interpersonal Neurobiology)*. WW Norton & Company.
- DeYoung, P, A. (2015) *Understanding and Treating Chronic Shame: A Relational/Neurobiological Approach*; Routledge, New York.
- Drea, C. (2016). *Is Self-disgust relevant to Psychopathology?* (Unpublished doctoral dissertation). Department of Clinical, Educational, and Health Psychology, University College London.
- Fairburn, C. G., & Harrison, P. J. (2003). Eating disorders. *The Lancet*, 361, (9355), 407-416.
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G\*Power 3: A flexible statistical power anlysis for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191.
- Field, A. (2013) *Discovering Statistics Using IBM SPSS Statistics. And sex, drugs and rock and roll: 4<sup>th</sup> Edition*. London: Sage Publications.
- Fok, L, M., Seegobin, S., Frissa, S., Hatch, S. L., Hotopf, M., Hayes, D. R., & Moran, P. (2015). Validation of the standardised assessment of personality – abbreviated scale in a general population sample. *Personality and Mental Health*, (9), 250-257.
- Germans, S., van Heck, G. L., & Hodiament, P. P. (2012). Results of the search for personality disorder screening tools: clinical implications. *J Clin Psychiatry*; 73, (2), 165-73.

- Germans, S., van Heck, G. L., Moran, P., & Hodiament, P. P. G. (2008). The self-report standardised assessment of personality-abbreviated scale: preliminary results of a brief screening test for personality disorders. *Personality and Mental Health*, (2), 70-76.
- Gilbert, P. (2015). Self-disgust, self-hatred, and compassion focused therapy. In: P. A. Powell, P. G. Overton & J. Simpson (Eds.), *The Revolting Self: Perspectives on the psychological, social, and clinical implications of self-directed disgust*, (223-242). London: Karnac.
- Gilbert, P., Clarke, M., Hempel, S., Miles, J. N. V., & Irons, C. (2004). Criticizing and reassuring oneself: An exploration of forms, styles and reasons in female students. *British Journal of Clinical Psychology*, 43, (1), 31-50.
- Giner-Sorolla, R., & Espinosa, P. (2011) Social Cuing of Guilt by Anger and of Shame by Disgust. *Psychol Sci*; 22(1) 49-53. DOI: 10.1177/0956797610392925.
- Goss, K., Gilbert, P., & Allan, S. (1994). An exploration of shame measures: The other as Shamer scale. *Personality and Individual Differences*, 17, (5), 713-717.
- Green, S., Moll, J., Deakin, J. F. W., Hulleman, J., & Zahn, R. (2013). Proneness to decreased negative emotions in major depressive disorder when blaming others rather than oneself. *Psychopathology*, 46, 34-44.
- Hair, J. F., Anderson, R. E., Tatham, R. L., and Black, W. C. (1998). *Multivariate Data Analysis*, Fifth Edition, Prentice-Hall International, Inc.
- Haslam, M., Mountford, V., Meyer, C., & Waller, G. (2008). Invalidating childhood environments in anorexia and bulimia nervosa. *Eating Behaviors*, 9(3), 313-318. doi.org.libproxy.ucl.ac.uk/10.1016/j.eatbeh.2007.10.005
- Hayes, A. F. (2012). PROCESS: A Versatile Computational Tool for Observed Variable Mediation, Moderation, and Conditional Process Modeling. Retrieved from <http://www.afhayes.com/public/process2012.pdf>
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.
- Hengartner, M. P., Ajdacic-Gross, V., Rodgers, S., Müller, M., & Rössler, W. (2013) Childhood adversity in association with personality disorder dimensions: New findings in an old debate. *European Psychiatry*; 28, 8, 476-482. DOI:10.1016/j.eurpsy.2013.04.004.

- Hyler, S.E. (1994). *PDQ-4+ Personality Diagnostic Questionnaire-4+*. New York: New York State Psychiatric Institute.
- Ille, R., Schoggl, H., Kapfhammer, H. P., Arendasy, M., Sommer, M., & Schienle, A. (2014). Self-disgust in mental disorders: symptom related or disorder specific? *Comprehensive psychiatry*, (4), 938-43.
- Isac, M., & Schneider, S. (1992). Some psychological reactions of rape victims. *Medicine and Law*, 11, 303–308.
- Johnson, D. M., Shea, M. T., Yen, S., Battle, C. L., Zlotnick, C., Sanislow, C. A., & Gunderson, J. G. (2003). Gender differences in borderline personality disorder: Findings from the Collaborative Longitudinal Personality Disorders Study. *Comprehensive Psychiatry*, 44(4), 284-292.
- Johnson, J. G., Cohen, P., Chen, H. Kasen, S., & Brook, J. S. (2006) Parenting Behaviors Associated with Risk for Offspring Personality Disorder During Adulthood, *Arch Gen Psychiatry*, 63, 5, 579-587.
- Jung, K., & Steil, R. (2012). The feeling of being contaminated in adult survivors of childhood sexual abuse and its treatment via a two-session program of cognitive restructuring and imagery modification: a case study. *Behaviour Modification*, 36, 67-86.
- Katerndahl, D. A., Burge, S. K., Kellogg, N., & Parra, J. M. (2005). Differences in childhood sexual abuse experiences between adult Hispanic and Anglo women in a primary care setting. *Journal of Child Sexual Abuse*, 14, 85-95.
- Keith, L., Gillanders, D., & Simpson, S. (2009). An exploration of the main sources of shame in an eating- disordered population. *Clinical psychology & psychotherapy*, 16(4), 317-327.
- Kim, J. & Curry, J. (1997). The treatment of missing data in multivariate analysis. *Sociological Methods and Research*, 6, 215-241.
- Krause, E. D., Mendelson, T., Lynch, T, R. (2003) Childhood emotional invalidation and adult psychological distress: The mediating role of emotional inhibition. *Child Abuse & Neglect*. 27, 199–213.
- Krawitz, R. (2012). Behavioural treatment of chronic, severe self-loathing in people with borderline personality disorder. Part 1: interrupting the self-loathing cycle. *Australasian Psychiatry*, 20(5), 419-424.

- Lansky, M., & Morrison, A. (1997). *The widening scope of shame*. Hillsdale, NJ: Analytic Press
- Lefever, S., Dal, M., & Matthíasdóttir, A. (2007) Online data collection in academic research: advantages and limitations. *British Journal of Educational Technology*, 38, (4), 574–582.
- Lewis, M (1992) *Shame: The Exposed Self*. New York. The Free Press.
- Linehan, M. (1993) *Cognitive-behavioral treatment of borderline personality disorder*. New York: Guilford Press.
- Low, G., Jones, D., MacLeod, A., Power, M., & Duggan, C. (2000). Childhood trauma, dissociation and self-harming behaviour: A pilot study. *British Journal of Medical Psychology*, 73(2), 269-278.
- Luntz, B. K., & Widom, C. S. (1994) Antisocial personality disorder in abused and neglected children grown up. *Am J Psychiatry*. 151, 670–4.
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39, 99-128.
- Marzillier, S., & Davey, G. (2004). The emotional profiling of disgust- eliciting stimuli: Evidence for primary and complex disgusts. *Cognition and Emotion*, 18(3), 313-336.
- Mason, E. C., & Richardson, R. (2012). Treating disgust in anxiety disorders. *Clin. Psychol.Sci.Pract.* 19, 180–194.
- McGinn, L. K., & Young, J. E. (1996) Schema-focused therapy. In: Salkovskis, P. M., editor. *Frontiers of Cognitive Therapy*. The Guilford Press; New York, 182–207.
- McKay, D. (2006) Treating disgust reactions in contamination-based obsessive-compulsive disorder. *Journal of Behavior Therapy and Experimental Psychiatry*. 37, 53–59.
- McLean L. M., & Gallop, R. (2003) Implications of childhood sexual abuse for adult borderline personality disorder and complex posttraumatic stress disorder. *Am J Psychiatry*, 160, (2), 369-71.
- Meade, A. W., & Pappalardo, G. (2013). *Predicting careless responses and attrition in survey data with personality*. Paper presented at the 28<sup>th</sup> Annual

Meeting of the Society for Industrial and Organizational Psychology, Houston, TX.

Moran, P., Jenkins, R., Tylee, A., Blizard, R., & Mann, A. (2000) The prevalence of personality disorder among UK primary care attenders. *Acta Psychiatrica Scandinavica*.102, 52–57.

Moran, P., Leese, M., Lee, T., Walters, P., Thorncroft, G., & Mann, A. (2003) Standardised Assessment of Personality – Abbreviated Scale (SAPAS): preliminary validation of a brief screen for personality disorder. *The British Journal of Psychiatry*, 183, (3), 228-232.

Mountford, V., Corstorphine, E., Tomlinson, S., & Waller, G. (2007). Development of a measure to assess invalidating childhood environments in the eating disorders. *Eating Behaviors*, (8), 48–58.

Munro, B. H. (2005). *Statistical methods for health care research*. Philadelphia: Lippincott, Williams & Wilkins.

Mundt, J. C., I. M. Marks, et al. (2002). "The Work and Social Adjustment Scale: A simple measure of impairment in functioning." *Br. J. Psychiatry* 180: 461-4.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3<sup>rd</sup> Ed.) New York, NY: McGraw-Hill, Inc.

Olatunji, B. O., Cisler, J. M., Deacon, B. J., Connolly, K., & Lohr J, M. (2007) The Disgust Propensity and Sensitivity Scale-Revised: Psychometric properties and specificity in relation to anxiety disorder symptoms. *Journal of Anxiety Disorders*, 21, (7), 918-930.

