The Disgusting Self: Developing and Validating an Implicit Measure of Self-Disgust

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I hereby declare that:

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2. None of the material contained in the thesis has been used in any other submission for an academic award.

3. I am aware of and understand the University's policy on plagiarism and certify that this thesis is my own work. The use of all published or other sources of material consulted have been properly and fully acknowledged.

4. The work undertaken towards the thesis has been conducted in accordance with the SHU Principles of Integrity in Research and the SHU Research Ethics Policy.

5. The word count of the thesis is 40,178.

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Abstract

Self-disgust is a negative self-conscious emotion schema (Powell et al., 2015) that originates from the basic emotion of disgust but is directed to the self. Self-disgust can be directed towards the self, commonly referred to as self-disgust “self” (e.g., "I find myself repulsive") or to one’s actions, referred to as self-disgust “ways” (e.g., "I often do things I find revolting") (Overton et al., 2008). The concept of self-disgust as an emotion schema highlights the fact that it is a lasting cognitive-affective construct, that requires some level of self-awareness (Powell et al., 2015). There are two main measures for self-disgust, which are both self-report questionnaires; the Self-Disgust Scale (SDS; Overton et al., 2008) and the Questionnaire for the Assessment of Self-Disgust (QASD; Schienle et al., 2014). Although self-report measures can offer insight into the experience of self-disgust, there are several limitations to their use. The aim of the present PhD thesis was to develop and validate a new implicit association test (IAT) to measure self-disgust. To do so, a systematic literature review (Chapter 2) was conducted to understand the relationship between self-disgust and mental health difficulties in clinical and non-clinical populations. The development of the implicit self-disgust measure involved four studies. Study 1 (word validation study) used a sample of university students to validate a set of disgust-related words and happy words, matched for length. This process resulted in 27 word-pairs (disgust-happy) that were used subsequently in the development of the IAT. In Study 2, the newly developed IAT was validated in a sample of adults, which included two target categories (self and other) alongside two attribute categories (disgust and happy). Study 3 involved development and validation of a single-target IAT (removing the “other” target category) in a sample of healthy adults. Finally, Study 4, used the single-target IAT, in a population with post-traumatic stress disorder (PTSD) or trauma-related experiences, which is known to exhibit high levels of self-disgust. Overall, the findings from the four studies, suggest that self-disgust may not reflect automatic, implicit cognitive processes, as measured by IATs. Rather, self-disgust requires reflective processes that are more readily captured using self-report measures. An extensive discussion on the utility of IAT in the context of self-disgust and the limitations of the current thesis are presented in the last chapter.

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I dedicate this PhD to my incredible family and friends. You all encourage me to live life to the fullest and to live by the mantra of my late Grandma, Floppy: Be Kind, Have Fun, Keep Going.

Table of Contents

Table of Tables

Table of Figures

Table of Appendices

Chapter 1 – Exploring the origins and structure of self-disgust.

This chapter aims to introduce self-disgust and describe its hypothesised origins from the basic emotion of disgust. It will also present key characteristics that define self-disgust, and why it is labelled as an emotional schema and a self-conscious emotion. Finally, the structure of self-disgust will be presented, with an extensive discussion on the two sub-factors of self-disgust (i.e., self and ways) that encapsulate the construct.

The historical basis of disgust

Disgust is known as one of six basic emotions: anger, fear, disgust, sadness, happiness and surprise (Izard, 2007). Basic emotions are determined by their biological basis, evolved origins, universality and location. They are initiated by a stimulus, which after consciously or unconsciously being appraised, triggers an 'affect program' (a genetically determined information storage; Ekman & Cordaro, 2011). An affect program then displays a co-ordinated set of responses as outputs. Basic emotions are innate and are thought to develop within the first 9 months of a baby's life (Draghi-Lorenz et al., 2001).

Disgust was initially defined by Darwin (1872/1965) as "…something revolting, primarily in relation to the sense of taste, as actually perceived or vividly imagined; and secondary to anything which causes a similar feeling, through the sense of smell, touch and even of eyesight." (p.253). Disgust in its original form is commonly referred to as core disgust. Core disgust began as a means of revulsion and rejection of eating something contaminated (Rozin & Fallon, 1987, p.23). The distaste response is seen to have preadapted to be used in wider contexts. In the preadaptation process, the responses stayed consistent and stable, however, the inputs that triggered a disgust response have changed and elaborated. Although the direct translation of disgust in French is 'distaste', disgust and distaste demonstrate wide differences. Distaste is more associated with the sensory aspects of the food item, rather than the idea of contamination (Rozin & Fallon, 1980; Fallon & Rozin, 1983). Originally, a predominantly food rejection system to avoid illness, disgust then moved to be a pathogen avoidance system and then further onto avoidance of animal reminders, death and moral actions among more (Olatunji et al., 2008).

Selection pressures have led to the evolution of separate disgust adaptations that perform distinct functions in the domains of pathogen avoidance, mate choice and moral choices (Lieberman & Patrick, 2014; Fumagalli et al., 2011). There is consistency in what individuals cross-culturally find disgusting, including substances such as faeces and dead bodies, which contain harmful bacteria (Ekman, 1972). However, there are many other objects and behaviours that elicit disgust despite not having a disease threat, for example stealing, lying and fraud (Tybur et al., 2009).

Disgust is a basic emotion that is genetically hardwired to elicit distinct responses (behavioural and physiological) to contaminants (Ross et al., 2013). Disgust can be described as an 'affect program', within the Tomkins/Ekman framework (Ekman, 1984), meaning inputs such as environmental cues trigger output responses, which can be displayed as behaviours, physiological responses, or expressions. Disgust can be identified uniquely as it has a very distinct facial expression, universally identified across cultures (Ekman et al., 1987; Izard, 1971; Haidt & Keltner, 1999). A typical disgust expression includes a lowering of the bottom jaw, a wrinkled nose and upper lip raise (Ekman & Friesen, 1975; Pochedly et al., 2012). The bottom jaw and wrinkled nose are the common identifiers of disgust to food substances related to disgust, whereas the raised upper lip is seen to be as a response from elaborated disgust such as dead bodies or moral violations (Rozin et al., 1994). Physiologically, the disgust reaction initiates feelings of nausea and the most common behaviour as a response to disgust is withdrawal or removal, to avoid the 'disgusting' item/ person/ event (Rozin et al., 1999).

Models of disgust

Although the research into disgust is wide ranging and has expanded in recent years, there is no singly accepted theoretical framework to understand the evolved function(s) of disgust (Olatunji & Sawchuck, 2005; Tybur et al., 2013). Many disgust researchers have identified that an evolutionary perspective is deemed necessary for a comprehensive understanding of disgust (Chapman et al., 2009; Curtis et al., 2011; Kelly, 2011; Oaten et al., 2009; Tybur et al., 2009).

Following psychometric analysis of the single domain disgust scale (developed by pioneers in disgust research to assess the emotion), Haidt et al. (1994) suggested eight potential domains of disgust (food, animals, body products, sex, envelope violations, death, hygiene and sympathetic magic) (Haidt et al., 1994). However, Schienle et al. (2003) questioned the validity of the eight domains. Following this, Olatunji et al. (2007a; 2007b) refined and re-examined the scale to develop the revised version (DS-R) with 3 main domains; core, animal reminder and contamination disgust. Olatunji et al. (2008) focused on the three main types of disgust and their relationships with personality traits, behavioural and physiological responses. The research identified support for convergent and divergent validity for these three disgust sub-types and it is suggested they may manifest as different mechanisms (oral consumptions, mortality defense and disease avoidance) which subsequently can catalyse different clinical conditions.

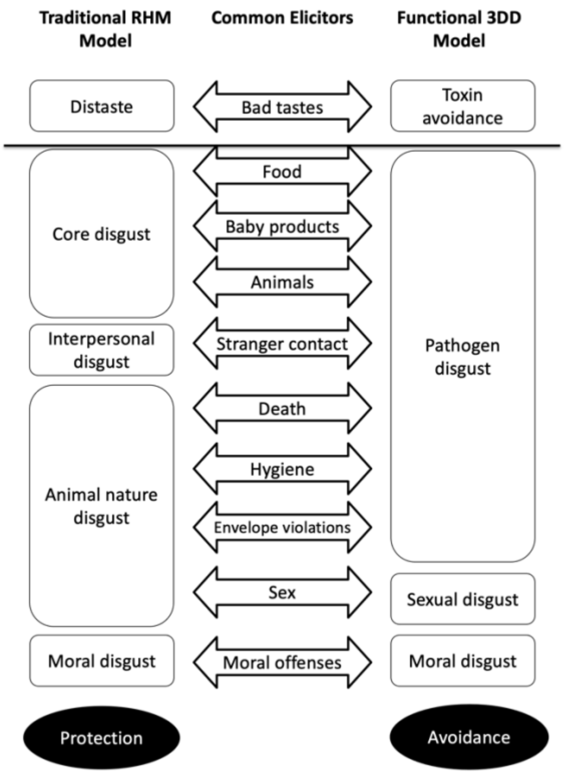
The Rozin-Haidt-McCauley (RHM) model is a theoretical model of disgust developed by Rozin et al. (2008) and focuses on the evolved function of disgust. The RHM model has been the quintessential model in explaining disgust evolution since it was developed. The model uses subsections to demonstrate how disgust has elaborated in many domains and aspects of life. The model suggests that the domains emerged from distaste with the prime function to protect the body and to motivate pathogen avoidance. The RHM model suggests disgust can be split into core disgust, interpersonal disgust, animal nature disgust and moral disgust. Core disgust, elicited from food, body products and animals, serves to protect the body from disease. Interpersonal disgust protects body, soul, and social order. Animal nature disgust protects the body and soul and denies mortality and finally, moral disgust protects social order.

Conversely, Tybur et al. (2013) put forward a functional model for disgust, with three distinct domains; pathogen disgust, sexual disgust and moral disgust, referred to as the Three Domain Disgust model (3DD). This functional model depicts the aims of the domains for avoidance. Pathogen disgust is thought to induce avoidance of physical contact with infectious disease-causing organisms. Sexual disgust initiates an avoidance of sexual contact with individuals of a low sexual value and moral disgust encourages rule endorsement. This three domains of disgust model was developed into a new scale to measure disgust which was supported by Olatunji et al. (2012) through principal components analyses and confirmatory factor analysis.

Despite these models categorising the disgust domains differently, the understanding of the fundamentals of disgust demonstrates consistent elicitors for disgust (food, baby products, animals, contact with strangers, death, hygiene, envelope violations, sex and moral offenses), which function to avoid threat or danger and as such protect the self from harm. All models also identify the evolution of disgust originating with bad tastes functioning to avoid ingesting harmful bacteria and toxins. See Figure 1 for a comparison of the latter two models (RHM and 3DD respectively).

Figure 1

Comparison of the RHM and 3DD models of disgust. Source: adapted from Tybur et al. (2013).



How disgust evolved

Disgust is a system that has evolved over time as civilisation and society has changed (Olatunji & Sawchuk, 2005). As systems evolve, they adapt to serve specific purposes. Disgust has notable adaptive functional roles, however, as with all emotions, it is also possible for disgust to become maladaptive (Powell et al., 2013). Dysfunctional disgust is thought to arise for three main reasons (Powell et al., 2013): (1) people can experience too much or too little disgust in response to typical disgust elicitors, otherwise called disgust propensity; (2) individuals can have varying levels of disgust sensitivity (disgust sensitivity describes the emotional impact someone feels when they experience disgust); finally, (3) disgust can be dysfunctional when directed towards stimuli that are deemed non-adaptive or non-functional. Self-disgust is an example of this latter sort of dysfunctional disgust, as the feeling of disgust is projected onto the self.

Self-disgust

Self-disgust is a negative emotion, originating from the basic emotion of disgust, that is directed onto aspects of the self, finding oneself disgusting. In moderation, self-disgust can be an adaptive mechanism for social acceptance and moral judgments by ensuring individuals follow 'social norms' to be accepted and included in society (Ille et al., 2014). However, at an enduring level, self-disgust can become maladaptive, which may result in a vicious cycle with detrimental outcomes. For example, those with high levels of self-disgust demonstrate high levels of loneliness possibly because they find the social environment threatening and therefore tend to withdraw (Ypsilanti et al., 2019).

The development of self-disgust in its maladaptive form is said to be due to interactions between: (i) an evolved predisposition to experience disgust; (ii) social comparison processes, which are initiated in early developmental stages and gradually become internalised (i.e., how other people see me) (Whelton & Greenberg, 2005); (iii) and any changes in the concept of self that occur over time that activate an individual's disgust repertoire (Powell et al., 2015). These characteristics demonstrate that the self-disgust construct requires self-awareness, self-reflection in addition to cognitive complexity. These are also seen as fundamental features for the experience of other self-conscious emotions, including shame and guilt (Power & Dalgleish, 2008; Tracy & Robins, 2004).

Self-disgust as a self-conscious emotion

Self-conscious emotions, most commonly shame, guilt and pride, have a fundamental role in motivating an individual's thoughts, feelings and behaviours and push people to behave in moral and socially appropriate ways (Tangney, 2002). However, they differ from basic emotions due to their unique features. A key requirement for self-conscious emotions and a clear way to distinguish self-conscious emotions from basic emotions, is that self-conscious emotions require self-awareness and self-representations (Tracy & Robins, 2004), both of which allow self-evaluations to take place, where individuals can compare themselves against their 'ideal self'. An example could be the difference between the emotions elicited from an exam result or winning the lottery. A good exam result could initiate feelings of pride, from an individual self-evaluating the work they have put in and their knowledge that resulted in this. Winning the lottery, however, would trigger a happiness emotion, a basic emotion as this does not require self-evaluation. Due to needing stable self-representation to produce self-conscious emotions, self-conscious emotions emerge much later in development and not until around 3 years of age (Lewis & Sullivan, 2005). Self-conscious emotions are more cognitively complex and unlike basic emotions there is weaker evidence of universality and cross-cultural stability (Davidson, 2006). Given the above features of self-conscious emotions, it is plausible that self-disgust can be described as a self-conscious emotion. Self-disgust requires the need to have a self-representation and self-awareness (Lazuras et al., 2019).

Due to self-conscious emotions being more cognitively complex, Tracy and Robins (2004) developed the process model for self-conscious emotions to display how self-conscious emotions are processed, which is different from basic emotions. The model is made up of stages, starting with survival goal relevance, which will separate basic emotions and self-conscious emotions, as basic emotions are deemed to have a survival goal, whereas self-conscious emotions do not. The next stage is attentional focus on the self, this is where self-representations will be activated. This will then be related to relevance to an individual's identity goal and whether it is congruent with this (positive self-conscious emotions) or incongruent (negative self-conscious emotions). Internality attributions will be made, deciphering whether the event in question occurred as a result of the self (self-conscious emotion) or not (basic emotion). The model suggests attributions of stability and globality can influence which self-conscious emotion is elicited. This pathway highlights the longer route necessary for self-conscious emotions to be formed.

Self-disgust as an emotion schema

Emotion is a term that comprises both basic emotions and emotion schemas (Izard, 2007). According to the Differential Emotion Theory (DET) (Izard, 1977), all emotions (basic or not) are products of evolution with specific dimensions that cannot be learned. Following this, emotion schemas are evolved feelings with added learned labels and concepts. An emotion schema is differentiated from mood, which is simply an emotion held over an extended period of time. They are sometimes seen as emotional traits or the motivational component of personality traits. Emotion schemas encompass dynamic emotion-cognition interactions that result from learned associations (Izard, 2007) and combine aspects of perception, emotion, appraisals and higher cognitions. The cognitive element of an emotion schema is thought to be adaptable. However, the feeling element is derived from a pre-existing basic emotion. In the case of self-disgust, the feeling stems from the basic emotion of disgust and the cognitions directed towards the self. Due to the emotion-cognition-action system in an emotion schema, activating the schema can cause perceived emotion-evoking cues, that others see as neutral (Neumann & Lozo, 2012), for example, once the emotion schema has been activated, it is like looking through a disgust lens; an individual may see going on a bus as 'disgusting', whereas this is commonly seen as a neutral emotion experience and not emotion evoking.

Understanding self-disgust as a negative self-conscious emotion schema, we are aware of the need for self-awareness and self-representations for the emotion to arise and the combination of cognition and motivation that leads to a lasting trait like affective emotion (Lazuras et al., 2019).

The structure and measurement of self-disgust

Self-disgust has been shown have a two-dimensional structure (Overton et al., 2008; Schienle et al., 2014), which includes subscales of self-disgust self and self-disgust ways, which are identified in the current measures for self-disgust. When the first measure of self-disgust was developed (Overton et al., 2008), it was based on the self-description questionnaire (SDQ III; Marsh & O'Neill, 1984) measuring several aspects of self-concept. The questions deemed most relevant to the self-disgust measure were items surrounding appearance, general self-concept and behaviour/abilities. These items were used a basis for developing the questions then used for the self-disgust scale (SDS; Overton et al., 2008). However, despite the original intention for the measure to contain three constructs, principal components analysis identified just two components for self-disgust (self-disgust self and self-disgust ways).

Self-disgust self encompasses an individual being disgusted by aspects of themselves (e.g. "I find myself repulsive"). The focus of this could comprise looks, thoughts or personality. Self-disgust ways includes disgust felt in response to one's own actions and behaviours (e.g. "the way I behave makes me despise myself"). Self-disgust as a construct incorporates both self-focused and action focused (ways) self-disgust, with the core underpinning of a feeling of disgust directed at the self. However, the sub-components can also be measured separately using subscales within the measures described. The main current measures used for self-disgust follow this structure, identifying subsections of self-disgust self and self-disgust ways and encapsulating the general self-disgust as a whole.

In a recent systematic review of the clinical utility of self-disgust (Clarke et al., 2019), two main current measures were explored (Self-Disgust Scale; Overton et al., 2008: Questionnaire for the Assessment of Self-Disgust; Schienle et al., 2014) and were identified to map well to the theoretical construct of self-disgust. In English, there is the Self-Disgust Scale (SDS), an 18 item self-report scale with two subscales, self-disgust self and self-disgust ways, measured on a 7-point Likert scale (Overton et al., 2008). This was revised in 2015, which resulted in the SDS-R (Powell et al., 2018), which has a total of 22 items, producing three proportionate domains; “physical self-disgust”, “behavioural self-disgust” and “general self-disgust”, with five questions in each. The scale was modified to increase the face validity for self-directed repugnance and reduce overlap with other conflicting constructs such as self-dislike.

In 2014, Schienle et al. created a new measure, the Questionnaire for the Assessment of Self- Disgust (QASD). This was created in the German language and is comprised of 14 items using the same two- factor structure. This measure aimed to create an instrument for both clinical and healthy populations; however, this has not been validated in the English language and the translations of some items (e.g. I find my behaviour regretful) are questionable whether this is measuring self-disgust or other concepts such as self-negativity (Powell et al., 2018; Clarke et al., 2019).

The two main measures for self-disgust demonstrate the structure by empirical means and support the categorisation of self-disgust in this way. These measures have been used cross-culturally and in relation to many different psychological disorders adding further support to the two-factor construct and scale. More detail of the measures used for self-disgust can be found in the literature review in Chapter 3.

Further to the self-report quantitative measures for self-disgust, qualitative studies allow a more in-depth exploration of the construct of self-disgust and the characteristics it entails. In terms of the phenomenology of self-disgust (what it’s like to feel disgusted with oneself), in a qualitative study in women with symptoms of depression (Powell et al. , 2014) it was found that self-disgust was perceived as a consuming, internal experience characterised by contamination and nausea. It also appears to encompass enduring and intense reactions that may be trait-like, but may also show state-like emotional elements. In other words, a person can feel self-disgust over a long period of time or momentarily. Further to this, aspects of self-disgust self (appearance) and aspects of self-disgust ways (behaviour) were drawn upon giving support to the two-factor structure discussed above and used within the self-report measures. That said, bar the above phenomenological study (Powell et al., 2014), little is known about the lived experience of self-disgust.

Self-disgust links

Research has demonstrated self-disgust to have links to both physical and mental health in clinical and non-clinical population (Clarke et al., 2019). Self-disgust has been demonstrated to have many existing relationships with several mental disorders and the associated symptoms. Some relationships that have been identified include social anxiety (Amir et al., 2010), depression (Powell et al., 2013), eating disorders (Fox, 2009), obsessive-compulsive disorder (Olatunji et al., 2015), psychoticism (Ille et al., 2014) and reduced psychological well-being (Azlan et al., 2017a; Brake et al., 2017). Due to this, the relationship between potential protective and mediating characteristics associated with self-disgust have been of interest in research. Identifying the broad associations seen with self-disgust, highlights the imperative to understand the construct sufficiently to enable effective interventions to be developed for individuals with high levels of self-disgust and accompanying psychological and mental disorders. Chapter 3 explores the different links and associations seen with self-disgust in detail.

Summary

This chapter outlined the basis and evolution of disgust and how disgust can become focused on the self and develop into what we know as self-disgust. The adaptive and maladaptive mechanisms of self-disgust were touched upon which demonstrates how self-disgust can be a maladaptive trait that manifests into different clinical conditions. Self-disgust has been introduced, and links to self-conscious emotions and emotional schemas explain why self-disgust can be categorised as a negative self-conscious emotional schema. The structure of self-disgust involves two main components, self-disgust ways and self-disgust self, which has been seen in both quantitative and qualitative research. Self-disgust has shown a broad expanse of connections with many clinical conditions highlighting the need for research to understand this construct further.

Chapter 2 – Demarcating self-disgust from other similar emotions and constructs.

In chapter 1, self-disgust was introduced, defined, and the main theoretical accounts linking it to the basic emotion of disgust were presented. A brief description of disgust was provided along with the suggested ways disgust can become dysfunctional, such as being projected onto non-adaptive or functional stimuli such as the self, resulting in self-disgust. Self-disgust was described as both an emotion schema and a negative self-conscious emotion, with research supporting these descriptions. Finally, the structure of questionnaires assessing self-disgust was discussed, including the two main factors that emerge from analysing responses to those questionnaires: disgust towards one's physical characteristics (physical self-disgust/ self-disgust self) and disgust towards one's own behaviour and actions (behavioural self-disgust/ self-disgust ways). The following chapter will explore and compare the emotions and constructs most commonly associated with self-disgust. Self-concept will be defined and distinguished from self-disgust, and mental contamination will be explored. There will be a focus on comparing self-disgust with other self-conscious emotions, such as shame and guilt and differentiating self-disgust from similar constructs namely self-hatred, self-loathing, self-blame, self-criticism, and self-depreciation, that have been discussed in literature. This chapter aims to demonstrate how these terms, constructs and emotions differ, supporting self-disgust as a distinct construct.

Self-concept

Self-concept refers to the concept an individual has about themselves as a physical, social, spiritual and moral being (Gecas, 1982). It is described as an organised schema containing memories about the self and modulates the processing of self-relevant information (Campbell & Lavallee, 1993), and can be defined as “A product of self-reflexive activity” (Gecas, 1982). Although many similarities are seen between self-concepts and emotions, emotions are distinguishable by the multidimensional structure including affective, cognitive, motivational, expressive, and physiological processes (Goetz et al., 2010). It is argued that a self-concept is constructed with two main sources of information: reflected and direct appraisal. Reflected appraisal is our beliefs concerning how we are seen by others, whereas direct appraisal is determined by how we see ourselves (Leary & Tangney, 2012). Therefore, disgust related self-concepts can be direct and reflected. However, a disgust-related self-concept is only one facet of the multidimensional self-concept of an individual (Schienle & Wabnegger, 2019) and therefore, although an individual’s self-concept may hold ideologies of self-directed disgust, the terms of self-concept and self-disgust are not interchangeable. When an individual orientates a disgust reaction to an aspect of the self and it becomes consistent and difficult to alter, this is thought to have made a contribution to the self-concept and will have a prolonged impact (Powell et al., 2015).

Mental contamination

Mental contamination or mental pollution is a construct which is similar to self-disgust. Mental contamination is when an internal sense of dirtiness arises in the absence of a physical contaminant (Rachman, 2004). Mental pollution was originally expressed as a type of mental contamination (Rachman, 2006), however the two terms are used interchangeably in the empirical literature and as such, will be referred to here as mental contamination. Individuals with mental contamination report an inability to feel clean despite intense washing rituals (Rachman, 1994, 2004, 2006). Initially, mental contamination is developed through direct or indirect contact with a perceived contaminant (immoral, impure, harmful perceived individuals). However, it can also be initiated or evoked through mental images, interactions or associations (Coughtrey et al., 2012; Rachman, 2010). The feelings of dirtiness are often internal and difficult to locate and are typically unique to an individual through memories or thoughts. A number of emotions have been identified as likely to be involved in mental contamination including disgust, fear, anxiety, anger, shame and guilt (Rachman, 2006).

Mental contamination is often seen in instances of obsessive compulsive disorder or following trauma (Jung & Steil, 2012; Badour et al., 2013). However, this does not need to be directed to the self. It can be triggered by mental images and events that have no resemblance or connection to the self and as such bears key differences to self-disgust. For example, an individual may feel contaminated due to a repetitive thought about woodlice, however, this does not involve finding the self (appearance or behaviour) disgusting, and therefore distinguishes this as mental contamination and separates this instance from self-disgust. Despite this, mental contamination and self-disgust can co-occur, for example, a memory of sexual trauma and how an individual reacted to this experience can cause self-disgust as well as mental contamination. Some studies describe mental contamination as a sense of dirtiness created by an internal event (Coughtrey et al., 2012) or permanent feelings of contamination generated by the self (Jung & Steil, 2012).

Self-disgust and other self-conscious emotions

There has been much discussion as to the demarcation of self-disgust from other overlapping self-conscious emotions, such as shame and guilt. Self-conscious emotions include shame, guilt, pride and embarrassment (Chung & Robins, 2015), Sznycer (2019) also includes social anxiety and shyness as well. Social anxiety and shyness, however, are less well researched and their architectural nature is unknown (Sznycer, 2019). For this reason, the main focus here will be demarcating self-disgust from the self-conscious emotions shame and guilt. Pride is notably different due to being a positive self-conscious emotion and embarrassment will be touched upon.

Shame, guilt, pride and embarrassment are all examples of self-conscious emotions as they require self-awareness and self-representations (Tracy & Robins, 2004). Embarrassment and guilt can be differentiated from self-disgust, as self-disgust involves core aspects of the self and is an enduring emotion, whereas guilt and embarrassment tend to be related to a specific action one has performed (Tangney et al., 1996; Tracy & Robins, 2004) and thus do not have the same long lasting impact of self-disgust. Therefore, the biggest challenge is to differentiate self-disgust from shame. That said, when focusing on the basic emotions underlying self-conscious emotions, self-disgust is considered to originate from disgust, whereas shame and guilt are identified to be most related to the basic emotion of sadness rather than disgust (e.g. Ekman & Cordaro, 2011; Levenson, 2011).

Shame is defined as a negative evaluation of the whole self, feeling inadequate and flawed (Tangney et al., 2011). Resultant behaviours of shame involve isolation and hiding the self. Guilt is usually directed to one's behaviours and subsequent behaviours normally include motivation to repair or make up for mistakes (Bastin et al., 2016; Lawrence & Taft, 2013). Although shame and guilt are both self-conscious emotions, they have clear differences in terms of the affective experiences and associated behaviours (Tangney et al., 2011; Lewis, 1971). Self-disgust differs from both shame and guilt, as the feeling of self-disgust can be as a result of both the physical self (core self) as well as behaviour and actions of the self. Similar to shame, behaviours associated with self-disgust can involve withdrawal and isolation, however, there is also a sense of avoidance of the self as well as avoiding social situations (i.e. looking at oneself through a mirror) in self-disgust, and there has consistently been research suggesting self-disgust also produces a desire to cleanse due to the evolution from the basic emotion of disgust based on contamination (Gilbert et al., 2006; Powell et al., 2014). Self-disgust has been recognised to have a unique visceral nature of experiencing nausea which is not seen in shame (Clarke et al., 2019), conversely, shame can be identified by a characteristic posture of slumped shoulders, narrowing of the chest and a downward head movement (Tracy & Matsumoto, 2008; Zahavi, 2020).

There are also evolutionary differences between shame and self-disgust. Self-disgust or more notably disgust, has evolved from disease and contamination avoidance, in comparison to shame which has developed as a damage limitation strategy in social competition (Fessler, 2007; Gilbert, 2007; Martens et al., 2012). Shame can be seen in non-human animals and young children (Clark, 2009; Lewis et al., 1992) following failure and submission in social hierarchies. The basic forms of disgust and shame are distinct from one another and show links to cognitively complex adaptations that exist following higher social and cognitive development in humans (Clark, 2009; Powell et al., 2015). Despite some overlapping between shame and self-disgust, such as tendencies for avoidance and rejection, Powell et al. (2015) have argued that self-disgust has unique identifying properties compared to other self-conscious emotions granting it the position of a distinctive separate emotion. These properties are: the phenomenological state of revulsion, a discrete expressive profile (e.g., facial expression), links with contamination and the laws of contagion and similarity, and specific appraisals (e.g., "Yuck, I'm repulsive"). In their conceptualization, self-disgust is a lasting vulnerability factor for negative psychological wellbeing. There are instances in which self-disgust can be experienced without shame, such as deformities of the body as a result of honourable military service, in this instance, an individual may feel self-disgust in how they look (self-disgust self), but convey no sense of shame.

Self-disgust and other similar constructs

Self-hatred, self-loathing, self-blame, self-criticism, and self-depreciation are all negative constructs that are directed towards the self. There is often confusion surrounding these constructs and how they are different. Some are overarching constructs enveloping others (see self-criticism and self-hate). To make this clearer, these five constructs will be defined and distinguished from one another to allow a more thorough understanding of what they all embody.

Self-hate has been operationalised as a response to setbacks or failures (Turnell et al., 2019). The primary emotional basis - hatred - incorporates generalised anger

(Ekman & Cordaro, 2011; Power & Dalgleish, 2008). Anger and disgust are closely associated and show some overlap especially in respect to sociomoral decisions and towards features of the self (Marzillier & Davey, 2004; Simpson et al., 2006; Powell et al., 2013). Despite this, emotional schemas of anger and disgust can be demarcated due to the emotional, cognitive, physiological, and behavioural profiles (Chapman & Anderson, 2012; Ekman & Cordaro, 2011; Guiterrez et al., 2012). The construct of self-hatred differs from self-disgust as there is a level of anger integrated within that emotion (Ekman & Cordaro, 2011), which is not evident in self-disgust. Self-hate and self-disgust can be uniquely identified, as self-hate can occur without self-disgust (Kardaş et al., 2021).

Self-criticism is described as an overarching construct generating feelings of self-hate and self-disgust (Simpson et al., 2010). Self-disgust is thought to be associated to some degree with generalised criticism for the self (Gilbert et al., 2004), and self-disgust unequivocally will include some self-criticism. Indeed, an aspect of self-criticism would be necessary for self-disgust. However, someone could dislike or criticise the self without displaying any self-disgust (Powell et al., 2013). One key difference seen between the constructs of self-disgust and self-criticism is that the visceral aspect of self-elicited nausea is specific to self-disgust only (Simpson et al., 2010).

Self-depreciation is a construct very similar to the profile of self-criticism, involving beating up the self, feeling unworthy, and seeing the self through a self-critical lens (McMullin, 2019). Self-depreciation incorporates feelings of unattractiveness, insecurity, being ashamed of the self and thinking down on the self (Rubenstein & Shaver, 1982). Self-depreciation can be described through self-evaluations represented by worthiness, competence, and capabilities (Liu et al., 2021). It is important in predicting life satisfaction and can project levels of stress, strain and depression (Judge et al., 2002). Similar to self-criticism, self-depreciation is undoubtably seen in tandem with self-disgust. However, the desired avoidance and withdrawal seen with self-disgust is absent in self-depreciation.