Olatunji, B. O., Cox, R., & Kim, E. H. (2015). Self-Disgust Mediates the Association Between Shame and Symptoms of Bulimia and Obsessive-Compulsive Disorder. *Journal of Social and Clinical Psychology*: 34, (3), 239-258.

Overton, P. G., Markland, F. E., Taggart, H. S., Bagshaw, G. L., & Simpson, J. (2008). Self-disgust mediates the relationship between dysfunctional cognitions and depressive symptomatology. *Emotion*, (8), 379-385.

Pallant, J. (2001). *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS for Windows (Version 10)*, Allen & Unwin, St.Leonards, N.S.W.

- Peng, C. Y. J., Harwell, M., Liou, S. M., & Ehman, L. H. (2006). Advances in missing data methods and implications for educational research. *Real data analysis*, 31-78.)
- Piccinelli, M., & Wilkinson, G. (2000). Gender differences in depression  
Critical review. *The British Journal of Psychiatry*, 177(6), 486-492.
- Powell, P. A., Overton, P. G., & Simpson, J. (2014). The revolting self: An interpretative phenomenological analysis of the experience of self-disgust in females with depressive symptoms. *Journal of Clinical Psychology*, 70, (6), 562–578.
- Powell, P. A, Overton, P. G, & Simpson, J. (2015). Reflections on the revolting self: a commentary and further directions. In: P. A. Powell, P. G. Overton & J. Simpson (Eds.), *The Revolting Self: Perspectives on the psychological, social and clinical implications of self directed disgust* (243-255). London: Karnac.
- Powell, P. A., Simpson, J., & Overton, P. G. (2014). Self-affirming trait kindness regulates disgust toward one's physical appearance. *Body Image*, 12, 98–107.
- Powell, P. A., Simpson, J., & Overton, P. G. (2015). An introduction to the revolting self: self-disgust as an emotion schema. In: P. A. Powell, P. G. Overton & J. Simpson (Eds.), *The Revolting Self: Perspectives on the psychological, social and clinical implications of self directed disgust* (1 – 25). London: Karnac.
- Power, M. J. (2006) The structure of emotion: an empirical comparison of six models. *Cognition and Emotion*, 20: 694-713.
- Power, M, J., & Dalgleish, T. (1997). *Cognition and Emotion: From Order to Disorder*. Hove, U.K: Taylor Francis.
- Power, M., & Dalgleish, T. (2016). *Cognition and emotion: From Order to Disorder*. Psychology press.
- Rahm, G. B., Renck, B., & Rinsberg, K. C. (2006). “Disgust, disgust beyond description” Shame cues to detect shame in disguise, in interviews with women who were sexually abused during childhood. *Journal of Psychiatric and Mental Health Nursing*, 13, 100–109.
- Reynolds, L. M., McCambridge, S. A., & Consedine, N. S. (2015). Self-disgust and adaptation to chronic physical health conditions: implications for avoidance and withdrawal. In: P. A. Powell, P. G. Overton & J. Simpson. (Eds.), *The Revolting Self: Perspectives on the psychological, social and clinical implications of self directed disgust* (75- 89). London: Karnac.

- Roberts, T. A., & Goldenberg, J. L. (2007). Wrestling with nature: an existential perspective on the body and gender in self-conscious emotions. In: J. L. Tracy, R. W. Robins, & J.P. Tangney (Eds.), *The Self-Conscious Emotions: Theory and Research* (389-406). New York: Guilford Press.
- Robertson, C. D., Kimbrel, N. A., & Nelson-Gray, R. O. (2013) The Invalidating Childhood Environment Scale (ICES): Psychometric Properties and Relationship to Borderline Personality Symptomatology. *Journal of Personality Disorders*, 27, (3), 402-10.
- Rüsch, N., Lieb, K., Gottler, C. H., Schramm, E., Richter, H., Jacob, G. A., Corrigan, P. W., & Bohus, M. (2007). Shame and implicit self-concept in women with borderline personality disorder. *American Journal of Psychiatry*, 164, (3), 500-508.
- Rüsch, N., Schulz, D., Valerius, G., Steil, R., Bohus, M., Schmahl, C., (2011). Disgust and implicit self-concept in women with posttraumatic stress disorder and borderline personality disorder. *Eur. Arch. Psychiatry Clin. Neurosci*, 261, 369–376.
- Sanders, B., & Becker-Laussen, E. (1995). The measurement of psychological maltreatment: Early data on the Child Abuse and Trauma Scale. *Child Abuse & Neglect*, 19, (3), 315- 323.
- Sansone, R. A., Gaither, G. A., & Songer, D. A. (2002). The relationships among childhood abuse, borderline personality, and self-harm behavior in psychiatric inpatients. *Violence Vict*, 17, (1), 49-55.
- Sauer, S. E., & Baer, R. A. (2010). Validation of measures of biosocial precursors to borderline personality disorder: Childhood emotional vulnerability and environmental invalidation. *Assessment*. 17, (4), 454-466, doi: 10.1177/1073191110373226.
- Scherer, K. R., & Wallbott, H. G. (1994) Evidence for universality and cultural variation of differential emotion response patterning. *Journal of Personality and Social Psychology*, 66, 310-328.
- Schlenle, A., Haas-Krammer, A., Schoggl, H., Kapfhammer, H. P., & Ille, R. (2013). Altered state and trait disgust in borderline personality disorder. *J Nerv Ment Dis*. 201, (2), 105-8.
- Schore, A. N., & Norton, P. W. (2013). The science of the art of psychotherapy. *J Clin Psychiatry*, 74(9), e867.



- Schwaiger, T. (2016). *'The role of self-disgust in non-suicidal self-injury among individuals with personality disorder.'* (Unpublished doctoral dissertation) Department of Clinical, Educational, and Health Psychology, University College London.
- Simpson, J., Hillman, R., Crawford, T., & Overton, P. G. (2010). Self-esteem and self-disgust both mediate the relationship between dysfunctional cognitions and depressive symptoms. *Motivation and Emotion*, 34, 399-406.
- Smith, N. B., Steele, A. M., Weitzman, M. L., Trueba, A. F., & Meuret, A. E. (2015). Investigating the Role of Self-Disgust in Non-suicidal Self-Injury. *Archives of Suicide Research*, 19, (1), 60–74.
- Soeteman, D. I., Hakkaart-van Roijen, L., Verheul, R., & Busschbach, J. J. (2008). The economic burden of personality disorders in mental health care. *Journal of Clinical Psychiatry*, 69, (2), 259-65.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using Multivariate Statistics*. Boston: Allyn and Bacon.
- Tracy, J. L., Robins, R. W., & Schriber, R. A. (2009). Development of a FACS verified set of basic and self-conscious emotion expressions. *Emotion*, 9, 554-559.
- Trull, T. J. (2001) Structural relations between borderline personality disorder features and putative etiological correlates. *J Abnorm Psychol*. 110, 471–81.
- Valentin, M., Sasha, M., Theodora, M., Cecilia, M., Chrysostome, Z. J., & Johanne, R. (2015) Family Functioning and Parental Invalidation of Depressed Adolescents with Borderline Personality Disorder Traits. *J Child Adolesc Behav*, (3), 235.
- van Overveld, M., de Jong, P. J., & Peters, M. L. (2010). The Disgust Propensity and Sensitivity Scale-Revised: Its predictive value for avoidance behavior. *Personality and Individual Differences*, 49, 706-711.
- van Overveld, M., de Jong, P.J., Peters, M.L., Cavanagh, K., & Davey, G, C, L. (2006). Disgust propensity and disgust sensitivity: separate constructs that are differentially related to specific fears. *Personality and Individual Differences*, 41, 1241-1252.
- Vizin, G., & Unoka, Z. (2014). The role of shame in development of the mental disorders II. Measurement of shame and relationship. *Psychiatria Hungarica: A*

*Magyar Pszichiatriai Tarsasag tudományos folyóirata*, 30(3), 278-296.

Wilson, R., Veale, D., & Freeston, M. (2016) Imagery Re-scripting for Body Dysmorphic Disorder: A multiple baseline Single Case Experimental Design. *Behaviour Therapy*, 47, (2), 248-261.

Yen, S., Shea, M. T., Battle, C. L., Johnson, D. M., Zlotnick, C., & Dolan-Sewell, R., et al. (2002) Traumatic exposure and posttraumatic stress disorder in borderline, schizotypal, avoidant, and obsessive-compulsive personality disorders: findings from the collaborative longitudinal personality disorders study. *J Nerv Ment Dis*; 190, 510–18.

Zanarini, M. C, Frankenbur, F. R, Reich, D. B., Marino, M. F., Lewis, R. E., Williams, A., et al. (2000). Bi-parental failure in the childhood experiences of borderline patients. *Journal of Personality Disorders*, 14, 254-273.

Zanarini, M. C, Williams, A. A., Lewis, R. E. et al (1997). Reported pathological childhood experiences associated with the development of borderline personality disorder. *American Journal of Psychiatry*, 154, 1101-1116.

### **Part 3: Critical Appraisal**

## **1. Introduction**

This critical appraisal considers outstanding issues regarding the assessment of self-disgust using the self-disgust scale revised (SDS-R) and possible areas of improvement are discussed. Directions for future research are considered in light of the current findings. Reflections are offered on the strengths and limitations of conducting an internet-based survey, highlighting the potential of social media in aiding recruitment of participants for psychological research. Finally, reflections are offered on the impact the research has had on me as a researcher and clinician.