Fisher and Exline (2010) describe self-loathing and self-blame as the essential ingredients of shame as a survival response. Self-loathing incorporates negative feelings towards the self, and see the self as deserving of punishment (Donald et al., 2019). Self-blame includes finding the self responsible for negative outcomes, and consequently finds the self deserving of negative events (Zahn et al., 2015). Self-blame has been associated with both guilt and shame in the literature (Duncan and Cacciatore, 2015). Neither self-loathing or self-blame have been associated with avoidance and both tend to be specific to events rather than a generalised embedded construct. Self-disgust can be disentangled from self-loathing and self-blame due to the differences discussed above between shame, guilt, and self-disgust.

Summary

This chapter has focused on disentangling self-disgust from multiple other emotions and constructs that are similar and closely related to self-disgust and as a result often mixed up with one another and sometimes wrongly used interchangeably. The term self-concept was introduced and associated to self-disgust, whereas mental contamination, also referred to as mental pollution, was separated from the definition of self-disgust. Self-disgust was explored in relation to the self-conscious emotions of shame, guilt, pride and embarrassment, and key differences highlighted. It was noted the biggest challenge is to demarcate between self-disgust and shame. However, with all the self-conscious emotions, the main feature which differentiate these emotions from self-disgust is that self-disgust embodies the experience of the basic emotion of disgust (Ypsilanti, 2018). Finally, other negative constructs related to the self that often overlap with self-disgust, including self-loathing, self-hatred and self-criticism were reflected upon and once more, differentiated from self-disgust. Due to the close relations between these constructs, it is common to see them together, which can be the cause for uncertainty concerning the differences between these similar co-occurring constructs. This chapter allowed for the main constructs and emotions considered close or overlapping with self-disgust, to be differentiated, so that self-disgust can be identified as a unique and distinct construct. Having differentiated self-disgust from closely related self-conscious emotions and related constructs, it is imperative to understand the emotional schema of self-disgust and how it intertwines with other constructs to further explore ways to measure self-disgust.

Chapter 3 – Self-Disgust systematic literature review.

1. Introduction

Chapters 1 and 2 have outlined the construct of self-disgust and identified related self-conscious emotions and highlighted the distinctiveness of self-disgust as an emotion schema. Following this, it is important to ascertain the prevalence of self-disgust within the population and explore the relationships between self-disgust and mental health difficulties and disorders, to understand the temporal association of self-disgust and psychopathology, and inform preventative interventions. A systematic literature review to understand the characteristics and measurement of self-disgust in clinical and non-clinical populations was deemed necessary.

This systematic literature review was deemed necessary to understand the landscape and the current research with self-disgust to identify whether there was a problem or difficulties in measuring self-disgust. Not only will this mitigate duplication of work, this allows a constructive decision to be made to determine whether there is a gap in research/ knowledge and whether a new measure was considered necessary and of importance.

Clarke et al. (2019) conducted a systematic literature review to discuss the clinical utility and significance of self-disgust in different clinical populations. Since then, there has been an increased in interest in the construct of self-disgust, in both clinical and non-clinical populations which have been included in the current review. Further to the inclusion of more recent studies and non-clinical papers, this systematic literature review will differ from that of Clarke et al. (2019) with the focus on measurements used for self-disgust, and the methodology of the studies to highlight difficulties and areas for further research.

Therefore, the aim of this systematic literature review was twofold; a) to investigate theoretical advances in self-disgust by including studies from both clinical and non-clinical populations and b) to review existing measurement and methodological approaches in the study of self-disgust.

2. Method

2.1. Search strategy

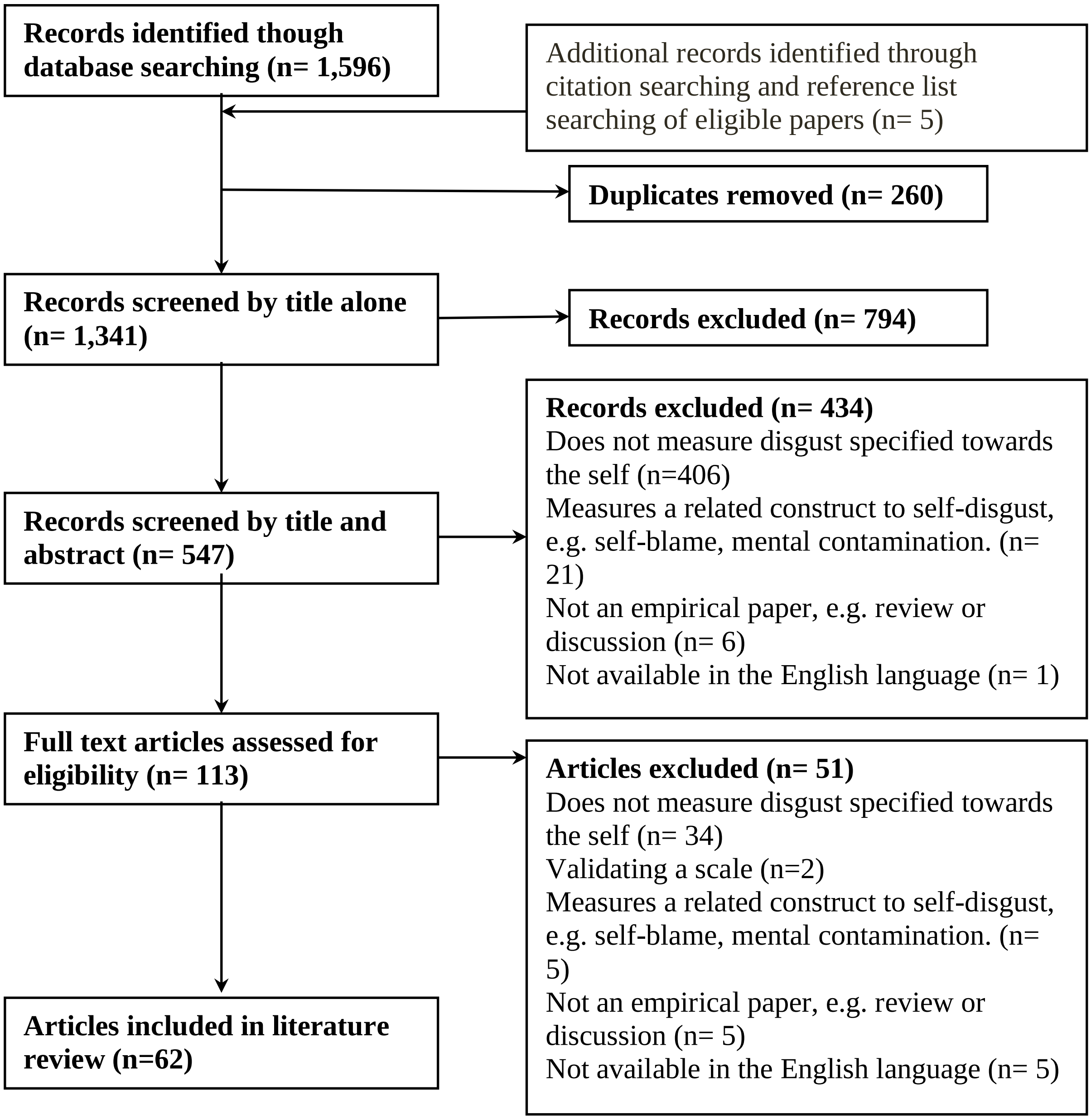
Empirical studies were searched using multiple electronic databases (PsychInfo, PubMed, and PubReminer) up until December 2021. Additional papers were identified through citation searching and reference lists of eligible papers. Within each database the following search terms were used: “self disgust”, “self-disgust”, “self-directed disgust” and “self-relevant disgust”. A total of 1596 papers were selected and through screening were reduced to 62. After removing duplicates, these entries were screened by title, title and abstract and then full article.

2.2. Inclusion and exclusion criteria

The inclusion criteria for papers to be selected consisted of: articles that specifically measure disgust towards the self, articles that are empirical (not reviews), articles in peer reviewed journals and articles available in the English language. The flow diagram in Figure 2, identifies how the search was filtered down to the final 62 papers meeting the research criteria. Out of the final papers, there were 55 quantitative, 5 qualitative and 2 mixed methods studies. Out of the 62 papers, 19 involved non-clinical samples. The findings from these 62 papers are discussed below in categories of the associated variables to self-disgust measured.

Figure 2

Flow chart displaying the search strategy for the systematic literature review.



3. Results

3.1. Risk of assessment bias

To assess the studies for risk of bias, the appraisal tool for cross-sectional studies (AXIS) was used (Downes et al., 2016). The AXIS was designed as a critical appraisal tool that addresses study design, reporting quality and risk of bias in cross-sectional studies. The majority of risk of bias tools are designed to test research trials, the AXIS seemed the most appropriate tool here due to the nature of the cross-sectional studies to be assessed. The AXIS risk of assessment bias tool highlights areas of ethics, conflicts of interest, sample size and whether or not non-responders are mentioned. Internal consistency and validity of measurements is also measured. For the risk and assessment bias table, see Appendix 1. Aims and designs of studies, participants and analyses were generally well documented and clear. Only very few studies justified sample sizes and mentioned missing data with subsequent data on non-responders. The internal consistency of studies was mentioned sometimes, but this could be increased in more studies to aid the understanding of the reliability of the results.

3.2. Study characteristics

A study characteristics table was also compiled to include the main characteristics of the studies included, the study aims and design, the samples used, measurements used, analysis procedure and findings (Clarke et al., 2019). An additional column was included determining whether the population was clinical or non-clinical. The study characteristics table can be seen in Appendix 2. The majority of studies included were cross-sectional by design, which raises concerns surrounding cause and effect. The remaining studies were either experimental, case-studies or a few longitudinal studies. Due to the design, the analyses for the quantitative studies tended to include correlations, t-tests, ANOVAs and regression. The qualitative studies used analyses of grounded theory, thematic analyses and interpretive phenomenological analysis (IPA). The measures used specifically for self-disgust were largely varied and so are discussed further below. Participants within the studies tended to fall within three main groups: (1) non-clinical populations, these samples included a lot of students, (2) diagnosed clinical populations or (3) individuals that exceed thresholds of clinical diagnoses, from the general population. It is important to note the cultural differences seen in the studies, as there are many different locations in which the studies have taken place, which could lead to culture-based differences. An example of this is displayed in Vivas et al. (2021), who identified differences between Arabic and Greek participants.

Throughout the results there are sections that overlap in findings. This happens for two main reasons; Firstly, the comorbidities between mental disorders are high and therefore finding a population with a singular diagnosis proves difficult and is not representative of the majority of the population. Secondly, some studies group mental disorders together, in these cases, the studies have been assigned to a single group as fits best. The study characteristics table (Appendix 2) gives an overview of all the study aims, methodology and findings.

3.3. Measurement of self-disgust

A key potential issue highlighted throughout this systematic review is the measurements for self-disgust. There were 15 different measures used to assess self-disgust within different samples. The main measures were the well-known Self-Disgust Scale (SDS/SDS-R) (30), followed by the Questionnaire for the Assessment of Self-Disgust (QASD) (9), then in addition to the qualitative methods using interviews to assess self-disgust (5), self-disgust was measured using instruments that are not well known/ validated, new to the area or not specifically designed to measure the construct of self-disgust. This brings into question the reliability of these scales and whether they are valid for these studies. The other measures used were; Feelings of Being Contaminated (FBC) (3), Visual Analogue Scales (VAS) (3), Disgust with Life Scale (DWLS)(2), Multidimensional Self-Disgust Scale (MSDS)(2), Survey of Body Areas (1), Disgust in Relationship Questionnaires (DIRQ)(1), Forms of Self-Criticising/Attacking and Self-Reassuring Scale (FSCRS)(1), Sexual Assault and Rape Appraisals (SARA)(1), Self-Relevant Task (SRT)(1), Implicit Association Test (1), affective self-evaluations (1) and the new measures developed for the Laffan et al. (2017) study (1). All the measures used will be outlined below.

The self-disgust scale (SDS) (Overton et al., 2008) was developed and validated in the UK using a non-clinical population. The 18 item self-report questionnaire includes 6 filler items and 12 items that are split across measuring the two factors: self-disgust self and ways. The SDS has shown excellent internal consistency (Cronbach's $\alpha = 0.91$), good consistency over-time with a test-retest reliability of $\alpha = 0.94$. There has been some discussion as to the definitional clarity of the measure, with certain items (e.g. I hate being me), being more closely related to other constructs such as self-hatred. However, the authors recognised this and Powell et al. (2014) developed a revised version of the SDS (SDS-R) to address this.

The questionnaire for the assessment of self-disgust (QASD) (Schienle et al., 2014) was developed and validated in Germany. The 14 item self-report questionnaire includes 9 items referring to physical self-disgust and 5 items measuring behavioural self-disgust. This measure has been used for clinical and non-clinical populations. The study validating the QASD as well as the scale itself is not available in the English language. However, translating the scale highlights some key issues as to whether it is accurately measuring self-disgust and not similarly related constructs, following items such as "I regret my behaviour" which suggest shame instead. This however may not be reliable as a direct translation of the scale and so should be used with caution in other languages. Studies using the QASD have reported high levels of internal consistency (Cronbach's $\alpha = .85$) (Schienle et al., 2015).

Qualitative methods to measure self-disgust were used in 8 of the studies included in the review. These methods included semi-structured interviews and IPA. These explorative methods have shown meaningful and coherent experiences that map together well with the findings of quantitative analyses. The distinct construct of self-disgust is identified throughout these studies, as are the factors of self-disgust directed to both behaviour and the physical self.

The Feeling of Being Contaminated (FBC) has been identified as a widespread phenomenon following survivors of sexual violence (Jung & Steil, 2013). The feeling of being contaminated has shown to have emotional consequences such as shame, self-contempt, self-hate, guilt and physical self-disgust. FBC is measured in terms of the intensity, vividness and uncontrollability. The three studies that measured self-disgust by measuring FBC were all treatment and intervention efficacy studies which aimed to reduce the levels of FBC. Although it is clear FBC includes aspects of self-disgust, due to the wide over-arching contents of FBC, it is difficult to ascertain self-disgust from this measure.

Self-disgust VASs have been used, sometimes in the absence of validated measures but also for ease and speed, however these have not been tested for reliability over time, nor validity of measuring the self-conscious emotion of self-disgust. However, it is argued that multi-item measures may be better to capture the underpinnings of the construct of self-disgust (Clarke et al., 2019). Powell et al. (2015) used VAS measurement of physical self-disgust as well as behavioural self-disgust to measure a state level of self-disgust, alongside the multidimensional SDS, a standard trait measure of self-disgust. The state and trait measures for self-disgust were highly correlated suggesting measuring self-disgust through VASs may be effective. Self-disgust has always been put forward as a trait emotion, without the understanding of whether self-disgust has a state element it is hard to determine whether VAS measurements are appropriate to measure trait self-disgust.

The Disgust with Life Scale (Ribiero et al., 2012) is a 24-item scale, comprised of 3 subscales (each with 8 items) measuring disgust with self, disgust with others and disgust with the world. This measure has been validated in many studies; however, it lacks the 2-factor structure seen in the other validated measures.

Multidimensional Self-Disgust Scale (MSDS; Carreiras, 2014) is a 33 item self-report measure consisting of 4 sub-scales; defensive activation, cognitive emotional, exclusion and avoidance. This measure was developed and validated in a non-clinical population in Portugal to expand the SDS which was deemed predominantly focused on the cognitive aspects of self-disgust.

A modified version of the Survey of Body Areas has also been used to measure self-disgust (Dyer et al., 2015). This comprises of 26 different body areas (e.g., the breasts) presented on drawings and the participants are asked to rate each body area on a Likert scale with regards to the extent they felt specific emotions in relation to this part of their body; guilt, shame, disgust, anger, interest, happiness and pride. This measure highlights the physical self-directed disgust in individuals, but due to this measure being a modification of a measurement that does not normally incorporate disgust, the validity and reliability is hard to assess.

Disgust in Relationship Questionnaire (DIRQ; Lenk et al., 2019) is a 44 item self-report measure that was developed in order to assess the source effect of disgust. The DIRQ assesses disgust content (hygiene, physical proximity, and sexuality) and disgust source (stranger, parent, partner, self) and is currently only validated in the German language.

The Forms of Self-Criticising/ Attacking and Self-Reassuring Scale (FSCRS; Gilbert et al., 2004) is a 22-item measure centering around internal shame, self-criticism and the ability to self-reassure. This does not measure self-disgust directly, however, due to the case study in the article concerned specifically identifying the individual as having flashbacks and feelings of disgust and shame directed towards the self, this paper was accepted as applicable.

Sexual Assault and Rape Appraisals (SARA; Fairbrother & Rachman, 2004) includes 80 items, however, only 3 items were included to measure self-disgust, which focus on the degree of sexual assault-related mental contamination. It is hard to establish whether this will assess self-disgust as although contamination is a key feature of self-disgust, mental contamination is demarcated as a distinct separate concept.

Self-Relevant Task is a semi-structured interview consisting of 2 free-narrative writing tasks, to articulate the thoughts and emotions evoked by the self-person and self-body (Abdul-Hamid et al., 2014). This measure maintains the two-factor structure seen in the main self-report measures for self-disgust, however, as it is person-centered, whether the emotion of disgust is captured is dependent on the output of the task. The use of this measure was also coupled with VASs.

Affective Self-Evaluations are vignette-based measures. Adapted specifically for Bornholt et al. (2005) following 4 different vignettes, participants have to circle the appropriate words to show how they feel in that situation. The words tap into feelings of ok, guilt, worry, disgust, and anger about the body.

The study by Laffan et al. (2017), used a measure consisting of 2 sub-scales each with 9 items to measure feelings of self-disgust and perceptions of other's disgust. Relating to care activities, the measure is specifically for use with physically dependent adults.

Finally, Implicit Association Tests (IATs) are identified to be advantageous in measuring aversive emotions in order to reduce the influence of self-presentational strategies and social desirability concerns. IATs are computer-based tasks which measure implicit beliefs using latencies to categorise. As such, an IAT was used to measure self-disgust (Rüsch et al., 2011). There were two target categories (self and best friend) to be matched with two attribute categories (disgust and anxiety). However, the words chosen for the latter categories were not validated to ensure they properly matched onto the meaning of disgust or anxiety. Further to this, although anxiety was chosen as a comparative emotion to ensure an individual was feeling specifically disgust rather than broad general emotions, it could be argued that this is not ideal due to the comorbidity of anxiety and self-disgust and individuals may have associations of the self to both feelings of anxiety and disgust and the scoring does not allow this to be identified, rather a comparison between self-directed anxiety and self-directed disgust.

The wide range of measurements used throughout the studies surrounding self-disgust can impede the comparison of findings. Further to this, many of the scales have only been used in 1 or 2 studies and do not have any values of reliability and validity. This is problematic as it questions whether the scale is measuring self-disgust or a similar construct. The measure used for a study is key, as this implicates the usefulness and efficacy of the findings going forward. Following all the above measures, the SDS stands alone as the only measure that has shown reliability and has been validated within an English-speaking population. It is imperative to remember the different scales used and the potential issues of validity when assessing the studies that have used these measures, as inconsistent findings may be a result of this.

3.4. The associations between self-disgust and psychological disorders/ mental distress

3.4.1. Anxiety and depression

Depression is a common mental disorder affecting around 5% of adults (World Health Organization, 2021), characterised by low mood and a lack of pleasure sustained over a period that impacts daily life. Over 700,000 people per year die due to suicide thought to be a result of depression (World Health Organization, 2021). Anxiety is considered to be persistent worry affecting individuals in work and personal life (Moulton-Perkins et al., 2020). Anxiety disorders include generalised anxiety disorder, panic disorder and post-traumatic stress disorder. Anxiety and depression commonly occur with comorbidity rates as high as 60% (Cameron, 2007). Multiple studies assessed depression and anxiety in relation to self-disgust. The majority of these were non-clinical samples, however, this research helps to understand the relationships between self-disgust and depression/anxiety in clinical samples and in other psychological disorders with comorbidities.

Overton et al. (2008) presented data demonstrating the relationship between dysfunctional cognitions and depressive symptoms using the SDS. They found that self-disgust was significantly correlated with depression (measured by both the BDI and DASS-depression) and that self-disgust partially mediated the relationship between dysfunctional cognitions and depressive symptomology. Following this, Simpson et al. (2010) tried to replicate these findings by incorporating self-esteem to examine if this could explain the partial mediation effects detected in the Overton (2008) study. Self-disgust and self-esteem both predicted depression when controlling for dysfunctional cognitions, however, both of these were identified as partial mediators and a full mediation was still not supported

To ensure the direction seen in the cross-sectional studies was accurate, Powell et al. (2013) conducted a longitudinal study to assess the relationship between depression and self-disgust. Self-disgust and dysfunctional cognitions showed high levels of stability over time, supporting that the constructs are trait-like measures. Depressive symptoms, however, were more variable (this could be a result of the non-clinical sample). When controlling for baseline depressive symptoms, self-disgust significantly predicted depressive symptoms 6 months later. This relationship was unidirectional, supporting the temporal association between self-disgust (as an antecedent) and depressive symptoms in a non-clinical population. Consistent with previous studies, self-disgust was identified as a partial mediator of the temporal relationship between depression and dysfunctional cognitions, suggesting existence of more complex reciprocal relationships. This longitudinal study also supported the usefulness of the 2 subscales of the SDS, by demonstrating the *disgusting self* to be a stronger predictor than *disgusting ways* in longitudinal findings at 6 months. However, *disgusting ways* demonstrated stronger cross-sectional relationships with depressive symptoms. Self-disgust and dysfunctional cognitions are likely to reciprocate in the temporal predictions of depressive symptoms.

Powell et al. (2016) went on to explore the relationship of disgust related side-effects on symptoms of anxiety and depression in cancer patients. Disgust related side-effects refer to side-effects of cancer treatment (e.g. hair loss or sickness) resulting in maladaptive disgust responses. Higher levels of depression and anxiety were evident in individuals who reported core disgust side effects, this was not seen with individuals who reported an animal nature disgust side-effect. The impact of core disgust side effects on depression and anxiety was fully explained by indirect effects through self-disgust, significantly predicting anxiety and depression. The effects on depression were only seen when using DASS to measure depression rather than HADS, which could be due to HADS having a reduced sensitivity to minor depression. Disgust proneness positively moderated the effect of experiencing core disgust side-effect. This research identifies the link between disgust proneness and self-disgust.

Ypsilanti et al. (2018) investigated the mediating role of anxiety and depression on the relationship between insomnia and self-disgust. Individuals suffering with insomnia reported higher levels of self-disgust, anxiety, and depression than normal sleepers. Depression and anxiety were found to mediate the effects of insomnia on self-disgust. A possible explanation of this is that negative ruminations and maladaptive thought control strategies commonly seen in anxiety and depression may contribute to the development of self-disgust in insomniacs. However, the trajectory and temporal relationship is unknown from this research, so it is unknown whether self-disgust is a result of insomnia, a precursor or whether both pathways remain possible.

Ypsilanti et al. (2019) investigated the role of loneliness in the relationship between self-disgust and depression. They found that lonely people reported higher levels of self-disgust compared to those who were not lonely or moderately lonely. Depression symptoms were correlated with loneliness, self-disgust ways, and self-disgust self. Self-disgust and loneliness were both seen as significant predictors of depressive symptoms. Also, self-disgust significantly mediated the association between loneliness and depressive symptoms and self-disgust predicted depression over and above loneliness and other variables.

To further support the link between loneliness, self-disgust and depression, Ypsilanti et al. (2020b) conducted two studies using a population of older adults. In the first questionnaire-based study, self-disgust was found to be positively associated with loneliness, anxiety, and depression in older adults. Self-disgust significantly mediated the loneliness- anxiety relationship in this population. However, the relationship between loneliness and depression was not mediated by self-disgust and self-disgust relationships were not as strong as those found in previous studies with younger participants. A possible explanation for this finding might be the effect of emotional positivity that increases after the age of 60 years (Mather & Castersten, 2005). In the second study, eye tracking methodology was employed to explore differences in attentional avoidance, vigilance, and maintenance in people with high and low levels of self-disgust. In this study, participants were asked to naturally view a series of unknown neutral faces and photos of their own face. The results showed adults with high levels of self-disgust showed attentional avoidance (measured by eye gaze duration) when viewing their own faces compared to unknown faces. There were no differences in vigilance and maintenance between the self-disgust groups. In addition, fixation duration was higher for pictures of unknown faces compared to their own face for individuals with high self-disgust. Finally, there were significant differences in eye-gaze patterns across time (from 2 to 5 seconds) with people with high self-disgust looking away from their own face after the 4^{th} and 5^{th} second of exposure. The finding that first fixation does not differ between high and low self-disgust groups, but differences in eye gaze duration become evident across exposure time (after 4 seconds) suggests that attentional avoidance is likely to play a role, rather than vigilance or maintenance (Olatunji et al., 2010).

The current research into the relationships of self-disgust with anxiety and depression is well documented in the literature. The temporal association of this relationship is not clearly understood, although there is evidence from longitudinal data that self-disgust precedes depression.

3.4.2. Suicidal ideation and non-suicidal self-injury

The systematic literature review identified four relevant studies investigating the relationship between self-disgust and suicidal ideation and non-suicidal self-injury.

Suicidal ideation or self-harm (non-suicidal self-injury) are methods used to escape the world of feelings an individual has (Brausch & Woods, 2019), which often stem from a mental health difficulty. Non-suicidal self-injury (NSSI) involves hurting oneself (e.g., burning, cutting or hitting oneself), without suicidal intent (Grandclerc et al., 2016). The main risk associated with NSSI is that the behaviours will become chronic and lead to other forms of self-injury such as suicide attempts. Non-suicidal self-injury is associated with symptoms including anxiety, depression, hostility, emotion dysregulation and self-blame, and therefore, it is suggestive self-disgust may have a role as well. Two papers have assessed non-suicidal self-injury and another two investigated suicidal ideation.

Two common factors associated with non-suicidal self-injury are depression and a history of sexual abuse, leading to similar trajectories of negative self-conscious emotions. Smith et al. (2015) identified a positive correlation between depressive symptoms and odds of endorsing lifetime non-suicidal self-injury (NSSI). Supporting the background research, they also found sexual abuse was positively and significantly associated with non-suicidal self-injury. A full mediation was seen from self-disgust in the relationship between depression symptoms and NSSI status and a partial mediation by self-disgust was seen between sexual abuse and NSSI. The pattern suggested in this study implies depression or sexual abuse comes first and then an increase in self-disgust with these backgrounds can develop into non-suicidal self-injury. However, this was a cross-sectional study and thus, direction and causation cannot be determined, and the relationships could be bidirectional. Self-disgust levels varied between the three examined groups in this study, with non-injurers having the lowest self-disgust and recent self-injurers having the highest levels of self-disgust. This not only shows a clear link between NSSI and self-disgust, but further to this, the differences in self-disgust between past self-injurers and recent injurers, indicates levels of self-disgust can alter over time.

Bachtelle and Pepper (2015) explored the role of scars in non-suicidal injurers in a qualitative study. NSSI can happen for many reasons, but the scars that are left behind can be constant reminder of NSSI. This study identified 98% of participants endorsed importance in their scars, the majority of these (60.4%) related their scars to markers of shame and stigma and had negative feelings towards them. Conversely, some participants gave some positive meaning to their scars, a memory of what they have been through and overcome. Those that related negative feelings towards their scars demonstrated higher levels of self-disgust and regret, showing higher depressive symptomology and lower symptom scores of borderline personality disorder. The direction suggested from this study is that self-disgust is a result of the scar and thus acts as a repercussion to NSSI, which is different to the trajectory proposed by Smith et al. (2015).

Bachtelle and Pepper (2015) identify that not all non-suicidal injurers will have high levels of self-disgust and that the feelings towards the scars can be an indicator of the self-disgust levels the individual may display. Both NSSI studies (Bachtelle & Pepper, 2015; Smith et al., 2015) were cross-sectional and thus causation cannot be inferred. However, they highlight an important unknown in terms of the trajectory of the relationship between self-disgust and NSSI. This will be key to developing interventions for NSSI.

A large internet based cross-sectional study was conducted to assess the relationship between self-disgust and lifetime suicidal ideation and behaviour (Schienle et al., 2020). Self-disgust showed a positive correlation to suicidality, whereas disgust proneness was unrelated to suicidality, showing the differences between these constructs and the elevated influence self-disgust has in this relationship. Self-disgust was the most relevant predictor of suicidality and accounted for 82% of the explained variance. There was a negative association between self-disgust and the use of support coping, which was positively related to suicidality, thus identifying potential protective factors within the relationship between self-disgust and suicidality. There was a positive association between self-disgust and suicidality via proneness to engage in evasive coping. The coping strategies clearly impact the progression of self-disgust into suicidal ideation and behaviour.

Following the previous studies, suggesting different directions in the self-disgust trajectory from cross-sectional studies, Hom et al. (2019) conducted a longitudinal study to ascertain the temporal association with self-disgust within the relationship between insomnia and suicidality. This study was split into a cross-sectional and longitudinal design. The cross-sectional analysis identified perceived burdenness, thwarted belongingness, loneliness, and self-directed disgust all to individually mediate the association between insomnia and suicide. However, in a longitudinal design, only disgust with others and disgust with the world mediated the relationship between insomnia and suicidality. The differences seen between the cross-sectional and longitudinal findings highlight the importance of conducting both longitudinal and cross-sectional studies to identify temporal associations due to the differences seen between the findings. This study used 30-day time points, which is relatively short for longitudinal studies and in a non-clinical sample who will have lower levels of self-disgust as well. In addition to this, self-directed disgust was measured with the Disgust with Life Scale, which is the least common measure for self-disgust, and this might not capture the construct as well as the other measures.

Out of the four papers discussed here, the cross-sectional studies identify self-disgust as relevant in non-suicidal self-injury and suicidal ideation and behaviours. Interestingly in Hom et al’s (2019) longitudinal study, insomnia did not seem to be related to self-disgust scores longitudinally. This could be something specific to insomnia or due to the long-term association between self-harming behaviours and self-disgust. The meaning and root cause behind the suicidal or self-harming behaviours may be the important factor in the role self-disgust plays in these relationships. For example, individuals who identify scars as showing strength may exhibit less self-disgust than individuals who identify scars as something they regret.

3.4.3. Schizophrenia

There was only one paper specifically investigating self-disgust in individuals with schizophrenia. Schizophrenia is a severe mental disorder characterised by distortions in thinking, emotions, perceptions, language, sense of self and behaviour (World Health Organization, 2020). Vivas et al. (2021) explored three self-conscious emotions (shame, guilt, and self-disgust) in patients with schizophrenia. This study included two very different cultured populations, the sample included Greek and Arabic participants, to additionally assess differences between individualistic and collectivist cultures respectively. As expected, patients with schizophrenia had higher levels of self-disgust and lower levels of guilt in comparison to the control participants. Poorer executive function was also indicated by higher levels of self-disgust and lower levels of guilt. Interestingly, in the control groups, the Arabic sample had lower levels of self-disgust than the Greek sample, suggesting cultural differences. A possible explanation for these cultural differences, is that collectivist cultures (e.g., Arabic) discourage the free expression of negative emotions, which could result in lower attention and accuracy to these emotions. To measure executive function, the Trail Making Task (TMT) and the Verbal Fluency Test were used. The relationship between lower executive function and higher self-disgust was not moderated by culture. Self-disgust was positively correlated with TMT time and negatively associated with verbal fluency scores. Self-conscious emotions involve sophisticated frontal lobe related cognitions and as such, all patients showed impaired executive function. However, frontal lobe dysfunction may affect specific self-conscious emotions differently. The lower scores in executive functions were significantly related to higher self-disgust and lower guilt levels. Findings were mostly consistent when controlling for anxiety and depression identifying that these relationships are consistent over and above both anxiety and depression. Due to this being the only research on self-disgust specifically with individuals with schizophrenia, it is difficult to draw definite conclusions about the observed differences in self-disgust levels in this population. However, considering the emotion regulation difficulties in schizophrenia, research focusing on similar disorders may reveal similar findings. This research identifies key cultural differences that may be seen in the experience of self-disgust between individualistic and collectivist cultures.