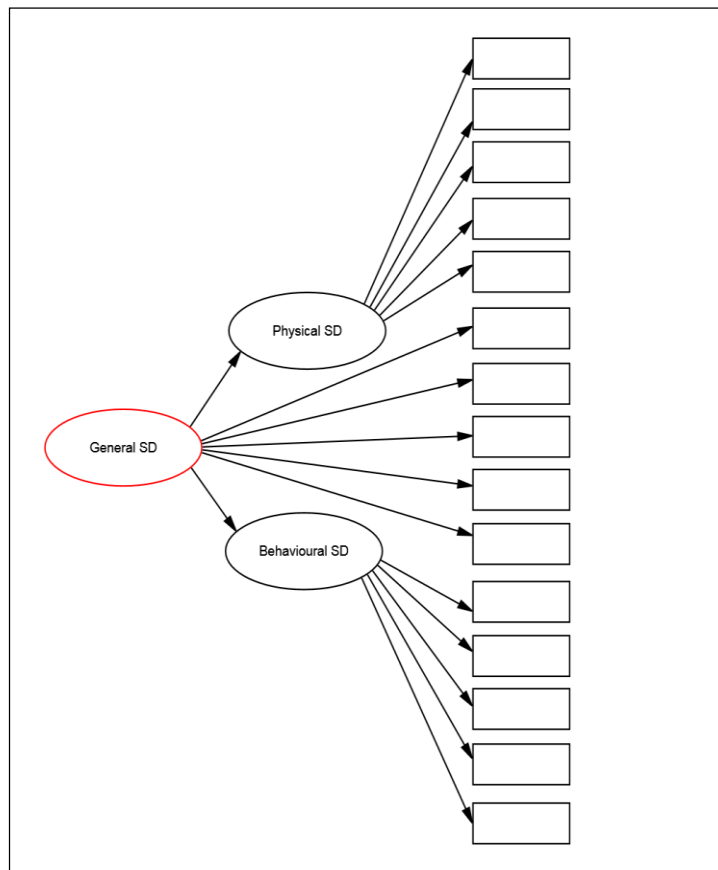
## **2. The Self-Disgust Scale Revised (SDS-R)**

The process of conducting this research led me to reflect on the inherent difficulties in measuring a complex psychological phenomenon such as self-disgust. Although the authors of the SDS-R propose a three-factor structure (physical disgust, behavioural disgust, general disgust), this intended factor structure was not entirely supported by the current data and three cross-loading items were removed from the scale as they were not considered to represent a discrete ‘general disgust’ factor. Further work is therefore necessary on the SDS-R to confirm its factor structure, reliability and validity.

In particular, the authors argue that the scale taps into an overarching and general form of disgust with the self, and suggest elsewhere that excessive and maladaptive self-disgust involves an appraisal of the *entire* self as an object of disgust and that this is detrimental to psychological well-being (Powell, Simpson & Overton, 2015). This ‘general disgust’ factor is therefore considered central in the operationalization of maladaptive self-disgust. The SDS-R items pertaining to this ‘general disgust’ factor (e.g. ‘I am proud of who I am’, ‘People avoid me’, ‘I can’t stand

being me’) may benefit from being refined and greater clarification is necessary on how these items tap into a general disgust factor as these items could easily relate to shame or a general dislike of the self. The use of more characterological and disgust based terminology for example; ‘who I am disgusts me’ or ‘at my core, I am disgusting’ or ‘I have felt disgusted by myself for as long as I can remember’ may be useful additional items that tap into a ‘general disgust’ factor. These items may help to capture appraisals in which the *entire* self is seen as an object of disgust and not just parts of the self (i.e. physical or behavioural traits).

The SDS-R may benefit from having a more clearly defined theoretical foundation that reflects the author’s operational definition of the self-disgust construct. For example, Powell et al., (2015) propose that self-disgust is an enduring emotion schema with distinct cognitive-affective components. However, no items in the scale appear to address the cognitive components of self-disgust and no items in the scale use any derivative of the word ‘disgust’. Further articulation of the theoretical underpinning of the scale and potential refinement of the items relating to a ‘general disgust’ factor may improve the validity of the scale. In view of these outstanding issues, further correspondence with the author of the SDS-R revealed that the intended factor structure of the scale is in fact hierarchical, meaning that the three factors (general, physical, behavioural) were never intended to exist independently on the same level. The general disgust factor is hypothesised to have two grouping factors (physical/behavioural) in addition to five items which cross-load on both the physical and behavioural factors (see Figure 1).



*Figure 1: Proposed hierarchical structure of the SDS-R (P. Powell, Personal Communication, April 25, 2016)*

Future research could therefore conduct a bi-factor confirmatory analysis (e.g., Jennrich & Bentler, 2011) on the current data to confirm this proposed factor structure. The SDS-R may also benefit from being validated on a more specific diagnostic group as the general PD sample in the current study represents a highly heterogeneous category. For example, future online research could focus on BPD specifically, and administer a symptom scale such as the Borderline Symptom List (BSL-23; Bohus et al., 2009). Moreover, it has been suggested that self-disgust may be high in Obsessive Compulsive, Narcissistic and Antisocial Personality Disorder (J. Feigenbaum, personal communication, June 2, 2016) and further research could explore the association

between these various forms of PD and self-disgust. This would enable more specific conclusions to be drawn regarding the reliability and validity of the revised scale in more distinct clinical samples.

### **3. Further research directions**

The findings highlight that early experiences of abuse and trauma and specifically, neglect may be risk factors for the development of self-disgust. Neglectful experiences may be common in the early lives of individuals with PD and when combined with frequent expressions of disgust from caregivers, may contribute to the development of a self-disgust schema. Interventions aimed at improving parent-child interactions may therefore help to attenuate the use of parental displays of disgust towards their children. For example, video feedback interventions have shown promising results for improving problematic parent-child interactions (Høivik, 2015) and may facilitate the identification and minimization of disgust based facial expressions and associated tone of voice, for example. Moreover, it may be of interest to investigate the impact of peer relations as there is known to be a relationship between early peer experiences and schema development (Keith, Gillanders & Simpson, 2009). For example, experiences of bullying are thought to involve both nausea and disgust and often involve a wish to eliminate what the despised person represents (Schott & Søndergaard, 2014). Thus, it seems plausible that experiences of bullying and social exclusion may contribute to the development of a self-disgust schema and may warrant further investigation.

The relationship between attachment and self-disgust may also represent an interesting avenue of further inquiry as preliminary studies have indicated that attachment style influences responses to facial displays of disgust. For example,

anxiously attached individuals attend away from closed mouth displays of disgust (social-moral disgust) and it is hypothesised that this represents an emotional regulatory response to perceived social threat (Westphal, Bonanno & Mancini, 2014). Further research may seek to consider whether various attachment styles are related to self-disgust.

#### **4. Web-based research**

In conducting the present research, I was surprised by the effectiveness of an online social media campaign, in recruiting large numbers of study participants. Research suggests that online social media is ripe for researchers to use as a tool for recruitment (Ryan, 2013; Fenner et al., 2012) but that clinical/academic researchers have been slow to adapt to this new technology (Khatri et al., 2015). In the current study, 526 participants attempted the survey, however, 39% of them did not complete the survey. A negative relation between survey length and response rate has been observed (Yammarino, Skinner & Childers, 1991) and it is possible that participants did not complete the survey due to the questionnaire battery being too long (approx. 35 min). Researchers must therefore weigh-up the relative costs and benefits of investigating numerous study hypotheses, versus the costs of participant attrition and shorter questionnaire batteries may help to improve study completion rates.

For the current study, a low-cost website was built (<http://www.research-selfdisgust.com>) in order to present a visually appealing and informative landing page that would promote research participation. Here, the researchers provided information on why the research was important and provided a link to online articles by the British Psychological Society that were relevant to self-disgust. A brief biography and photographs of the researchers were additionally presented to enable participants to



understand our personal motivation for conducting research in this area and to cultivate a rapport/relationship with potential participants. Future researchers may benefit from developing a visually exciting and informative website, ensuring that the real world relevance of the study is communicated and essentially ‘bringing to life’ academic research that can often be perceived as ‘dry’ and ‘irrelevant’ (Pymm & Hider; 2008). Future websites could consider including the voice of service users as a way to involve them further in the research process and to highlight the real world relevance of the research. Adding a YouTube clip of the researchers talking about the rationale and clinical implications of the research may additionally help with participant recruitment, and this strategy has been shown to be effective in increasing recruitment in a public health study (Khatri et al., 2015).

A campaign approach was utilized to recruit participants, using several different online social media platforms at once (e.g. Facebook, Twitter) and specific mental health forums and blogs. Facebook and twitter have access to over 1 billion users each (Khatri et al., 2015) and therefore offer a huge pool of potential participants. An aim was to build a relationship with the study population and community; for example, twitter was used and ‘tweets’ were sent directly to individuals and organisations (e.g. Emergence Plus BPD charity) with a request to re-tweet the survey link. This strategy is thought to develop ‘derived rapport’, through the dissemination of recruitment messages via people, organisations, or communities that have an existing relationship with potential participants (Temple & Brown, 2011). Content related to self-disgust/BPD/Mental Health was also tweeted and I interacted with other twitter feeds by re-tweeting interesting and applicable topics on a regular basis. Other researchers may therefore benefit from developing a highly focused social media strategy targeted

towards the specific study sample of interest. A commitment to regularly update and maintain the social media sites is essential in order to maximise participant response.

Despite the fact that advancements in technology have extended opportunities for psychological research, they introduce additional complexities around adherence to ethical principles (BPS, 2013). For example, the level of risk to participants in the current study was difficult to control, given the lack of direct oversight over participants' behaviour or mood. Although a risk plan and distress tolerance techniques were factored into the study, it is unclear how effective or useful these were and whether any potential harm was caused to participants through completing the survey. Only two participants contacted the researchers via e-mail/twitter to say that they found the survey emotionally challenging to complete and they were responded to accordingly; however it is unknown whether more participants became distressed in the process. On reflection, it may have been helpful to ask participants after they exit the survey at any point; 'how did you find this experience?' and 'how are you feeling at the moment?' with a range of possible response options. This would have indicated whether those who did not complete the study (39%) did so due to being distressed or due to other factors such as becoming fatigued while completing the survey.