3.4.4. Borderline personality disorder

This systematic literature review identified studies that evidence associations between borderline personality disorder (BPD) and elevated levels of self-disgust. BPD is characterized by emotion dysregulation and disturbed patterns of thinking and behaviour (Carpenter & Trull, 2013). Six papers were identified within this group, using a range of methodology to understand the relationship between BPD and self-disgust.

Rüsch et al. (2011) used an Implicit Association Test (IAT) to investigate self-disgust in a population with BPD and post-traumatic stress disorder (PTSD). They used a two-target IAT that included “self” and “best friend” as targets and “disgust” and “anxiety” as attributes. The IAT scores demonstrated that participants with BPD or PTSD associated the “self” with “disgust” more often than with “anxiety”. Healthy controls reported lower levels of self-disgust than those in the BPD group or the PTSD group but not the group of participants with both BPD and PTSD. Individuals who had experienced childhood physical abuse were quicker to categorise “anxiety” than “disgust” with the self in the IAT, demonstrating they had more anxiety towards the self rather than self-disgust. This was the first time the task was used, and IAT performance was the sole measure for self-disgust, bringing into question whether it was accurately measuring self-disgust. However, the IAT findings suggest patients with diagnoses of PTSD and/or BPD had higher self-disgust (quicker to categorise “self” and “disgust”) than the control group.

In a different study, self-harm urges were investigated in patients with BPD in comparison to a group of participants with depression and a healthy control sample, (Abdul-Hamid, 2014). Using a VAS, the results showed that self-disgust was related to an increase in self-harm urges and there were between-group differences on self-disgust in the BPD group compared to the healthy controls. Body image was seen to be a shared predictor of self-harm and BPD. Self-injury is commonly performed to alleviate intense negative emotions or as a way to express self-directed anger or disgust. This task involved a self-relevant task, where participants were involved in a free writing task concerning their thoughts and emotions about their body and themselves as a person. The data was coded into the different emotions expressed in these narratives. The BPD group had a higher baseline self-disgust and responded with more disgust to focusing on negative aspects of the self.

Schienle et al. (2013) investigated self-disgust in BPD patients and a control group with the use of the Questionnaire for the Assessment of Self-Disgust (QASD). Participants were asked to watch a series of faces showing different emotions and rate the intensity of six emotions (happiness, anger, fear, sadness, surprise and disgust) within the individual shown, and they were also shown some pictures of affective scenes and were asked to rate the intensity of the six emotions while viewing each picture. Participants were also asked to complete self-report measures of self-disgust, disgust proneness, disgust sensitivity, depression and borderline symptoms. Interestingly, when viewing the affective scenes, BPD patients showed less happiness when looking at the happiness scenes than the control group but comparable levels of fear and disgust, suggesting that rather than an increase in disgust and negative emotions, it could be a result of a decrease of happiness and positive emotions. In the emotion recognition task, viewing the faces, the BPD group gave higher ratings of perceived disgust in male disgust faces, than the control group. There were no other differences seen between emotion or sex. A disgust bias was evident towards the male sex within the BPD group, however, as the sample was only women, it is difficult to determine whether this is specific to the male sex or merely a 'different' sex to themselves. The self-report data demonstrated BPD patients had higher scores on all the measures. The biggest group differences between the BPD group and the control group were seen in the self-disgust scores. Overall, more severe BPD symptomology correlated to increased self-disgust.

Using a sample including men and women, Ille et al. (2014) examined self-disgust in multiple mental disorders (schizophrenia, BPD, eating disorders and spider phobia). This was the only sample to include men, however, there was no information on the gender split within the BPD group and therefore gender differences on self-disgust remain speculative. The clinical sample in this study showed more pronounced self-disgust self as opposed to self-disgust ways. Only individuals with BPD or eating disorders differed from controls on both self-disgust subscales. Individuals who had experienced a traumatic event reported higher self-disgust self. Within BPD, psychoticism was identified as the best predictor for both self-disgust self and ways, which is the same as the healthy control group. The clinical group as a whole, identified psychoticism and hostility as best at predicting self-disgust self and anxiety and interpersonal sensitivity as more effective for predicting self-disgust ways. This therefore links the self-disgust seen in the BPD group as more similar to the healthy participants, despite elevated levels as opposed to the combined clinical group within this study.

Two studies investigated self-disgust in a BPD population using brain imaging techniques. In 2015, Schienle and colleagues researched self-disgust in BPD patients using voxel-based morphometry to identify the brain regions impacted when processing negative emotions such as self-disgust. There have been mixed previous research into the brain structure differences in patients with BPD. The majority of studies have found a reduced amygdala volume in BPD patients. This study aimed to identify these differences specifically within the three amygdala regions and see how these connected with levels of self-disgust. Self-report measures of self-disgust (QASD), BPD (BSL-23) and disgust proneness (QADP) were collected alongside T1-weighted brain imaging scans in women with a BPD diagnosis and a matched control group. Women with a BPD diagnosis had a larger grey matter volume in the basolateral amygdala (BLA- known to be implicated in classical conditioning), in comparison to the control group. The BLA volume was also correlated with BPD symptom severity. Within the BPD group, a positive correlation was seen between self-disgust and insula volume (associated with emotional processing and arousal) and a negative correlation was seen between self-disgust and the secondary somatosensory cortex grey matter volume (processing sensory information). Hence, self-disgust differences can be seen at a physical structural level.

Dudas et al. (2017) also researched the brain volumes in BPD patients using an fMRI block task. Individuals were asked to view emotion-inducing images of key emotions (disgust, anger, happiness, sadness, and a neutral condition) and then complete a simple task of determining whether the picture was set inside or outside. BPD patients showed differences in brain activity in the amygdala, ventral striatum, and the dorsolateral prefrontal cortex, compared to controls. Although differences in brain activity were found between BPD patients and the control group, there were no correlations between self-disgust and brain activity in any region, suggesting that the brain activity differences are a result of BPD and are not impacted by self-disgust levels. However, this does not remove the potential for self-disgust to be linked to BPD and even the activation of certain brain structures, as these findings could be a result of self-disgust being a trait measure and therefore not affected by state changes in brain activation.

The majority of research on self-disgust in BPD patients has only included female samples. This is due to women accounting for a large proportion of BPD patients; however, this makes it difficult to generalise findings to male participants. Another difficulty within these studies is that self-loathing and self-disgust are interchangeably used by Schienle and colleagues, despite research identifying self-loathing and self-disgust as different constructs. This highlights the difficulty in precisely articulating what self-disgust is and brings into question what certain studies are measuring. The six studies currently available that assess self-disgust in patients with BPD all consistently identify elevated levels of self-disgust within this population. These studies use a wide range of measures to assay the construct of self-disgust (SDS, QASD, VAS and IAT), making it harder to compare the studies to one another, especially as a number of them are using self-disgust measures that are not validated in previous studies. BPD is known to have high comorbidity to other psychological disorders and as such, most of the participants within the clinical samples had multiple diagnoses. Whether these findings are specific to BPD is questionable.

3.4.5. Traumatic experiences

The lasting effects following witnessing, or being involved directly or indirectly, in a traumatic event can develop into PTSD, which is an anxiety disorder associated with a traumatic event causing significant impact to an individual’s life (Farhood et al., 2018). Having a traumatic experience can later impact individuals by re-living the experience and connecting stimuli to the event.

In a study with undergraduates who had experienced a traumatic event (Sonnier et al., 2019), individuals that surpassed the cut-off for probable PTSD had significantly higher scores for both self-disgust subscales (self and ways). Further to this, individuals classified as hazardous drinkers had higher scores in self-disgust ways, identifying that they either feel disgust towards their drinking behaviour, or use drinking as a coping mechanism due to disgust towards their own behaviour. There were clear gender differences seen for self-disgust self, with women scoring higher than men. The mediation effects of self-disgust in the relationship between post-traumatic symptoms and hazardous drinking, show both self-disgust self and ways mediate the relationship. Contributions of the covariates of sex and probable PTSD suggested they worked to suppress the negative relationship between self-disgust and hazardous drinking.

In another non-clinical sample, Brake et al. (2017) examined the relationship between probable PTSD and suicide risk. PTSD symptoms were positively and significantly associated with both self-disgust subscales. However, after accounting for PTSD symptoms and other covariates, only self-disgust self was linked to an increase in suicide risk. This research suggests post-traumatic self-disgust may heighten vulnerability to engage in suicidal behaviour.

There were two papers focusing on self-disgust and trauma in veterans. Zerach and Levi-Belz (2018) researched a group of Israeli combat veterans and found that combat exposure was positively related to post-traumatic symptoms (PTSS). However, the relationship between betrayal and PTSS was fully mediated by depressive attributions, trauma related guilt and shame, and self-disgust above and beyond the contribution of combat exposure. Self-disgust mediated the relationship between depressive attributes and PTSS. This research highlights the key role that self-disgust has in relation to trauma in veterans; however, it also demonstrates that the relationship can be complex and the nature of trauma may play a significant role in this relationship. Similar to research found in the NSSI and suicidal ideation literature, the impact of self-disgust is determined by the root cause of the harm or reason behind the trauma (Bachtelle & Pepper, 2015).

Ypsilanti et al. (2020a) also investigated self-disgust in a group of war veterans with PTSD compared to healthy controls. They found between group differences in self-disgust, loneliness, depression, and anxiety. Further, in the PTSD group, self-disgust mediated the relationship between loneliness and anxiety but not loneliness and depression. A suggested reason for this is that due to the elevated loneliness and anxiety within this population, self-disgust may manifest differently, and a negative affect loop may be created with self-disgust and anxiety. In the same study, eye tracking methodology was used to determine attentional vigilance, maintenance, and avoidance during a free-viewing task of photos of the "self" and unknown other faces. The attentional avoidance hypothesis was supported, with the PTSD group spending more time gazing at unknown faces rather than the "self" across time (i.e., in seconds 2, 3 and 5). The control group exhibited the opposite pattern with increased eye gaze towards their own photo compared to the photo of an unknown other. The results also showed a negative correlation between self-disgust scores and eye-gaze towards the "self", that may reflect an attentional avoidance mechanism.

Badour et al. (2012) investigated peritraumatic self-disgust measured via a VAS in a group of women who had been through a traumatic sexual or physical assault. The peritraumatic assessment included ratings of peritraumatic fear, disgust towards the self, as well as disgust towards the perpetrator. Peritraumatic self-disgust was significantly correlated with contamination-based obsessive compulsive symptoms but was not significantly associated with PTSS, questioning whether self-disgust as a result of trauma develops over time or within the moment of the traumatic experience. When predicting contamination symptoms, self-disgust showed a significant relationship, however, peritraumatic fear and perpetrator disgust were not significant predictors.

In a further study by Badour et al. (2013), focusing on women who had experienced a traumatic sexual assault, PTSS were significantly and positively associated with mental contamination. Mental contamination, although different to self-disgust, has many conceptual similarities, which results in wanting to cleanse the body. This research was expanded (Badour et al., 2014), and findings show that mental contamination was significantly correlated to disgust propensity, peritraumatic self-disgust and post-traumatic cognitive appraisals. The association between peritraumatic disgust and mental contamination was specific to the self rather than disgust directed towards others or the world (measured with VASs). This highlights the importance of disgust seen in mental contamination. Disgust was a unique predictor of mental contamination following sexual trauma.

To measure negative emotions directed to an individual's body following childhood sexual abuse, Dyer et al. (2015) used a rating task and asked individuals to rate the intensity of specific emotions for each body part shown. This task was conducted in a control group, individuals with BPD, individuals with PTSD after child sexual abuse (CSA) and individuals with both BPD and PTSD after CSA. CSA patients reported more body areas associated with traumatic experiences than the BPD and control groups. The body areas related to trauma were more negatively rated (higher scores in guilt, shame, disgust and anger) than areas not involved in the trauma. There were significant differences in levels of disgust across the groups. The control group had the lowest levels of disgust and the individuals with PTSD reported the highest levels of disgust in comparison to both BPD and control groups. This is not consistent with previous research and as such, it is suggested that high levels of disgust are a result of child sexual abuse rather than PTSD diagnosis.

Simpson et al. (2020) explored psychosis and childhood adversities alongside shame, self-esteem and self-disgust. Childhood trauma correlated with self-disgust and symptoms of psychosis. Self-disgust correlated with both positive and negative symptoms of psychosis. Self-disgust was found to be the mediator of the relationship between childhood trauma and psychosis (positive and negative), this was still evident when controlling for self-esteem and external shame. Highlighting the role that self-disgust may have in the maintenance and development of psychosis symptoms. However, superiority over other psychological mediators that could be present cannot be ascertained. Trauma characteristics (peritraumatic and post-traumatic factors) will likely influence the exact mediator relationship. In conclusion, self-disgust may represent highly relevant trauma sequela for some trauma survivors with psychosis.

Psychosis and sexual abuse were also investigated in a qualitative study by Rhodes et al. (2018). Interviews of seven females who experienced child sexual abuse by a family member and all experiencing a form of psychosis resulted in 6 themes.

Degradation of the self was one overriding theme, relevant to self-disgust, this theme identified feeling of dirt, contamination and self-blame from the individuals. Specifically, inferiority, rejection and perceived disgust of others. These are all very relevant to self-disgust and describe the common associated feelings seen in individuals with high levels of self-disgust. Another theme that emerged was body-self entrapment, showing a lack of control and also some dissociation from the body- this links back to being able to remove oneself from a disgusting object, item or person. There was also a 'sense of being different', which showed individuals saw themselves as different and as a result isolated themselves from others, this linked to difficulties in intimate relationships. These difficulties in later life demonstrate how self-disgust can maintain and induce a negative cyclical approach. This is also seen in the theme of unending struggle and depression, further to the cyclical negative thoughts, depression is very commonly comorbid with self-disgust. Psychotic condemnations and abuse, describes the voices that are heard, and disturbed thinking seen, as a result of trauma. However, the final theme of perceptions of links to the past, encompasses how although participants could see links between the abuse and adult suffering, they did not make the link between the abuse and the psychosis.

There were also a few papers on interventions and treatment for survivors of childhood sexual abuse (CSA). In 2011, Steil et al. discuss a pilot study of a short-term treatment of cognitive restructuring and imagery modification (CRIM). This treatment was developed as a result of literature identifying the common feeling of being contaminated in CSA survivors however, no intervention specifically targets this. The 2-session treatment includes internet searching to demonstrate the rate at which skin cells reproduce and image modification of creating a new skin following their trauma and removing the connection of contamination with the self. Ratings pre, post and 6 weeks post showed significant reductions in intensity, vividness, uncontrollability, and related distress of feelings of being contaminated (FBC). Further to this, despite only targeting the FBC, there were also significant reductions in post-traumatic symptoms, this identified promising results from the pilot study. Two case studies from this were explored in detail (Jung & Steil, 2012) identifying a model. The upper cognitive model, relevant when FBC starts years after a trauma, shows how negative self-appraisals after trauma induce effects of self-disgust, shame and self-contempt which leads to and then maintains the FBC. FBC is viewed as a secondary trauma related emotion based on maladaptive cognitive appraisals. When FBC is relevant from the time of trauma, a classical conditioning of disgust towards the perpetrator associated to the self is assumed. Jung and Steil (2013) assess the CRIM treatment in a randomised control trial, with a treatment group and a group on a waitlist for treatment (control group). PTSD severity through time was significantly more reduced in the CRIM group than the waitlist group as rated by blinded clinicians. Similar to the pilot study, very positive results were seen for the CRIM treatment, and it was identified as an effective and safe treatment for FBC in adults with PTSD following CSA and once again, strong effects were seen in reducing PTSD symptomology as well as reductions in all areas of FBC.

Another treatment that has been used for PTSD sufferers is compassionate mind training to enhance trauma focused CBT (Bowyer et al., 2014). Research suggests high levels of shame reduce the effectiveness of standard CBT, and high levels of shame and disgust are common in PTSD sufferers. This case study identified the approach reduced levels of hated self and shame, however, the measures for these were using the Forms of Self-Criticising/Attacking and Self-Reassuring scale (FSCRS) and the Other as Shamer scale (OAS), so the true impact on self-disgust per se is still unknown.

Post-traumatic stress disorder can be debilitating for individuals and the research above shows the co-occurring difficulties that are common. Self-disgust has shown to be evident in individuals with PTSD, however, some research determines the cause of the trauma impacts the subsequent PTSD symptoms and severity. PTSD can occur as a result of wide range of events or traumas, the main traumas assessed in relation to self-disgust were sexual trauma and trauma in combat (veterans). The research identifies interventions of compassionate mind training and CRIM that have shown encouraging results reducing PTSD severity as well as contamination feelings and hatred towards the self. These findings support that idea that self-disgust has a cognitive basis and as such to reduce the severity, targeting cognitive beliefs seems to be effective.

3.4.6. Body image and eating disorders

Body image concerns relates to anxiousness or distress toward a particular body part and has cognitive, affective and perceptual implications to the individual (Forbes et al., 2012). Eating disorders can be characterised by restricted diet, obsessive thoughts, compensatory behaviours and psychological distress (American Psychiatric Association, 2013; Marks et al., 2020). Eating disorders and weight related difficulties are increasing in incidence and are a major public health concern (Galmiche et al., 2019), they are commonly associated with mental health difficulties and there is research linking self-disgust with eating disorders and body image. This area is one of the most researched topics in relation to self-disgust with 15 studies identified.

Bornholt et al. (2005) examined the relationships between cognitive and affective body self-evaluation in adolescent girls. The sample included schoolgirls with a range of body mass indexes (BMIs) and hospitalised patients with anorexia nervosa (AN). Self-directed disgust was measured with an affective self-evaluation task, where participants had to circle the feeling most appropriate after a vignette. The findings demonstrated on average, the sample had moderately positive self-concepts about body, movement, and appearance. BMI and self-evaluations showed no significant associations to one another. There were differences in the self-concept of body and appearance (but not movement). Those who were in school and had low/ moderate BMIs tended to show the optimal self-concepts, however, the AN group had a significantly lower self-concept than those with a low BMI. Across all the emotions, those in the AN group demonstrated higher levels of disgust, anger and worry and lower levels of feeling OK than the healthy population. Feelings of guilt didn't differ much between the groups. Self-concept and feelings did not correlate to body weight and the self-concepts tended to be sensitive and specific to being in the AN group compared to individuals with a low BMI. This highlights the complexity of AN and shows that the extended mental health outcomes are not the same as having a low BMI. This study only used females in the sample, due to research identifying AN aetiology differs with gender, however, this does mean the results cannot be generalised to males. A clear segregation is seen here for self-disgust between clinical and non-clinical samples.

Previous research (Critchley, 2005) suggests brain regions for emotion perception may overlap with interoceptive and sensory awareness. Therefore, an online study by Bell et al. (2017) researched the relationship between self-disgust and sensory processing in groups with eating disorders (AN, bulimia nervosa: BN) and a healthy control group. They measured disgust sensitivity, propensity, self-directed disgust, anxiety, sensory profiles (subjective experience of sensation in multiple sensory domains e.g., "I notice when people come into a room") and eating disorder symptomology. As predicted, self-disgust significantly and positively correlated with all disgust and anxiety variables in all groups. Self-disgust was also positively associated with three sensory variables (low registration, sensory sensitivity, and sensation avoidant) and negatively associated with sensation seeking. Self-disgust was predicted by disgust sensitivity, anxiety, low registration, and sensation seeking in the AN sub-group. Anxiety, sensation avoidance and sensation seeking could predict self-disgust levels in the bulimia sample. No significant differences were found between bulimia and anorexia. These findings support the idea that sensory processing is related and somewhat altered in individuals with eating disorders. Further to this, although no specific differences were found between BN and AN, the different models used to predict SD within these subgroups identify the presentation or development of self-disgust differs in different eating disordered groups. This sample used a large sample, however, once again only included women.

In a qualitative study the relationship between negative emotions and anorexia nervosa (AN) were explored (Espeset et al., 2012). Due to the emotion regulation difficulties being a key feature of AN, this research aimed to understand how AN patients manage negative emotions and whether they see relationships between the negative emotions and their eating disorder behaviour using a grounded theory approach. From the focused interviews, it emerged that eating disorder behaviours were described as a way to manage/ avoid/ escape or suppress negative emotions. This therefore suggests, the negative emotions are the precursor, and a maladaptive coping strategy has developed into an eating disorder. Disgust was frequently mentioned with clear reference to nausea and linked to a feeling of being fat or full. A trigger for the disgust feeling was identified as mirror viewing as this reminded the participants of their appearance. There was a close association with disgust and body dissatisfaction. Specific avoidance strategies were described to manage the disgust feelings such as dissociating from their bodies, food and body awareness, social isolation and reduced physical and sexual closeness. Disgust was identified to trigger eating disorder behaviours such as restrictive eating and purging. Each emotion (sadness, anger, fear and disgust) was related to different behaviours to avoid or suppress said emotion. These maladaptive coping mechanisms of developing one problem to combat another, is consistent with the research identifying emotion regulation difficulty. This study only focused on one specific eating disorder (AN) and all the patients had been diagnosed for a long time prior to participation, it would be interesting to understand whether the different time points along the AN journey, had different relationships with emotions to understand if the emotional response is a result of habituation and conditioning each emotion with the response, to identify the emotion regulation throughout this journey would also be of relevance.

Another qualitative study researched obesity and stigma consequences in a population with participants who were obese or who had been obese previously (Ogden & Clementi, 2010). The thematic analysis uncovered 4 main themes; 1) the impact of obesity seemed to be detrimental to self-perception and self-identity (although this was not consistent for all participants). 2) Negative emotion may result in an individual distancing themselves from their physical body in an avoidance technique. 3) The meaning of food was seen to have a central role in managing and regulating emotions, giving temporary comfort and support. 4) The individuals mentioned issues with control and the need for comfort and support based upon past relationships or bad experiences in childhood. The social context within individuals with obesity led to a feeling of being abnormal, seeing high levels of discrimination and feeling unable to participate in everyday tasks. Finally, stigma seemed to influence the motivation to change. This study highlights some key consistencies seen throughout other research- avoidance once again is mentioned, regulation and difficulty with emotions but mainly the idea that stigma and reflecting perceived views of others onto themselves seemed to be at the core of this.

Palmeira et al. (2019) investigated self-disgust in overweight and obese individuals and the role of self-compassion. Self-disgust was measured using the multidimensional self-disgust scale (Carreiras, 2014). Self-disgust was found to positively correlate to Body Mass Index (BMI) and eating disorder symptomology and negatively correlated to gender and self-compassion. Distinct gender differences were identified as females tended to have higher self-disgust and eating disorder symptomology, whereas males tended to score higher in self-compassion. Overall, self-disgust had a significant direct and indirect effect on eating disorder symptomology through self-compassion. This shows that self-compassion can have an alleviating role for self-disgust and may explain some of the gender differences seen in eating disorders.

Marques et al. (2021) researched self-compassion within the relationship between self-disgust and urge to be thin in a female clinical sample with diagnosed eating disorders, in comparison to a community sample. The clinical sample showed higher levels of self-disgust, drive for thinness and external shame and reduced levels of self-compassion in comparison to the control group. Positive correlations were found between self-disgust and drive for thinness in both samples and negative correlations were seen between self-disgust and self-compassion and drive for thinness and self-compassion. The clinical group showed a moderator effect of self-compassion in the relationship between self-disgust and drive for thinness when shame was controlled for, whereas the community group showed when controlling for shame, the interaction between self-disgust and self-compassion to be non-significant. This research highlights the useful strategy of self-compassion to reduce drive for thinness in highly self-disgusted individuals with eating disorders, showing a promising avenue for interventions using self-compassion. The multidimensional self-disgust scale was also used in this study and the sample only contained females.

Considering interventions or methods to control and reduce self-disgust levels, Powell et al. (2015) examined whether self-affirmation can reduce biases, increase openness and reduce negative thinking processes in a non-clinical population. In accordance with previous research (Armitage, 2012), affirmed students showed reduced body dissatisfaction in comparison to a non-affirmed group. The affirmed group also showed a significant reduction on state levels of self-disgust, anger, and sadness. Self-affirming trait kindness affected the emotion towards appearance (self-disgust self) but not to behaviour (self-disgust ways). It is suggested that the lack of differences seen towards self-disgust ways, is due to personal behaviour (self-disgust ways) being too similar to the manipulation (kindness intervention), which was developed from the personal attributes scale. Previous research (Blanton et al., 1997; Sherman & Cohen, 2006) suggests affirming a construct with a related domain can result in adverse or null effects, due to an increase in defensiveness and dissonance. The second part of the study (Powell et al., 2015), repeats the study again online, in a more ecologically valid environment, the results showed only partial replication, with some key differences between the findings of both studies. Condition (affirmed group or control) did not predict threat, anger, sadness, or happiness. Trait self-disgust moderated self-affirmation in appearance disgust. In the second study, self-affirmation only predicted state disgust towards appearance, in contrast to predicting all negative emotions in study 1. Overall, it was found that threats to physical appearance (high self-disgust self) can be offset by affirming an unrelated self-aspect, however, due to the cross-sectional nature of the study, the long-term effects are not known and thus the impact on trait measures cannot be seen.

Neziroglu et al. (2010) investigated individuals with body dysmorphic disorder (BDD) and the role of disgust in appearance in BDD. Participants were asked to view themselves in a mirror for 1-minute intervals, 5 times and focus on their most disliked feature, during these exposures, physiological changes were seen, an increased heart rate across trials after each exposure. The BDD group demonstrated decreases in anxiety and disgust towards themselves across trials, as trials were repeated, anxiety and disgust levels reduced each time. Whereas there were no differences seen in the anxiety and disgust scores across trials in the control group. This is the only research of self-directed disgust and BDD and the sample size was small. Levels of disgust towards the self, reducing between trials is somewhat unexpected, especially due to the trait nature of self-disgust, however, using a VAS, a more state version of self-disgust may be being measured.

In a non-clinical population, Chu et al. (2015) explored eating disorders and suicidal ideation. High rates of suicidal ideation are seen in eating disorder patients and therefore this research aimed to unpick this relationship further. Using the Disgust with Life Scale (DWLS), disgust related to the self and to the world was associated with suicidal ideation, however disgust with others, disgust sensitivity and propensity were not related to suicidal tendencies. Bulimia is related to self-disgust only and no other disgust domains, whereas, body dissatisfaction was related to self-disgust, other disgust and world disgust and was mediated by self-disgust and world disgust to predict suicidal ideation. One explanation for this, is the wide societal generalisation of body dissatisfaction. Drive for thinness showed correlations to self-disgust, other disgust, and disgust propensity. Some key findings here show differences between different disgust domains, and associations between eating disorders and suicidality with self-directed disgust playing a core role.

In another non-clinical population, Von Sprecklesen et al. (2018) explored negative body image and disgust identifying a strong relationship between them. Self-disgust mediated the relationship between disgust propensity and negative body image and disgust sensitivity did not moderate the association between self-disgust and negative body image. This research highlights the key role self-disgust can play in psychological relationships that cannot be explained by general disgust propensity or sensitivity. This study only included females and therefore a second study was conducted within the same paper, including men and women, an additional measure of the three disgust domains (sexual, pathogen and moral) and the self-disgust measure used was altered to the SDES (self-disgust in eating disorders). Disgust propensity correlated to the three domains of disgust, however, there were no correlations between self-disgust and the three disgust domains. This supported the findings from study 1 in that self-disgust partially mediated the relationship between disgust propensity and negative body image and once again, disgust sensitivity did not moderate the relationship between self-disgust and negative body image. Pathogen disgust had an independent relationship with negative body image and was found to be a significant predictor of negative body image independent of the other disgust measures including self-disgust.

Further research into disgust in body image disturbance (BID) was conducted in a non-clinical population of workers and students (Stasik- O'Brien & Schmidt, 2018). Body image disturbance is defined with maladaptive attitudes and behaviours toward a disliked aspect on one's own body with a severity continuum. In a hierarchical regression analysis, self-disgust uniquely explained 4% of BID variance and 7% in the student sample. However, both disgust propensity and sensitivity did not explain any unique variance. This demonstrates the effect self-disgust can have in a non-clinical sample.

Olatunji et al. (2015) investigated the role of self-disgust in the relationships between shame, bulimia and OCD. Shame has shown many links to psychopathology (specifically eating disorders (Troop & Redshaw, 2012) and OCD (Kim et al., 2014), which are commonly comorbid), however, the mechanisms underlying this is unclear. Given the similarities between shame and self-disgust but the unique properties, it was investigated to see if self-disgust was responsible for these associations. The variables, shame proneness, depression bulimia, general anxiety and self-disgust all correlated to one another. Self-disgust was found to have unique variance in predicting bulimic symptoms and OCD, however, did not in respect to general anxiety. Self-disgust was demonstrated to partially mediate the relationship between shame and bulimic symptoms and the relationship between shame proneness and OCD. These findings show that not all paths from shame to psychopathology are distinctly accounted for by self-disgust which increases the argument for shame and self-disgust to be distinct constructs. Further to this, the relationships that self-disgust showed variance for were for pathologies linked to the self specifically, rather than general anxiety which could be argued is more around the external world. The findings potentially suggest shame could develop into self-disgust.

Looking into chronic health conditions which impact body image, Jin et al. (2020) researched patients with stomas. Individuals with stoma have displayed serious psychological distress which could be results of the threats of physical and psychological functioning from impaired self-image and changes in bowel function. A core issue seen is a result of the stigma or perceived stigma. Self-disgust ways had no mediating effect on acceptance or self-efficacy, however, self-disgust self and stigma mediated the relationship between stoma acceptance and self-efficacy. Reduced stoma acceptance was linked to increased self-disgust (self and ways) and increased perceived stigmatisation. The mediating effect of self-disgust self was greater than the effect of stigma. This suggests that the self-disgust may be a result of internalising perceived stigma and thus emphasising and exaggerating the effects of stigma.

Prothesis use and loss of limbs can dramatically impact body image and self-concept. Burden et al. (2018) found prosthesis use frequency was significantly negatively correlated with self-disgust ways. The relationship between increased time since amputation and increased prothesis use resulting in a reduction in self-disgust is most likely bi-directional. The use of prosthesis can be seen as a ‘normalising’ undertaking to correct the body envelope and function, this could have positive psychological benefits beyond functional utility. It brings into question, whether this links back to stigma and the perceived thoughts of others seeing loss of limb and thus, by ‘correcting’ this, with prosthesis, self-disgust is reduced.

Schienle (2018) has also conducted research in skin picking to identify another ‘normalising’ act. Skin picking however, is a maladaptive mechanism. Skin picking disorder patients scored higher on all disgust measures than the control group. However, moral disgust and disgust sensitivity were found to be able to predict the degree of skin picking which differs from previous research (Schienle, 2018) which identified behavioural self-disgust as a predictor of focused skin picking. fMRI studies have demonstrated skin picking disorder patients showed more disgust and urge to pick at skin irregularities. Greater activation was seen in the amygdala and insula.

The literature referred to in this section highlights some commonly occurring key points. In eating disorders, there is a clear link to emotion regulation difficulties and eating disorders seem to be a maladaptive coping mechanism as a response to the maladaptive emotion of self-disgust. Stable with self-disgust research in other areas, avoidance of the self is evident. Body image studies show self-disgust to be linked to behaviours to attempt and ‘normalise’ how an individual looks to others. This also links with the strong sense that self-disgust is often as a result of the perceived disgust of others towards the self. Self-compassion and self-affirmations have been used within these populations with positive results suggesting potential interventions that could be developed.