Secondly, although it is recommended to cultivate relationships with potential participants and to interact with them online where possible, this poses ethical dilemmas around confidentiality and the right to privacy. For example, although the identity of the participants completing the survey is unknown and no identifiable information is recorded, several participants contacted the researcher via twitter therefore revealing their identity to the researchers. The blurred distinctions between public and private spaces on Twitter also raise questions around contacting individuals who may be suitable potential participants. For example if an individual blogs about BPD on

Twitter, is it ethical to tweet them the survey link or is this an invasion of their privacy? As a researcher, I considered these ethical dilemmas and only made tweets to individuals who 'followed' the researcher in order to respect their right to privacy. In addition, the administrators of mental health blogs and forums were always contacted first to gain permission to promote the research, as recommend in the BPS guidance on conducting internet based research (BPS, 2013).

## **5. Impact on the researcher**

Prior to conducting this research, I was curious, yet somewhat sceptical as to whether self-disgust represented a unique variable that was worthy of interest and whether it explained anything over and above other associated emotions such as shame or self-hatred. However, in conducting a focus group with participants who experience high levels of self-disgust from a personality disorder service, it was evident that painful and intense feelings of self-disgust/revulsion were common and sadly a fundamental way in which they had come to see themselves. Through this research, I have developed an increasing awareness of the expression of self-disgust reactions in both myself, and others. In particular, I have developed an increasing sensitivity in my clinical work to the obvious and at times, subtle, communications and expressions of disgust towards the self. For example, I have had client's report that they feel 'disgusted' and 'sick' by memories of childhood sexual abuse and accordingly express fears of 'infecting' me as a therapist, somehow viewing themselves as 'infectious' and 'contaminated'. I have come to see what a powerful emotion disgust is and I have been truly surprised at how little the emotion of disgust has been considered and reflected upon in clinical research and practice. Indeed disgust has previously been defined as the 'forgotten emotion of psychiatry' (Phillips, Fahy, David & Senior, 1998) and it has been argued that disgust

has often been confused with others emotions. For example, a number of phobias, which are thought to be predominantly fear driven, may in fact be disgust driven according to Power and Dalgleish (2016). I believe that at times, clinical psychology practice can become too focused on diagnostic labels and categories, symptoms and behaviours and fails to have a rich, complex and nuanced understanding of the myriad of emotions that may underpin many of the clinical presentations that appear in the consulting room. I have therefore developed a deeper appreciation of this ‘forgotten emotion’ in my clinical practice and hope to be able to support my clients to identify, label and regulate this distressing emotion; indeed disgust does appear to be finding its rightful place in clinical research and practice and has recently been termed *the* basic emotion of the 21<sup>st</sup> century (Power & Dalgleish, 2016).

## **6. Conclusion**

My experience in conducting this research has highlighted the need for on-going psychometric evaluation of the SDS-R and specifically, a bi-factor confirmatory factor analysis to confirm its factor structure. Future research may benefit from exploring the impact of peer relations in the development of a self-disgust schema and considering the use of video feedback to reduce disgust based disapproval from caregivers. The research highlighted the value of conducting an internet-based survey and how a social media strategy can be utilised to engage participants in psychological research. Finally, the process of conducting this research has alerted me to the various manifestations of disgust turned upon the self in my clinical practice and has left me with an on-going curiosity and appreciation of this often hidden, yet revolting emotion.

## 7. References

- Bohus, M., Kleindienst, N., Limberger, M. F., Stieglitz, R. D., Domsalla, M., Chapman, A. L., Steil, R., Philipsen, A., Wolf, M. (2009) The short version of the Borderline Symptom List (BSL-23): Development and initial data on psychometric properties. *Psychopathology*, 42, 32-39.
- British Psychological Society (2013). *Ethics Guidelines for Internet-mediated research*. Retrieved 20<sup>th</sup> May from <http://www.bps.org.uk/system/files/Public%20files/inf206-guidelines-for-internet-mediated-research.pdf>
- Fenner, Y., Garland, S. M., Moore E. E., Jayasinghe Y., Fletcher A., Tabrizi S. N., Gunasekaran B., Wark J. D. (2012) Web-based recruiting for health research using a social networking site: an exploratory study. *J Med Internet Res*, 14 (1).
- Høivik, M. S., Lydersen, S., Drugli, M. B., Onsøien, R., Hansen, M. B., & Berg-Nielsen, T. S. (2015). Video feedback compared to treatment as usual in families with parent-child interactions problems: a randomized controlled trial. *Child and adolescent psychiatry and mental health*, 9(1), 3.
- Khatri, C., Chapman, S. J., Glasbey, J., Kelly, M., Nepogodiev, D., Bhangu, A., ... & STARSurg Committee. (2015). Social media and internet driven study recruitment: evaluating a new model for promoting collaborator engagement and participation. *PloS one*, 10(3), e0118899.
- Phillips, M. L., Fahy, T., David, A. S., & Senior, C. (1998). Disgust: The forgotten emotion of psychiatry. *The British journal of Psychiatry*, 172, 373-375. <http://dx.doi.org/10.1192/bjp.172.5.373>
- Powell, P. A., Simpson, J., & Overton, P. G. (2015) An introduction to the revolting self: self-disgust as an emotion schema. In: P. A. Powell, P. G. Overton & J. Simpson (Eds.), *The Revolting Self: Perspectives on the psychological, social and clinical implications of self directed disgust* (1 – 25). London: Karnac.
- Power, M. J., & Dalgleish, T. (2016). *Cognition and Emotion: From Order to Disorder* (3<sup>rd</sup> edn.). Hove: Psychology Press.
- Pymm, B. & Hider, P. (2008). Research Literature and its Perceived Relevance to University Librarians, *Australian Academic & Research Libraries*, 39, (2), 92-105, DOI: 10.1080/00048623.2008.10721335.
- Ryan, G. S. (2013) Online social networks for patient involvement and recruitment in clinical research. *Nurse Res*, 21(1), 35–9.

Schott, R. M., & Søndergaard, D. M. (Eds.). (2014). *School bullying: New theories in context*. Cambridge University Press.

Temple, E. C., & Brown, R. F. (2011). A comparison of Internet-based participant recruitment methods: Engaging the hidden population of cannabis users in research. *Journal of Research Practice*, 7(2), Article D2.

Westphal, M., Bonanno, G. A., & Mancini, A. D. (2014). Attachment and Attentional Biases for Facial Expressions of Disgust. *Journal of Social and Clinical Psychology*, 33(2), 169.

Yammarino, F. J., Skinner, S. J., & Childers, T. L. (1991). Understanding mail survey response behavior a meta-analysis. *Public Opinion Quarterly*, 55(4), 613-639.

## **Appendix A: Qualsyst criteria for evaluating quantitative research papers**

## Quality Assessment Criteria

### 1. Question or objective sufficiently described?

**Yes:** Is easily identified in the introductory section (or first paragraph of methods section). Specifies (where applicable, depending on study design) *all* of the following: purpose, subjects/target population, and the *specific* intervention(s)/association(s)/descriptive parameter(s) under investigation. A study purpose that only becomes apparent after studying other parts of the paper is *not* considered sufficiently described.

**Partial:** Vaguely/incompletely reported (e.g. “describe the effect of” or “examine the role of” or “assess opinion on many issues” or “explore the general attitudes”...); *or* some information has to be gathered from parts of the paper other than the introduction/background/objective section.

**No:** Question or objective is not reported, or is incomprehensible.

**N/A:** Should not be checked for this question.

### 2. Design evident and appropriate to answer study question? (If the study question is not given, infer from the conclusions).

**Yes:** Design is easily identified and is appropriate to address the study question / objective.

**Partial:** Design and /or study question not clearly identified, but gross inappropriateness is not evident; *or* design is easily identified but only partially addresses the study question.

**No:** Design used does not answer study question (e.g., a comparison group is required to answer the study question, but none was used); *or* design cannot be identified.

**N/A:** Should not be checked for this question.

### 3. Method of subject selection (and comparison group selection, if applicable) or source of information/input variables (e.g., for decision analysis) is described and appropriate.

**Yes:** Described and appropriate. Selection strategy *designed* (i.e., consider sampling frame and strategy) to obtain an unbiased sample of the relevant target population or the entire target population of interest (e.g., consecutive patients for clinical trials, population-based random sample for case-control studies or surveys). Where applicable, inclusion/exclusion criteria are described and defined (e.g., “cancer” -- ICD code or equivalent should be provided). *Studies of volunteers:* methods and setting of recruitment reported. *Surveys:* sampling frame/ strategy clearly described and appropriate.

**Partial:** Selection methods (and inclusion/exclusion criteria, where applicable) are not completely described, but no obvious inappropriateness. Or selection strategy is not ideal (i.e., likely introduced bias) but did not likely seriously distort the results (e.g., telephone survey sampled from listed phone numbers only; hospital based case-control study identified all cases admitted during the study period, but recruited controls admitted during the day/evening only). Any study describing participants only as “volunteers” or “healthy volunteers”. *Surveys:* target population mentioned but sampling strategy unclear.



**No:** No information provided. *Or* obviously inappropriate selection procedures (e.g., inappropriate comparison group if intervention in women is compared to intervention in men). *Or* presence of selection bias which likely seriously distorted the results (e.g., obvious selection on “exposure” in a case-control study).

**N/A:** Descriptive case series/reports.

4. *Subject (and comparison group, if applicable) characteristics or input variables/information (e.g., for decision analyses) sufficiently described?*

**Yes:** Sufficient relevant baseline/demographic information clearly characterizing the participants is provided (or reference to previously published baseline data is provided). Where applicable, reproducible criteria used to describe/categorize the participants are clearly defined (e.g., ever-smokers, depression scores, systolic blood pressure > 140). If “healthy volunteers” are used, age and sex must be reported (at minimum). *Decision analyses:* baseline estimates for input variables are clearly specified.

**Partial:** Poorly defined criteria (e.g. “hypertension”, “healthy volunteers”, “smoking”). *Or* incomplete relevant baseline / demographic information (e.g., information on likely confounders not reported). *Decision analyses:* incomplete reporting of baseline estimates for input variables.

**No:** No baseline / demographic information provided.  
*Decision analyses:* baseline estimates of input variables not given.

**N/A:** Should not be checked for this question.

*Q5, Q6, Q7 N/A*

8. *Outcome and (if applicable) exposure measure(s) well defined and robust to measurement / misclassification bias? Means of assessment reported?*

**Yes:** Defined (or reference to complete definitions is provided) and measured according to reproducible, “objective” criteria (e.g., death, test completion – yes/no, clinical scores). Little or minimal potential for measurement / misclassification errors. *Surveys:* clear description (or reference to clear description) of questionnaire/interview content and response options. *Decision analyses:* sources of uncertainty are defined for all input variables.

**Partial:** Definition of measures leaves room for subjectivity, *or* not sure (i.e. not reported in detail, but probably acceptable). *Or* precise definition(s) are missing, but no evidence or problems in the paper that would lead one to assume major problems. *Or* instrument/mode of assessment(s) not reported. *Or* misclassification errors may have occurred, but they did not likely seriously distort the results (e.g., slight difficulty with recall of long-ago events; exposure is measured only at baseline in a long cohort study). *Surveys:* description of questionnaire/interview content incomplete; response options unclear. *Decision analyses:* sources of uncertainty are defined only for some input variables.

**No:** Measures not defined, or are inconsistent throughout the paper. *Or* measures employ only ill-defined, subjective assessments, e.g. “anxiety” or “pain.” *Or* obvious misclassification errors/measurement bias likely seriously distorted the results (e.g., a prospective cohort relies on self-reported outcomes among the “unexposed” but requires clinical assessment of the “exposed”). *Surveys:* no description of questionnaire/interview content or response options. *Decision analyses:* sources of uncertainty are not defined for input variables.

**N/A:** Descriptive case series / reports.

9. Sample size appropriate?

**Yes:** Seems reasonable with respect to the outcome under study and the study design. When statistically significant results are achieved for major outcomes, appropriate sample size can usually be assumed, unless large standard errors ( $SE > \text{effect size}$ ) and/or problems with multiple testing are evident. *Decision analyses:* size of modelled cohort / number of iterations specified and justified.

**Partial:** Insufficient data to assess sample size (e.g., sample seems “small” and there is no mention of power/sample size/effect size of interest and/or variance estimates aren’t provided). *Or* some statistically significant results with standard errors  $> \text{effect size}$  (i.e., imprecise results). *Or* some statistically significant results in the absence of variance estimates. *Decision analyses:* incomplete description or justification of size of modelled cohort / number of iterations.

**No:** Obviously inadequate (e.g., statistically non-significant results and standard errors  $> \text{effect size}$ ; or standard deviations  $> \text{effect size}$ ; or statistically non-significant results with no variance estimates and obviously inadequate sample size). *Decision analyses:* size of modelled cohort / number of iterations not specified.

**N/A:** Most surveys (except surveys comparing responses between groups or change over time). Descriptive case series / reports.

10. Analysis described and appropriate?

**Yes:** Analytic methods are described (e.g. “chi square”/ “t-tests”/“Kaplan-Meier with log rank tests”, etc.) and appropriate.

**Partial:** Analytic methods are not reported and have to be guessed at, but are probably appropriate. *Or* minor flaws or some tests appropriate, some not (e.g., parametric tests used, but unsure whether appropriate; control group exists but is not used for statistical analysis). *Or* multiple testing problems not addressed.

**No:** Analysis methods not described and cannot be determined. *Or* obviously inappropriate analysis methods (e.g., chi-square tests for continuous data, SE given where normality is highly unlikely, etc.). *Or* a study with a descriptive goal / objective is over-analyzed.

**N/A:** Descriptive case series / reports.

11. Some estimate of variance (e.g., confidence intervals, standard errors) is reported for the main results/outcomes (i.e., those directly addressing the study question/ objective upon which the conclusions are based)?

**Yes:** Appropriate variances estimate(s) is/are provided (e.g., range, distribution, confidence intervals, etc.). *Decision analyses:* sensitivity analysis includes all variables in the model.

**Partial:** Undefined “+/-“ expressions. *Or* no specific data given, but insufficient power acknowledged as a problem. *Or* variance estimates not provided for all main results/outcomes. *Or* inappropriate variance estimates (e.g., a study examining change over time provides a variance around the parameter of interest at “time 1” or “time 2”, but does not provide an

estimate of the variance around the difference). *Decision analyses*: sensitivity analysis is limited, including only some variables in the model.

**No**: No information regarding uncertainty of the estimates. *Decision analyses*: No sensitivity analysis.

**N/A**: Descriptive case series / reports. Descriptive surveys collecting information using open-ended questions.

## 12. Controlled for confounding?

**Yes**: Randomized study, with comparability of baseline characteristics reported (or non-comparability controlled for in the analysis). *Or* appropriate control at the design or analysis stage (e.g., matching, subgroup analysis, multivariate models, etc). *Decision analyses*: dependencies between variables fully accounted for (e.g., joint variables are considered).

**Partial**: Incomplete control of confounding. *Or* control of confounding reportedly done but not completely described. *Or* randomized study without report of comparability of baseline characteristics. *Or* confounding not considered, but not likely to have seriously distorted the results. *Decision analyses*: incomplete consideration of dependencies between variables.

**No**: Confounding not considered, and may have seriously distorted the results. *Decision analyses*: dependencies between variables not considered.

**N/A**: Cross-sectional surveys of a single group (i.e., surveys examining change over time or surveys comparing different groups should address the potential for confounding). Descriptive studies. Studies explicitly stating the analysis is strictly descriptive/exploratory in nature.

## 13. Results reported in sufficient detail?

**Yes**: Results include major outcomes and all mentioned secondary outcomes.

**Partial**: Quantitative results reported only for some outcomes. *Or* difficult to assess as study question/objective not fully described (and is not made clear in the methods section), but results seem appropriate.

**No**: Quantitative results are reported for a subsample only, or “n” changes continually across the denominator (e.g., reported proportions do not account for the entire study sample, but are reported only for those with complete data - i.e., the category of “unknown” is not used where needed). *Or* results for some major or mentioned secondary outcomes are only qualitatively reported when quantitative reporting would have been possible (e.g., results include vague comments such as “more likely” without quantitative report of actual numbers).

**N/A**: Should not be checked for this question.

## 14. Do the results support the conclusions?

**Yes**: All the conclusions are supported by the data (even if analysis was inappropriate). Conclusions are based on all results relevant to the study question, negative as well as positive ones (e.g., they aren’t based on the sole significant finding while ignoring the negative results). Part of the conclusions may expand beyond the results, if made *in addition to* rather than instead of those strictly supported by data, and if including indicators of their interpretative nature (e.g., “suggesting,” “possibly”).

**Partial:** Some of the major conclusions are supported by the data, some are not. *Or* speculative interpretations are not indicated as such. *Or* low (or unreported) response rates call into question the validity of generalizing the results to the target population of interest (i.e., the population defined by the sampling frame/strategy).

**No:** None or a very small minority of the major conclusions are supported by the data. *Or* negative findings clearly due to low power are reported as definitive evidence against the alternate hypothesis. *Or* conclusions are missing. *Or* extremely low response rates invalidate generalizing the results to the target population of interest (i.e., the population defined by the sampling frame/ strategy).

**N/A:** Should not be checked for this question.

### **How to calculate the summary score for quantitative papers**

**Total sum** = (number of 'yes' x 2) + (number of 'partials' x 1)

**Total possible sum** = 28 – (number of 'N/A' x 2)

**Summary Score:** total sum/total possible sum

## Quality assessment criteria for qualitative papers

### 1. Question / objective clearly described?

**Yes:** Research question or objective is clear by the end of the research process (if not at the outset).

**Partial:** Research question or objective is vaguely/incompletely reported.

**No:** Question or objective is not reported, or is incomprehensible.

### 2. Design evident and appropriate to answer study question?

(If the study question is not clearly identified, infer appropriateness from results/conclusions.)

**Yes:** Design is easily identified and is appropriate to address the study question.

**Partial:** Design is not clearly identified, but gross inappropriateness is not evident; *or* design is easily identified but a different method would have been more appropriate.

**No:** Design used is not appropriate to the study question (e.g. a causal hypothesis is tested using qualitative methods); *or* design cannot be identified.

### 3. Context for the study is clear?

**Yes:** The context/setting is adequately described, permitting the reader to relate the findings to other settings.

**Partial:** The context/setting is partially described.

**No:** The context/setting is not described.

### 4. Connection to a theoretical framework / wider body of knowledge?

**Yes:** The theoretical framework/wider body of knowledge informing the study and the methods used is sufficiently described and justified.

**Partial:** The theoretical framework/wider body of knowledge is not well described or justified; link to the study methods is not clear.

**No:** Theoretical framework/wider body of knowledge is not discussed.

### 5. Sampling strategy described, relevant and justified?

**Yes:** The sampling strategy is clearly described and justified. The sample includes the full range of relevant, possible cases/settings (i.e., more than simple convenience sampling), permitting conceptual (rather than statistical) generalizations.