3.5. Self-disgust in relation to health conditions and diseases

3.5.1. Sensory disorders

There were three papers identified that assessed the relationship between self-disgust and sensory disorders. All three, focus on the olfactory system. Olfaction is known to have links to disgust due to using smell as a sensory input of determining diseased produce to avoid. These papers subsequently investigated the relationship between self-disgust and olfaction as well as the impact of odour and exudate from chronic venus leg ulceration.

The impact of exudate and odour in chronic venus leg ulceration was explored by Jones et al. (2008). After a quantitative measure for anxiety and depression, demonstrating significant associations between anxiety, depression and odour, the study used a qualitative approach, interviewing participants on their experiences. The analyses revealed three main themes that all have links to self-disgust. Firstly, the emotional response demonstrated the participants had feelings of shame and self-directed disgust because of the odour and this resulted in a sense of loss of control as they were unable to monitor this to their satisfaction. Further to this, another theme was the limitation of social activities. Participants detailed they avoided socialising events to prevent others from smelling it. This very much links to social withdrawal, commonly seen with self-disgust as a result of perceived others disgust. The third theme highlighted the management of odour and leakage and that they felt unable to keep it under control, this could result in disgust towards their behaviour due to feeling incapable. This study highlights the impact on psychological state that can be seen from exudate odour. The use of interviews encapsulated aspects of both self-disgust self and ways. It is difficult to generalise these findings to a wider population, as the sample size was small (20) and all participants were above the age of 52 (chronic leg ulceration is most commonly seen in older adults). However, this shows potential findings for psychological impacts as a result of odour from the self.

In a different study, Ille et al. (2016) investigated individuals who had a loss of smell (partial loss of smell- hyposmic, or total loss of smell- anosmic) in comparison to normosmic individuals (normal sense of smell) and its relationship to self-disgust. Participants answered questionnaires for disgust proneness, disgust sensitivity as well as self-disgust self. In terms of self-disgust self, dysosmic individuals (both anosmic and hyposmic) had higher levels of self-disgust that the normosmic group. Further to this, the anosmic and hyposmic groups did not differ from one another. Duration and cause of olfactory disfunction did not have an impact on self-disgust either. This suggests that rather than the extent of olfaction loss impacting self-disgust, it is a change in self-disgust seen from any level of loss. Overall, self-disgust showed potential relations to general social insecurity in dysosmic patients, this links back to the idea of threat or perceived judgement initiating heightened levels of self-disgust. This study, however, only included male participants, which was stressed as a limitation and as such, Ille et al. (2017) replicated the study with both women and men. Regarding the self-disgust findings, there was once again a group difference between dysosmic individuals and normosmic individuals. There was marginal group gender interaction and on further investigation this showed, although female groups did not differ, male hyposmic individuals had higher self-disgust levels than normosmic males. These gender differences are key to understanding differences in both olfaction disfunction and self-disgust. The findings identify gender specific consequences for individuals with reduced sense of smell and point to greater problems psychologically in men as a result.

These three papers, identify another avenue in which heightened self-disgust shows to have impact as a result of a clinical difficulty. These papers show that olfaction, both the ability to smell and the thought of oneself smelling can increase levels of self-disgust and negatively influence an individual’s life. The perceived disgust of others is once again a key factor in the development and maintenance of self-disgust.

3.5.2. Parkinson’s

When exploring self-disgust in Parkinson’s Disease patients, Tsatali et al. (2019) found that individuals with Parkinson’s had significantly higher levels of self-disgust, shame, anxiety, and depression than the healthy control group. Depression scores were correlated to self-disgust and shame scores, whereas anxiety was correlated to shame scores only. This research not only highlights the population sample as individuals with heightened levels of self-disgust but also suggests self-disgust is more commonly related to depression, rather than anxiety.

3.5.3. Cancer

Azlan et al. (2017a) investigated the levels of self-disgust in a group of cancer patients. In comparison to a healthy control group, the cancer patients had significantly higher levels of self-disgust self, disgust sensitivity, depression, and significantly lower levels of disgust propensity. Behavioural self-disgust (self-disgust ways) showed no differences between the cancer group and the control group. These associations were independent and still present when controlling for anxiety and depression. A negative association was seen between years since diagnosis and levels of disgust sensitivity and propensity and anxiety and depression, this suggests these constructs may lessen in cancer survivors over time. In the cancer sample, both self-disgust subscales and disgust sensitivity were predictors of anxiety, however, in the control group, behavioural self-disgust was the only predictor for anxiety. Similarly, self-disgust self and disgust sensitivity were both predictors of depression in the cancer group, however, in the control group, the only predictor was self-disgust self. These findings, highlight the differences between groups with elevated self-disgust to the healthy population and also show how the subscales of self-disgust seem to map independently onto mental health difficulties (anxiety and depression). This paper suggests emotional profiling could be used to identify cancer patients with higher tendencies to develop mental health disorders.

Azlan et al. (2017b) also explored partners disgust levels on cancer patient's disgust. Significant positive correlations were seen between partners disgust sensitivity and patient's self-disgust, patients disgust propensity and patients' depression scores. Interestingly, patient's self-disgust fully mediated the association between partners disgust sensitivity and patient anxiety and depression. Linking to the strong feature of self-disgust being perceived disgust of others towards the self, this displays the trajectory of how high levels of self-disgust along with higher levels of partner disgust propensity can develop into anxiety and depression.

3.6. Self-disgust in non-clinical populations

Self-disgust in relation to emotion regulation and dark triad traits (narcissism, machiavellianism and psychopathy) were investigated by Akram and Stevenson (2020).

Self-disgust showed links to two of the dark triad traits, explaining 5% of the variance seen in machiavellianism scores and 13.5% of the variance in psychopathy. Direct effects of self-disgust were seen on machiavellianism and neither expression suppression or cognitive reappraisal (emotion regulation subscales) were mediators of this relationship. Direct effects were also seen of self-disgust on psychopathy, over and above the mediator expressive suppression. This research identifies links with the dark triad and demonstrates the role of self-disgust within this. The role of self-disgust seems to be evident over and above any effect of emotion regulation in this instance.

Lazarus et al. (2019) examined impulsivity, self-regulation and emotion-regulation in a non-clinical sample. The aim of the research was to understand the psychological characteristics associated with self-disgust experiences. Self-disgust is thought to stem from a lack of capacity to resist impulses and exercise regulation of thoughts, actions, and emotions. The findings showed that cognitive reappraisal was negatively associated with both self-disgust subscales and expressive suppression to be positively associated with both subscales of self-disgust. The attention subfactor of the impulsivity measure were positively associated with both self-disgust subscales too. Motor and non-planning subfactors of the impulsivity scale showed some marginally significant associations with self-disgust self and motor was positively associated with self-disgust ways. Self-regulation was significantly negatively associated with both self-disgust ways and self. Cognitive reappraisal and expressive suppression significantly predicted self-disgust but in opposite directions. Disgusting self was negatively associated with cognitive reappraisal and self-regulation and positively associated with both expressive suppression and attentional impulsivity. Disgusting ways was negatively associated with cognitive reappraisal and self-regulation and positively associated with expressive suppression and both attentional and motor impulsivity. Self-regulation was more strongly associated with self-disgust in comparison to emotion-regulation and impulsivity. Women had overall significantly higher self-disgust than men. This research identifies the links between impulsivity, self-regulation and emotion-regulation with self-disgust and understanding these relationships more could help to develop interventions targeting the psychological characteristics seen to be associated with self-disgust experiences.

Schienle and Wabnegger (2019) conducted a voxel-based morphometry in a non-clinical sample, to identify whether grey matter volume in disgust specific regions of the brain (namely, the insula and prefrontal cortex) relates to reported self-disgust. This study only used women as participants. Women with high levels of self-disgust self showed reduced grey matter volume in the left and right insula in comparison to those with low self-disgust self scores. This relationship was still evident when depression was added as a covariate. Self-disgust ways had no relationship with the grey matter volume monitored. Further to this, the split that personal self-disgust seems to demonstrate changes in the brain morphometry, however, self-disgust ways does not. The insula is involved with interoceptive awareness and connecting homeostatic information with higher cognitive processes. This links to self-disgust as being a cognitive-affective emotional schema.

A non-clinical study by Hirao and Kobayashi (2013) investigated self-disgust, guilt and flow experience (a state of being intensely involved in an activity that nothing else seems to matter) and found a significant negative correlation between frequency of flow experiences and self-disgust. Both duration of flow and quality of flow were positively related to guilt, suggesting individuals who experience guilt are motivated to compensate for this and thus, experience long and high-quality flow experiences. Flow experiences is a potential helpful intervention basis for individuals suffering with high levels of self-disgust.

Lenk et al. (2019) investigated the source effect in relation to self-disgust. The source effect is measured by the Disgust in Relationship Questionnaire (DIRQ), where 44 disgust statements are rated in respect to the disgust content (hygiene, physical proximity and sexuality) and the disgust source (stranger, parents, partner and self). The source effect is a phenomenon which explains that strangers evoke more disgust than known others (parents, partners, the self) and as such, more distance is desired between the self and strangers, linking to the avoidance theory that as humans we avoid disgusting stimuli. However, the source effect demonstrated differences in the sexual disgust category, directing highest disgust towards parents, whereas strangers are more in line with partners. This effect is very much dependent on relationship and context; however it moderates individuals' social relationships. In this research study, the source effect was measured in a healthy control group and a group of inpatients of psychiatric treatment, with a broad range of diagnoses. Healthy controls demonstrated a clear source effect, with more intense disgust directed towards strangers, however, in the inpatient group, there was a reduced source effect, especially towards sexual disgust. One explanation for this, is due to higher levels of self-disgust, the individuals in the experimental group show higher levels of disgust towards the self and those within close proximity (due to perceived disgust and not wanting to subject their close ones to such stimuli) and lower levels of disgust towards strangers.

To further understand the concept of self-disgust, Powell et al. (2014) conducted an interpretive phenomenological analysis, running interviews with individuals following measuring levels of depression and self-disgust. Four themes emerged from the data. The first theme was the subjective experience of self-disgust, that was described as a more intense version of self-dislike, which was mentally consuming and caused physical sensations such a nausea. The two-factor structure was evident within the interviews of self-disgust self and ways, however, there was a degree of change seen in levels of self-disgust overtime. A second theme involved the origins of the revolting self, which was found to be placed in late childhood and adolescence that is later than other self-conscious emotions (Stipek, 1995; Powell et al., 2014). There were disgust-based criticism experiences, and there was an emphasis on the role of others and feelings of inferiority (similar to shame and self-criticism). The third theme encapsulated the consequences of self-disgust. The feelings felt like they couldn't be rectified and as such individuals seemed to remove themselves from social situations and felt a dissociation to the self, with behaviours such as avoiding mirror gazing or social withdrawal. The final theme, entitled associated emotional states suggested that self-disgust and self-hatred were hard to separate as constructs. This research has identified some key points to help understand the concept of self-disgust and is consistent with other research conducted and discussed throughout this literature review. However, due to the sample only being 9 females, it is hard to understand how generalisable these findings are. Despite this, they stand as a good base point to conduct further empirical research.

Laffan et al. (2017) conducted a mixed methods study on self-disgust in older adults who required daily living support in a care home setting in comparison to physically able older adults from the community. Self-disgust was measured through a new measure focusing on self-disgust and perceived other disgust (how disgusting individuals believe other people see them). These measures demonstrated good internal consistencies but were new for this study. The participants did not report high levels of self-disgust or perceived other disgust in either group. There was, however, a medium sized positive correlation (r=0.35) between self-disgust and perceived other disgust within the residential home participants. This relationship was non-significant in the community sample. Self-disgust and disgust sensitivity were related in both groups. Neither depression nor anxiety correlated with self-disgust or perceived other disgust in either of the groups. However, there were significant group differences between scores on self-disgust and perceived other disgust. Following this, interviews identified some key findings. Self-disgust was thought to be caused by loss of functioning, embarrassment, and self-consciousness, but could be alleviated by strategies, protective factors and seemed to reduce over time with repeated exposure of situations of requiring assistance. Carer characteristics, including age, gender and attitude were identified to be both causes and alleviators of self-disgust. During the time of the interviews, the participants described current feelings of gratitude and acceptance of the help they were receiving. These findings, although very different to other findings, are in line with a reduced level of self-disgust in older adults due to a positivity bias (Carstensen & DeLiema, 2018).

In another non-clinical study, Olatunji et al. (2012) investigated the influence that self-disgust has on morally relevant decisions. After completing measures of self-disgust, depression and disgust sensitivity, participants had to rate the disgust towards 19 moral narratives that were split into groups of non-offenses (e.g., “ate an entire gallon of ice cream”), moderate offenses (e.g., “spread harmful rumours about a co-worker”), and severe moral offenses (e.g., “murdered two people in their own home”).

Self-disgust was significantly positively related to disgust and punishment ratings of non-moral offenses and significantly negatively related to disgust and punishment of severe moral offenses. Only self-disgust explained significant unique variance in predicting more disgust and punishment of non-moral offenses and only self-disgust explained significant unique variance in predicting less disgust ratings of moderate offenses. But it was disgust proneness that explained more punishment of moderate offenses. Also, only self-disgust explained significant unique variance in predicting less disgust and punishment of severe offenses. Overall, self-disgust was associated with less punishment of moral transgressions, suggesting participants with high self-disgust may have an internal moral imbalance.

In 2015, Olatunji studied the impact of health-related behaviours on self-disgust. The experimental group were asked to monitor their normal health related behaviours (e.g., carrying hand sanitiser, taking multivitamins, or drinking at least 8 glasses of water a day) on a checklist for the first and third week but on the second week, they were asked to complete as many health-related behaviours as often as possible. This was compared to a control group who were just asked to monitor their normal health related behaviours for the full 3 weeks. Disgust propensity showed differences between the groups over time, however for self-disgust, there was a main effect of time, but no group or interaction effects seen. This suggests that the health behaviour manipulation did not impact the levels of self-disgust, and that excessive engagement of health-related behaviours exacerbates disgust propensity only.

These non-clinical studies show strong evidence for self-disgust levels to be elevated within samples in the general population as well as in clinical samples. Within non-clinical samples, relationships have been identified between self-disgust and emotion regulation, health related behaviours, morally relevant decisions, and impulsivity, among others. Self-disgust in non-clinical populations has been shown to be related to behaviours and decision making mostly, with higher levels of self-disgust resulting in actions less socially and morally acceptable. Finally, emotion regulation ability seems to be imperative to manage self-disgust levels in an adaptive way.

4. Discussion

This literature review has demonstrated that the current research on self-disgust is both informative and substantial. Over 60 articles were identified and reviewed with the aim of investigating the characteristics of self-disgust within both clinical and non-clinical populations, and reviewing the measurements and methodology used to assay self-disgust. The main findings of this systematic literature review are that: a) research in clinical and non-clinical groups suggests that self-disgust is related to debilitating conditions; and b) the two-factor structure of self-disgust has been supported in findings from both quantitative and qualitative studies and therefore the use of this structure within measurements should be adopted.

Self-disgust is also related to difficulties in emotion regulation (Lazuras et al., 2019), which could lead to the maladaptive self-conscious emotion being directed towards themselves. However, self-disgust also has a strong link to how an individual imagines others to feel towards them. Self-disgust is strongly impacted by perceived other disgust toward themselves (Laffan et al., 2017). This then is what causes individuals to use avoidance behaviours and subsequently withdraw. Once an individual has withdrawn, the cognitive schema is sustained and the self-disgust emotion is maintained or even exacerbated.

Understanding the differences in self-disgust scores across different clinical conditions highlights its transdiagnostic role in mental health (Simpson et al., 2020). That said, self-disgust has been demonstrated to arise for different reasons. For example, eating disorders notably tend to develop as a coping mechanism, which in turn is a catalyst to maintaining self-disgust (Bell et al., 2017). However, in NSSI and PTSD, self-disgust tends to be related more to the specific root cause of the trauma or the self-injurious behaviour (Smith et al., 2015; Brake et al., 2017).

The cross-sectional nature of most the studies poses problems of directionality in the trajectories for the development of self-disgust, and the few longitudinal studies do not all show consistent results, which makes generalising to conclusions difficult. We cannot be certain from the current literature whether self-disgust acts as a catalyst or is a result of other mental health disorders and difficulties, and it is very possible that it can occur in both instances.