**Partial:** The sampling strategy is not completely described, or is not fully justified. Or the sample does not include the full range of relevant, possible cases/settings (i.e., includes a convenience sample only).

**No:** Sampling strategy is not described.

6. Data collection methods clearly described and systematic?

**Yes:** The data collection procedures are systematic, and clearly described, permitting an “audit trail” such that the procedures could be replicated.

**Partial:** Data collection procedures are not clearly described; difficult to determine if systematic or replicable.

**No:** Data collection procedures are not described.

7. Data analysis clearly described, complete and systematic?

**Yes:** Systematic analytic methods are clearly described, permitting an “audit trail” such that the procedures could be replicated. The iteration between the data and the explanations for the data (i.e., the theory) is clear – it is apparent how early, simple classifications evolved into more sophisticated coding structures which then evolved into clearly defined concepts/explanations for the data). Sufficient data is provided to allow the reader to judge whether the interpretation offered is adequately supported by the data.

**Partial:** Analytic methods are not fully described. Or the iterative link between data and theory is not clear.

**No:** The analytic methods are not described. Or it is not apparent that a link to theory informs the analysis.

8. Use of verification procedure(s) to establish credibility of the study?

**Yes:** One or more verification procedures were used to help establish credibility/trustworthiness of the study (e.g., prolonged engagement in the field, triangulation, peer review or debriefing, negative case analysis, member checks, external audits/inter-rater reliability, “batch” analysis).

**No:** Verification procedure(s) not evident.

9. Conclusions supported by the results?

**Yes:** Sufficient original evidence supports the conclusions. A link to theory informs any claims of generalizability.

**Partial:** The conclusions are only partly supported by the data. Or claims of generalizability are not supported.

**No:** The conclusions are not supported by the data. Or conclusions are absent.

10. Reflexivity of the account?

**Yes:** The researcher explicitly assessed the likely impact of their own personal characteristics (such as age, sex and professional status) and the methods used on the data obtained.

**Partial:** Possible sources of influence on the data obtained were mentioned, but the likely impact of the influence or influences was not discussed.

**No:** There is no evidence of reflexivity in the study report.

### **How to calculate the summary score for qualitative papers**

**Total sum** = (number of 'yes' x 2) + (number of 'partials' x 1)

**Total possible sum** = 20

**Summary Score:** total sum/total possible sum

## **Appendix B: Outline of contribution to joint thesis**



This thesis is presented as part of a joint thesis with '*The role of self-disgust in non-suicidal self-injury among individuals with personality disorder*' (Schwaiger, 2016).

Theresa and I worked closely together during the initial preparation of our projects and to ensure that our projects were sufficiently independent. The service user consultation was jointly conducted, as was the NHS ethics application as it was necessary to merge our two projects into one study. We designed and created the website together as well as promotional material to advertise the research. Participants were recruited by both trainees and involved us developing a social media campaign and presenting and promoting our research to various mental health teams in North East London.

Data entry was not necessary due to the POD system automatically storing data, which could be exported into SPSS. Following the recruitment phase, statistical analyses were conducted independently in SPSS as evidenced in the differing analysis and focus of the studies. However, we did collaborate over the validity and reliability of the SDS-R and agreed together to use a revised 12-item version of the scale in each of our respective studies following an analysis of the factor structure of the scale.

The literature search, data analysis (excluding factor analysis), theoretical conceptualization and write-up of all parts of the thesis were therefore completed independently and without collaboration.

## **Appendix C: Notification of Ethical Approval**

03 July 2015

Dr Janet Feigenbaum  
Senior Lecturer Clinical Psychology; Consultant Clinical Psychologist  
University College London and North East London NHS Foundation Trust  
Research Department Clinical, Educational and Health Psychology  
University College London  
Gower Street  
London  
WC1E 6BT

Dear Dr Feigenbaum

**Study title:** Self-disgust and its relationship with early childhood experiences and self-harm.  
**REC reference:** 15/LO/1032  
**IRAS project ID:** 172486

Thank you for your letter of 02 July 2015, responding to the Committee's request for further information on the above research and submitting revised documentation.

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

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

**Confirmation of ethical opinion**

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

### Conditions of the favourable opinion

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

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

*Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.*

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

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

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

*Sponsors are not required to notify the Committee of approvals from host organisations*

### Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database. This should be before the first participant is recruited but no later than 6 weeks after recruitment of the first participant.

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

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

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact [REDACTED]. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from NRES. Guidance on where to register is provided on the HRA website.

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

### **Ethical review of research sites**

#### NHS sites

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

## Approved documents

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

Document	Version	Date
Copies of advertisement materials for research participants [Flyer 1]	1	22 May 2015
Copies of advertisement materials for research participants [Flyer 2]	1.2	22 May 2015
Covering letter on headed paper		01 July 2015
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Arthur J Gallagher]		14 July 2014
Non-validated questionnaire [SDS-R ]	1	22 May 2015
Participant consent form [Paper Version]	2	24 April 2015
Participant information sheet (PIS) [PIS paper version]	3	01 July 2015
Participant information sheet (PIS) [PIS on website]	3	01 July 2015
REC Application Form	4.0.0	22 May 2015
Referee's report or other scientific critique report [North East London NHS Foundation Trust]		02 April 2015
Research protocol or project proposal	4	01 July 2015
Response to Request for Further Information		02 July 2015
Summary CV for Chief Investigator (CI) [Janet Feigenbaum]		
Summary CV for student [Clare Drea]		01 April 2015
Summary CV for student [Theresa Schwaiger]		02 April 2015
Validated questionnaire [Validated Questionnaire Pack]		

## Statement of compliance

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

## After ethical review

### Reporting requirements

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

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

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

## User Feedback

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

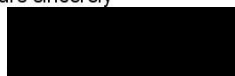
## HRA Training

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

<b>15/LO/1032</b>	<b>Please quote this number on all correspondence</b>
-------------------	---

With the Committee's best wishes for the success of this project.

Yours sincerely



Signed on behalf of:  
**Miss Stephanie Ellis**  
**Chair**

Email: 

*Enclosures:* "After ethical review – guidance for researchers"

*Copy to:* Mr David Wilson - UCL

Ms Fiona Horton - Research and Development Department, North  
East London NHS Foundation Trust

Ms Clare Drea – UCL

Ms Theresa Schwaiger – UCL

## **Appendix D: Participant information sheet**



## Information Sheet for Participants in Research Studies

Title of Project: **Self-disgust and its relationship with early childhood experiences and self-harm.**

This study has been approved by the UCL  
Research Ethics Committee [Project ID Number]:

Name, Address and Contact Details of  
Investigators:

**Ms Clare Drea, Ms Theresa Schwaiger &  
Dr Janet Feigenbaum**



**Sub-Department of Clinical Psychology**

**University College London**

**Gower Street**

**London WC1E 6BT**

**Project Telephone:** 

**Project Email:**  
  




We would like to invite you to participate in this research project. You should only participate if you want to; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, it is important for you to read the following information carefully. If you would like more information please contact the researchers via e-mail or telephone.

### **What is this research about?**

Disgust is an emotion that is universal to all humans, yet it is a highly under-researched area. Many people report experiencing disgust about themselves which is known as self-disgust. Our study looks to assess how common feelings of self-disgust are. We are also interested in the links between self-disgust, early childhood experiences and deliberate self-harm in adulthood. We will use the information to help us learn more about how common this experience is and to also better services and psychological therapies for people who experience high levels of self-disgust.

### **Why should I get involved?**

For each participant who completes the survey, £1\* will be donated to one of three charities. Your donation will help support vulnerable adults and children. Please indicate your choice by circling one of the below charities:

*MIND (Mental Health Charity)*

*EMERGENCE (service user led charity supporting individuals with personality disorders)*

*NSPCC (National Society for the Prevention of Cruelty to Children)*

\*Donations will be capped at a maximum of £475

### **What will it involve?**

This survey contains a total of seven questionnaires. Topics covered include personality style, possible experiences of self-disgust and self-harm, feelings about yourself, childhood experiences, and some background information about you. We are interested in your views whether you identify with these topics or not. This survey is anonymous and your identity will remain completely unknown. The completed survey will only be seen by researchers in our team.

### **How might taking part affect me?**

These questionnaires cover some topics that may be painful to think about. If you feel distressed while completing the forms, refer to the extra sheet provided which will give

you information to help manage your distress and also recommend where to seek further support. You can also contact the research (Clare Drea on XXXXXXXX). If you are currently experiencing high levels of distress we would suggest completing this survey at another time.

#### **How do I find out the results?**

This research study will end in autumn 2016. If you would like to know the results of this research, please e-mail your request to [REDACTED]. As this survey is anonymous it will not be possible to identify you from any publications that may arise out of this research.

#### **Consent**

If you decide to take part, you will be asked to sign a consent form. After signing the consent form, you will remain free to withdraw from the study at any time and without giving a reason.

## **Appendix E: Participant consent form**



## Informed Consent Form for Participants in Research Studies

*(This form is to be completed independently by the participant after reading the Information Sheet.)*

Title of Project: **Self-disgust and its relationship with early childhood experiences and self-harm.**

This study has been approved by: NHS NRES Committee  
London – Hampstead [Project ID Number]: 15/LO/1032

### Participant's Statement

- I confirm that I have read and understood the information sheet for the above study.
- I confirm that I have been advised of an individual to contact for answers to questions about the research, my rights as a participant and whom to contact should I become unduly distressed.
- I understand that my participation is voluntary and that I am free to withdraw at any time.
- I understand that the information I submit is completely anonymous and that it will not be possible to identify me from any data. It will therefore not be possible to retract my information from the research once submitted.
- I understand that the information I provide will be included in the researcher's doctoral thesis and will be published as a report in a scientific journal.
- I give my consent to take part in the above study.

Signed:

Date:

## **Appendix F: Participant Help Sheet**



## Getting Help for Feelings of Distress

This sheet contains recommendations on how to best cope with your current distress and will also provide you with numbers of services you could contact to seek help.

### Calming Exercise

The following exercise has been proven to help people in distress to feel calmer and less anxious. It is called 'Safe Place Imagery' and involves imagining yourself in a safe and peaceful place. Please follow these instructions:

*If you notice any negative links or images entering your positive imagery, then discard that image and think of something else. Avoid using your home (or bed) as a 'safe place'.*

*You can create a new 'safe place' in your imagination.*

*Start by getting comfortable in a quiet place where you won't be disturbed, and take a couple of minutes to focus on your breathing, close your eyes, become aware of any tension in your body, and let that tension go with each out-breath.*

*Imagine a place where you can feel calm, peaceful and safe. It may be a place you've been to before, somewhere you've dreamed about going to, somewhere you've seen a picture of, or just a peaceful place you can create in your mind's eye. Some people have found it helpful to imagine themselves on a beach, on a forest meadow or at a waterfall.*

*Look around you in that place, notice the colours and shapes. What else do you notice?*

*Now notice the sounds that are around you, or perhaps the silence. Sounds far away and those nearer to you. Those that are more noticeable, and those that are more subtle.*

*Think about any smells you notice there.*

*Then focus on any skin sensations - the earth beneath you or whatever is supporting you in that place, the temperature, any movement of air, anything else you can touch.*

*Notice the pleasant physical sensations in your body whilst you enjoy this safe place.*

*Now whilst you're in your peaceful and safe place, you might choose to give it a name, whether one word or a phrase that you can use to bring that image back, anytime you need to.*

*You can choose to linger there a while, just enjoying the peacefulness and serenity. You can leave whenever you want to, just by opening your eyes and being aware of where you are now, and bringing yourself back to alertness in the 'here and now'.*

### **Where to seek further help**

These are the numbers of services that can help if you are feeling distressed:

#### **Samaritans**

Helpline Number: 08457 90 90 90 (Open 24 hours, 365 day a days)

██████████ / [www.samaritans.org](http://www.samaritans.org)

#### **Healthcare professional**

If you are currently using services contact your care coordinator, therapist or psychologist for advice and support.

#### **GP**

Contact your local GP

#### **NHS Emergency and Urgent Care Service**

Call 111 (use this 24 hour telephone helpline when you need help fast but it is not a 999 emergency)

[www.nhs.uk/111](http://www.nhs.uk/111)

#### **A&E**

Visit your local A & E department in case of a 999 emergency

## **Appendix G: Research Recruitment Poster**



**www.research-selfdisgust.com**

Paper copies of the questionnaires can be posted to you and returned via a pre-paid stamped addressed envelope.



Clare Drea/Theresa Schwaiger



research-selfdisgust.com

research-selfdisgust.com

research-selfdisgust.com

research-selfdisgust.com

research-selfdisgust.com

research-selfdisgust.com

research-selfdisgust.com

research-selfdisgust.com

research-selfdisgust.com

research-selfdisgust.com

research-selfdisgust.com

research-selfdisgust.com

research-selfdisgust.com

**Appendix H: The Self-Report Standardised Assessment of Personality –  
Abbreviated Scale (SAPAS-SR)**

**(SAPAS-SR; Germans, Van Heck, Moran, & Hodiament, 2008)**

Please select Y (yes) or N (no) to the following questions:

1. In general, do you have difficulty making and keeping friends? Y/N  
(yes=1, no=0)
2. Would you normally describe yourself as a loner? Y/N  
(yes=1, no=0)
3. In general, do you trust other people? (i.e. *most* of the time in *most* situations) Y/N  
(yes=0, no=1)
4. Do you normally lose your temper easily? Y/N  
(yes=1, no=0)
5. Are you normally an impulsive sort of person? Y/N  
(yes=1, no=0)
6. Are you normally a worrier? Y/N  
(yes=1, no=0)
7. In general, do you depend on others a lot? Y/N  
(yes=1, no=0)
8. In general, are you a perfectionist? Y/N  
(yes=1, no=0)

## **Appendix I: The Self-disgust scale revised (SDS-R)**

This questionnaire is concerned with how you feel about yourself. 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

	<i>Strongly disagree</i>					<i>Strongly agree</i>	
	1	2	3	4	5	6	7
1. I find myself repulsive.	1	2	3	4	5	6	7
2. I am proud of who I am.	1	2	3	4	5	6	7
3. I am sickened by the way I behave.*	1	2	3	4	5	6	7
4. Sometimes I feel tired. <sup>†</sup>	1	2	3	4	5	6	7
5. I can't stand being me.*	1	2	3	4	5	6	7
6. I enjoy the company of others.	1	2	3	4	5	6	7
7. I am revolting for many reasons. <sup>†</sup>	1	2	3	4	5	6	7
8. I consider myself attractive.*	1	2	3	4	5	6	7
9. People avoid me.*	1	2	3	4	5	6	7
10. I enjoy being outdoors.	1	2	3	4	5	6	7
11. I feel good about the way I behave.	1	2	3	4	5	6	7
12. I do not want to be seen.	1	2	3	4	5	6	7
13. I am a sociable person.	1	2	3	4	5	6	7
14. I often do things I find revolting.	1	2	3	4	5	6	7
15. I avoid looking at my reflection. <sup>†</sup>	1	2	3	4	5	6	7
16. Sometimes I feel happy.	1	2	3	4	5	6	7
17. I am an optimistic person.	1	2	3	4	5	6	7
18. I behave as well as everyone else. <sup>†</sup>	1	2	3	4	5	6	7
19. It bothers me to look at myself.	1	2	3	4	5	6	7
20. Sometimes I feel sad.	1	2	3	4	5	6	7
21. I find the way I look nauseating.*	1	2	3	4	5	6	7
22. My behaviour repels people.	1	2	3	4	5	6	7

\* = Revised item; <sup>†</sup> = New item.

**Appendix J: The Disgust Propensity and Sensitivity Scale-Revised  
(DPSSR-R)**

DPSS-R Instructions: this questionnaire consists of 16 statements about disgust. Please read each statement and think how often it is true for you, then select the box that is closest to this.

		Never	Rarely	Sometimes	Often	Always
1	I avoid disgusting things					
2	When I feel disgusted I worry that I might pass out					
3	It scares me when I feel nauseous					
4	I think disgusting items could cause me illness/infection					
5	I feel repulsed					
6	Disgusting things make my stomach turn					
7	I screw up my face in disgust					
8	When I notice that I feel nauseous, I worry about vomiting					
9	When I experience disgust, it is an intense feeling					
10	I experience disgust					
11	It scares me when I feel faint					
12	I become disgusted more easily than other people					
13	I worry that I might swallow a disgusting thing					
14	I find something disgusting					
15	It embarrasses me when I feel disgusted					
16	I think feeling disgust is bad for me					

## **Appendix K: The Experience of Shame Scale (ESS)**



**(ESS)**

Everybody at times can feel embarrassed, self-conscious or ashamed. These questions are about such feelings if they have occurred **at any time in the past year**. There are no 'right' or 'wrong' answers. Please indicate the response which applies to by selecting from the following options.

	<b>Not at all</b>	<b>A little</b>	<b>Moderately</b>	<b>Very much</b>
1. Have you felt ashamed of any of your personal habits?	( 1 )	( 2 )	( 3 )	( 4 )
2. Have you worried about what other people think of any of your personal habits?	( )	( )	( )	( )
3. Have you tried to cover up or conceal any of your personal habits?	( )	( )	( )	( )
4. Have you felt ashamed of your manner with others?	( )	( )	( )	( )
5. Have you worried about what other people think of your manner with others?	( )	( )	( )	( )
6. Have you avoided people because of your manner?	( )	( )	( )	( )
7. Have you felt ashamed of the sort of person you are?	( )	( )	( )	( )
8. Have you worried about what other people think of the sort of person you are?	( )	( )	( )	( )
9. Have you tried to conceal from others the sort of person you are?	( )	( )	( )	( )
10. Have you felt ashamed of your ability to do things?	( )	( )	( )	( )
11. Have you worried about what other people think of your ability to do things?	( )	( )	( )	( )
12. Have you avoided people because of your inability to do things?	( )	( )	( )	( )
13. Do you feel ashamed when you do something wrong?	( )	( )	( )	( )

- |   |     |     |     |     |
|---|-----|-----|-----|-----|
| 14. Have you worried about what other people think of you when you do something wrong?                | ( ) | ( ) | ( ) | ( ) |
| 15. Have you tried to cover up or conceal things you felt ashamed of having done?                     | ( ) | ( ) | ( ) | ( ) |
| 16. Have you felt ashamed when you said something stupid?   | ( ) | ( ) | ( ) | ( ) |
| 17. Have you worried about what other people think of you when you said something stupid?             | ( ) | ( ) | ( ) | ( ) |
| 18. Have you avoided contact with anyone who knew you said something stupid?                          | ( ) | ( ) | ( ) | ( ) |
| 19. Have you felt ashamed when you failed in a competitive situation?                                 | ( ) | ( ) | ( ) | ( ) |
| 20. Have you worried about what other people think of you when you failed in a competitive situation? | ( ) | ( ) | ( ) | ( ) |
| 21. Have you avoided people who have seen you fail?   | ( ) | ( ) | ( ) | ( ) |
| 22. Have you felt ashamed of your body or any part of it?   | ( ) | ( ) | ( ) | ( ) |
| 23. Have you worried about what other people think of your appearance?                                | ( ) | ( ) | ( ) | ( ) |
| 24. Have you avoided looking at yourself in the mirror?   | ( ) | ( ) | ( ) | ( ) |
| 25. Have you wanted to hide or conceal your body or any part of it?                                   | ( ) | ( ) | ( ) | ( ) |

## **Appendix L: Invalidating Childhood Environment Scale (ICES)**

**(ICES)**

The following questions address your experiences of how your parents responded to your emotions when you were young. For each item, please choose the rating from 1 to 5 that most closely reflects your experience up to the age of 18 years.

1	2	3	4	5
Never	Rarely	Some of the time	Most of the time	All of
the time				

Because your parents may have been very different, please rate them separately. The left hand column is to rate your mother, and the right hand column is to rate your father.

<b>Mother</b>	<b>During my childhood</b>	<b>Father</b>
e.g. ( 2 )		(3)
( )	1. My parents would become angry if I disagreed with them.	( )
( )	2. When I was anxious, my parents ignored this.	( )
( )	3. If I was happy, my parents would be sarcastic and say things like: "What are you smiling at?"	( )
( )	4. If I was upset, my parents said things like: "I'll give you something to really cry about!"	( )
( )	5. My parents made me feel OK if I told them I didn't understand something difficult the first time.	( )
( )	6. If I was pleased because I had done well at school, my parents would say things like: "Don't get too confident".	( )
( )	7. If I said I couldn't do something, my parents would say things like "You're being difficult on purpose"	( )
( )	8. My parents would understand and help me if I couldn't do something straight away.	( )
( )	9. My parents used to say things like: "Talking about worries just makes them worse".	( )
( )	10. If I couldn't do something however hard I tried, my parents told me I was lazy.	( )
( )	11. My parents would explode with anger if I made decisions without asking them first.	( )
( )	12. When I was miserable, my parents asked me what was upsetting me, so that they could help me.	( )
( )	13. If I couldn't solve a problem, my parents would say things like: "Don't be so stupid - even an idiot could do that!"	( )
( )	14. When I talked about my plans for the future, my parents listened to me and encouraged me.	( )

## **Appendix M: Childhood Abuse & Trauma Scale (CATS)**

## (CATS)

This questionnaire seeks to determine the general atmosphere of your home when you were a child or teenager and how you felt you were treated by your parents or principal caretaker. (If you were not raised by one or both of your biological parents, please respond to the questions below in terms of the person who had the primary responsibility for your upbringing as a child.)

Where a question inquires about the behaviour of both of your parents and your parents differed in their behaviour, please respond in terms of the parent whose behaviour was the more severe or worse. In responding to these questions, simply select the appropriate number according to the following definitions:

**0 = never      1 = rarely      2 = sometimes      3 = very often      4 = always**

To illustrate, here is a hypothetical question: Did your parents criticize you when you were young? If you were rarely criticized, you should circle number 1. Please answer all the questions.

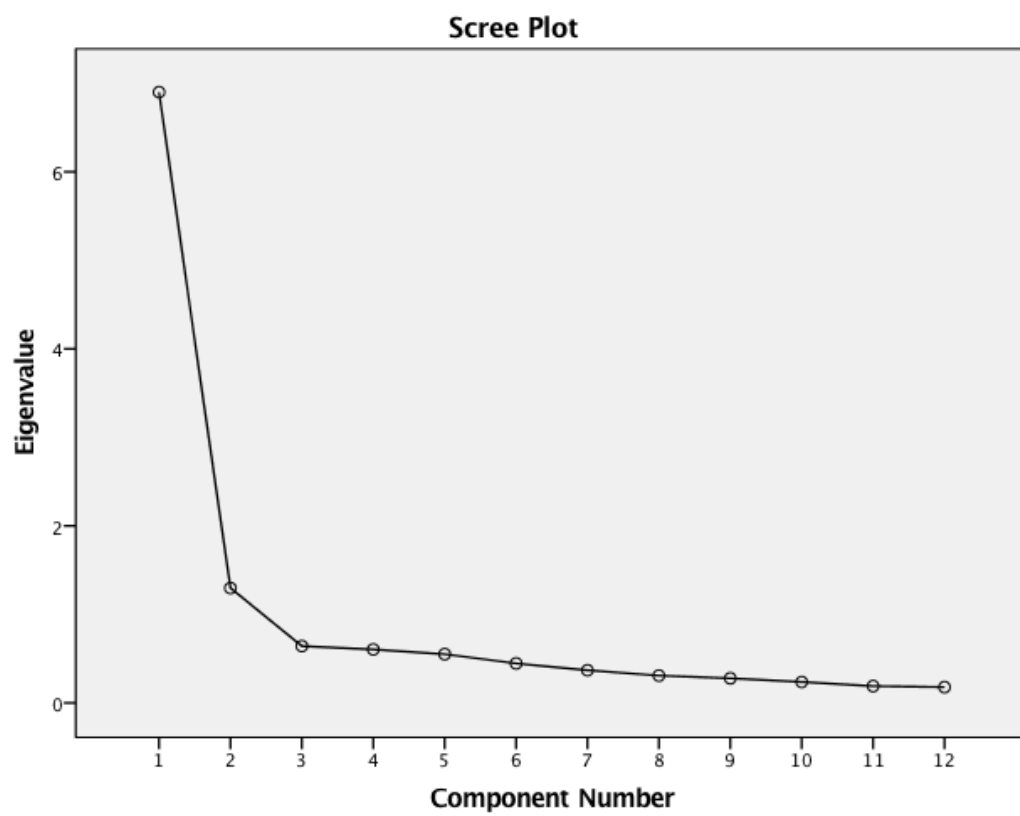
1. Did your parents ridicule you?	0	1	2	3	4
2. Did you ever seek outside help or guidance because of problems in your home?	0	1	2	3	4
3. Did your parents verbally abuse each other?	0	1	2	3	4
4. Were you expected to follow a strict code of behaviour our in your home?	0	1	2	3	4
5. When you were punished as a child or teenager, did you understand the reason you were punished?	0	1	2	3	4
6. When you didn't follow the rules of the house, how often were you severely punished?	0	1	2	3	4
7. As a child did you feel unwanted or emotionally neglected?	0	1	2	3	4
8. Did your parents insult you or call you names?	0	1	2	3	4
9. Before you were 14, did you engage in any sexual activity with an adult?	0	1	2	3	4
10. Were your parents unhappy with each other?	0	1	2	3	4
11. Were your parents unwilling to attend any of your school-related activities?	0	1	2	3	4

12. As a child were you punished in unusual ways e.g. being locked in a closet for a long time or being tied up?	0	1	2	3	4
13. Were there traumatic or upsetting sexual experiences when you were a child or teenager that you couldn't speak to adults about?	0	1	2	3	4
14. Did you every think you wanted to leave your family and live with another family?	0	1	2	3	4
15. Did you ever witness the sexual mistreatment of another family member?	0	1	2	3	4
16. Did you ever think seriously about running away from home?	0	1	2	3	4
17. Did you witness the physical mistreatment of another family member?	0	1	2	3	4
18. When you were punished as a child or teenager, did you feel the punishment was deserved?	0	1	2	3	4
19. As a child or teenager, did you feel disliked by either of your parents?	0	1	2	3	4
20. How often did your parents get really angry with you?	0	1	2	3	4
21. As a child did you feel that your home was charged with the possibility of unpredictable physical violence?	0	1	2	3	4
22. Did you feel comfortable bringing friends home to visit?	0	1	2	3	4
23. Did you feel safe living at home?	0	1	2	3	4
24. When you were punished as a child or teenager did you feel "the punishment fit the crime"?	0	1	2	3	4
25. Did your parents ever verbally lash out at you when you did not expect it?	0	1	2	3	4
26. Did you have traumatic sexual experiences as child or teenager?	0	1	2	3	4
27. Were you lonely as a child?	0	1	2	3	4
28. Did your parents yell at you?	0	1	2	3	4
29. When either of your parents was intoxicated, were you ever afraid of being sexually mistreated?	0	1	2	3	4

30. Did you every wish for a friend to share your life?	0	1	2	3	4
31. How often were you left at home alone as a child?	0	1	2	3	4
32. Did your parents blame you for things you didn't do?	0	1	2	3	4
33. To what extent did either of your parents drink heavily or abuse drugs?	0	1	2	3	4
34. Did your parents ever hit or beat you when you did not expect it?	0	1	2	3	4
35. Did your relationship with your parents ever involve a Sexual experience?	0	1	2	3	4
36. As a child, did you have to take care of yourself before you were old enough?	0	1	2	3	4
37. We you physically mistreated as a child or teenager?	0	1	2	3	4
38. Was your childhood stressful?	0	1	2	3	4



**Appendix N: Scree Plot of Principal Component Analysis for the  
15-item SDS-R**



## **Appendix O: Component loadings of the 15-item SDS-R**

---

**Component loadings of the 15 item SDS-R**


---

Item no.	Content of item	Component 1	Component 2
19.	It bothers me to look at myself	.952	
21.	I find the way I look nauseating	.885	
15.	I avoid looking at my reflection	.868	
8.	I consider myself attractive	.834	
1.	I find myself repulsive	.678	
7.	I am revolting for many reasons	.579	.358
12.	I do not want to be seen	.572	
5.	I cant stand being me	.507	.430
9.	People avoid me	.355	.340
18.	I behave as well as everyone else		.899
11.	I feel good about the way I behave		.846
3.	I am sickened by the way I behave		.812
22.	My behaviour repels people		.705
14.	I often do things I find revolting		.592
2.	I am proud of who I am	.401	.481

---

*Note:* Factor loading <.3 are supressed