Methodologically, there are a large range of measurements used to assay the construct of self-disgust. The majority of measures used, employ self-report questionnaires, which may be prone to social desirability and response bias. Out of the self-report measures for self-disgust, the most widely used and validated scale in English is the SDS and it would be the recommended scale for English-speaking samples. The other measures have either been developed in other countries or have not been validated or widely used, or have not been originally developed to measure the construct of self-disgust. Other methodologies have had limited use such as eye-tracking and implicit association tests, but more validation of these methods is needed. However, these studies do give an idea of other methodologies that could be used in future.

The research has indicated the potential of some interventions for lowering self-disgust levels and this tends to be interventions accessing the cognitive aspects and challenging cognitive processes thoughts, via strengthening affirmations or cognitive restructuring. It is clear though, from the papers discussed, that there are many more potential avenues of research to enable a better understanding of self-disgust.

Further, in 77addition from the understanding of self-disgust, the systematic literature review has identified the methodological issues and the amount of measurements being used. It is clear there is not currently an implicit measure for self-disgust and this review also shows the importance this could have in regard to the far-reaching links self-disgust has and the importance of obtaining reliable data in understanding this construct.

Summary

The aim of Chapter 3 was to review the current literature in the area of self-disgust. The research shows a multitude of associations seen between self-disgust and other mental, physical and health disorders in addition to the associations seen in non-clinical populations as well. Despite the range of connections highlighted, there are still many gaps in the understanding of the construct of self-disgust. The potential issues with the measures of self-disgust were stressed, as the research into the construct and understanding of self-disgust is reliant on reliable and valid measures.

Chapter 4 – Understanding the uses of implicit tasks.

The systematic literature review in Chapter 3 outlined the current research into self-disgust and the increasing amount of interest being shown in the topic in relation to mental health disorders. Some of the methodological approaches used in the current research to measure self-disgust have associated concerns and limitations. Many of the measures were not developed specifically for self-disgust and several of the measurement tools were only developed and used within one study and as such have not been validated: thus the validity and reliability of using them to measure self-disgust could be questioned. There were only two main self-disgust measures in the literature, developed specifically for the measurement of self-disgust: the SDS (Overton et al., 2008) and the QASD (Schienle et al., 2014). These two measures were validated in different countries (England and Germany respectively), and these measures are both self-report questionnaires, which can cause further issues, as detailed below.

There are evident challenges due to the main current measures of self-disgust employing a self-report methodology, which may result in problems with response biases, including social desirability, impression management and self- deception (Bensch et al., 2019; Paulhus, 1986; Stöber, 2001). Response biases describe many ways in which participants give false answers to questions (Bensch et al., 2019), such as social desirability, which is when individuals change their response to something they believe is more socially acceptable. Impression management is the way people answer to have control over how others perceive them (Paulhus, 1986) and self-deception is when someone denies the truth and convinces themselves of a different truth (Stöber, 2001). These problems arise due to the participant having time to think and determine which answer to give, and it is sometimes difficult to know the validity of self-report questionnaire responses due to the different biases that come into play. Automatic decisions, seen in implicit tasks, remove or significantly reduce the chances of the results being affected by these response biases.

In other contexts, implicit measures have demonstrated the ability to advance findings and research surrounding the effects of global self-evaluation on behaviour and psychological outcomes while reducing response bias risks (Buhrmester et al., 2011; Farnham et al., 1999). Research has also demonstrated that self-referential attitudes, such as self-esteem, can operate and influence behaviour and psychological outcomes outside of conscious awareness (Greenwald & Banaji, 1995; Bargh et al., 2012), evidencing that by solely using explicit self-report measures, some of the findings may be getting lost. This chapter focuses on implicit measures and tasks and whether there is value in developing an implicit task to measure self-disgust.

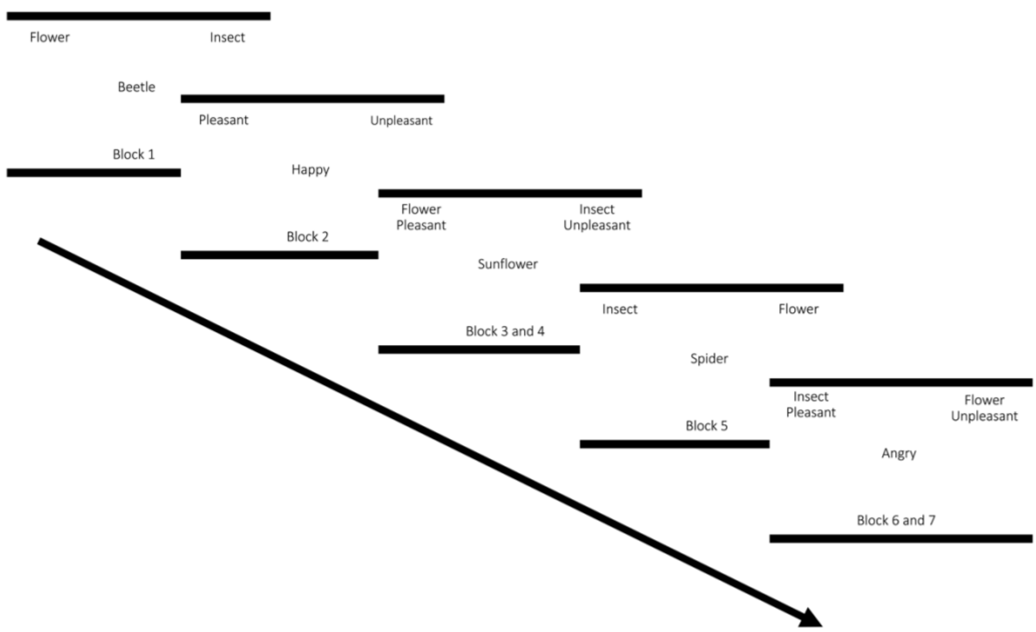
It is thought that rapid, automatic reactions outside of conscious awareness may predict behaviours independently of explicit self-report beliefs (Gawronski, 2006; Greenwald et al., 2009). Due to this, they are interpreted as unbiased assessments of underlying beliefs (Siegel et al., 2012). There has been some research to suggest emotional responses can be automatic, and implicit emotional reactions can be measured (Fiori, 2009; Rüsch et al., 2010). Further to this, implicit processes are sometimes referred to as schema that can guide perceptions and behaviour (Beck, 2008; Hartocollis, 1978). Given that self-disgust is identified as an emotion schema that can be displayed as self-focused self-disgust (perception) or self-disgust ways (behaviour), it seems appropriate to suggest that self-disgust could have associations that might be automatic and self-referential, which may be accessible via implicit measures due to emotion schemas being activated unconsciously.

Implicit attitudes can be expressed as actions or judgements that are controlled by automatic evaluation without the awareness of causation (Greenwald & Banaji, 1995). Individuals are thought to be lacking in awareness of implicit self-esteem (Nuttin, 1985), which as a result implies implicit self-esteem is a form of self-evaluation that emerges in the absence of self-reflection (Greenwald & Banaji, 1995). Implicit self-esteem is driven by automatically activated self-evaluations, it is thought to be representative of habitual, repetitive self-evaluations, showing a moderate consistency over time, showing it to be a trait measure, but it may also be affected by immediate pressures within an individual's environment (Koole et al., 2001). Paulhus (1993) described the automatic self as the highly practiced self, confirming the expectation of stability over time. The implicit association test aims to measure implicit attitudes by capturing the automatic evaluation without the explicit awareness. Greenwald, McGee and Schwartz (1998) suggest that the IAT may resist self-presentational forces that can mask personally or socially undesirable evaluative associations that can impact results in self-report measures.

IATs are one of the most common methods of measuring attitudes in behavioural and social sciences (Siegel et al., 2012). IATs assess the strength of associations between concepts by observing response latencies in computer administered categorization tasks (Greenwald et al., 2009). The classic IAT measures the differential association of two target concepts with two attributes (Greenwald et al., 1998). Two target concepts are presented in a 2-choice task, for example flower vs. insect names. A word is presented in the centre of the screen (e.g. beetle) and individuals categorise this word as a flower or an insect using the keyboard keys "E" and "I". There is then a second 2-choice task, for the attribute categories, for example pleasant vs unpleasant. Using the same two keys, individuals are asked to categorise a word presented to them (e.g. happy). All words used are presented to the participants before the trials begin to ensure the words and categories are understood and known. In the third task, the target and attribute categories are combined, for example flower and pleasant in one category, and insect and unpleasant in the other. Once again, as a word is presented to them, the participant is required to select the category that the word belongs to. There is then a second target choice task (the same as the first task, but the targets swap sides of the screen). This is to allow the final task to swap the category associations, for example insect and pleasant in one category, and flower and unpleasant. See Figure 3 for a visual example of the different stages in an IAT.

Figure 3.

Example of an Implicit Association Test.



When two highly associated categories share a response key, for example flower and pleasant, performance is faster than when two less associated categories share a response key, for example flower and unpleasant (Greenwald et al., 2009). In the case of self-disgust, an individual who has self-disgust will have already made a bond between themselves (the self) and the emotion of disgust, and therefore will be able to process these categories being in the same group at an increased speed compared to those who have low self-disgust. Implicit tasks are found to be useful due to the reliance on automatic processes determining the strength within associative groups (Devine et al., 2002), making the task less susceptible to fakery.

When comparing implicit and explicit measures with one another, Greenwald et al. (1998) found correlations between implicit and explicit measures of attitudes to be small to moderate (average r=0.25). However, rather than seeing this as evidence for convergent validity of the scales, this can be seen as evidence of divergence of the attitude constructs represented by implicit and explicit measures. Comparing the IAT methodology with that of evaluative semantic priming (preceding words with other related words to identify when associated words are activated quicker), Greenwald et al. (1998) demonstrated the IAT method has around twice the sensitivity that the priming method has towards evaluative differences.

Olson and Fazio (2004) identified some issues with the IAT methodology and suggested results can be contaminated due to extrapersonal associations. Extrapersonal associations are associations available in memory but irrelevant to the individuals' attitude. For example, someone may hold the association between women and housework in their memory due to hearing about old traditions and reading in books. This is in no way indicative of the person's beliefs regarding gender stereotypes. This sort of prior association may result in faster performances in the IAT and present itself as a bias towards a stereotype, regardless of whether this is the opinion held by the individual or not. Despite this, Olson and Fazio (2004) came up with three areas to be aware of within the IAT to reduce the likelihood of IAT contamination. The choice of category labels was deemed of interest, as the category will carry a normative implication. The items used within the categories can have a normative valence which can be problematic with pre-associated items. Finally, the classic IAT methodology design includes feedback that informs the participant when a categorisation mistake is made, suggestive of a normative correct response which can further impede the true performance of the participant. Having identified these issues and introduced possible ways to eradicate them, the IAT shows good promise in predicting implicit personal attitudes with a careful design and validation process.

As seen in the literature review in Chapter 3, self-disgust is often described as a precursor to many mental health and psychological disorders and as such understanding self-disgust is useful if we want to predict behaviour and develop preventative interventions to change expected worsening health trajectories. Greenwald et al. (2009) show that the predictive validity of self-report measures (not IAT measures) is reduced in socially sensitive topics or areas when self-serving bias may play a role. This is supportive of the need for an implicit measure for the construct of self-disgust. In addition to this, within this research it was found that IAT and self-report measures together show incremental predictive validity with respect to one another. Specifically, there is a crucial role for both implicit and self-report measures, and it is recommended that implicit and explicit measures used together is the best way to predict behaviour (Greenwald et al., 2009).

Implicit measures are already being used in research on the basic emotion of disgust and the findings have demonstrated a significant association between implicit and explicit disgust and disgust propensity measures and mental health outcomes, such as PTSD (e.g., Nicholson & Barnes-Holmes, 2012; Rüsch et al., 2011). Greenwald et al. (1998) introduced the idea of using self-other targets with various attribute dimensions in IAT methodology, to identify associations between attributes and an individual's self-concept. This is thought to help measure the self-schema construct. Further to this, due to the IAT being effective in measuring socially sensitive attitudes (Greenwald et al., 2009), it has been used in relation to the self, to measure self-esteem (Greenwald & Farnham, 2000; Greenwald et al., 2002). Nicholson and Barnes-Holmes (2012) suggested future research with implicit measures in more specific disgust domains would be valuable. This indicates that developing an implicit self-disgust measure could become progressively relevant and prominent in order to develop a fuller understanding of how self-disgust relates to mental health difficulties.

Summary

This chapter has given an overview of the importance of implicit measures and specifically the uses of the IAT. The current effective use of implicit measures in constructs related to self-disgust, such a self-esteem and disgust sensitivity and propensity, as well as the current issues in measurements for self-disgust, highlight the requirement for the development of an implicit measure for self-disgust. An IAT for self-disgust has been used in one study previously (Rüsch et al., 2011), however, there were key limitations with this such as the incorporation of anxiety as another attribute (see Chapter 3).

Chapter 5 – Study 1: Validating words to depict self-disgust.

Following Chapter 4, outlining the usefulness of implicit tasks to capture true attitudes, emotions and thoughts without intervening bias, and the difficulties found with the current measures of self-disgust (Chapter 3), there seems to be a defensible case for developing an implicit measure to assay self-disgust. An implicit task may also provide a methodology to obtain self-disgust scores without being overly intrusive or triggering to an individual.

In implicit tasks, a group of words can be used to capture an emotion, such as disgust. Therefore, to ensure the measure is valid and measuring the desired emotion, it is important that the words used reflect the emotion in question. The aim of Study 1 is to develop a bank of words that are validated to describe "disgust" and a control-matched group of words with a positive meaning. This would allow the words to be used in tasks knowing they assay the emotion of disgust rather than similar constructs.

There are many lexical variables that can impact word processing, including; number of letters, frequency, semantic ambiguity, imageability, arousal and valence (González-Nosti et al., 2014; Acha & Perea, 2008; Pexman, 2012; Kousta et al., 2009). Ferré et al., (2017) argue that to obtain reliable data on emotion affects, stimuli must be well-characterised and controlled. There are two main theoretical approaches that determine how words are rated and matched across emotional dimensions when used in lexical decision studies (Harmon-Jones et al., 2017); the dimensional theory and the discrete theory.

The dimensional theory suggests that all words should be rated on valence (the extent something represents something pleasant/ positive) and arousal (how activating the word is). Valence of stimuli (positive or negative) facilitates word processing (Kousta et al., 2009) and this is regardless of polarity, however there is a processing advantage in comparison to neutral words and therefore control measures should reflect the polar opposite to be able to match valence. How intense a word is can be described by its arousal rating. Arousal and valence are thought to work in congruence. Valence guides attention, whereas arousal modulates the attention (Sutton & Lutz, 2019).

The discrete theory suggests that emotions are discrete entities and each emotion is believed to evoke a specific response and so emotion-based ratings determine the expected response from a word. Words are rated in respect to how much they describe one of the five basic emotions: sadness, happiness, fear, disgust and anger. The number of discrete emotions is in debate, however most commonly the 5 listed above are used (Balota et al., 2007, Ferré et al., 2017).

The dimensional theory is thought to be partly based on experiences and associations which can make specific arousal and valence ratings subjective (Stadthagen-Gonzalez et al, 2017), whereas the discrete theory is thought to be more universal. Most of the currently available lexical resources use one of these theories to rate emotional stimuli such as words. More recently, research has shown that these theories can be combined to provide a more solid and reliable rating system by rating words on axes of emotion, valence and arousal (Harmon-Jones et al., 2017). Ferré et al. (2017) used this approach in Spain and developed a bank of words for use in lexical based studies to represent emotions matched on dimensions of valence and arousal.

Following this approach, to ensure the most rigorous approach was being used to develop a set of words to represent disgust, both discrete and dimensional approaches were combined to select and validate disgust words that could be used in an implicit task for self-disgust. Therefore, the aim of this study was to obtain a set of matched words that measure feelings of disgust and happiness to use in future tasks. To create a new measure in the most rigorous way to ensure the measure accurately represents to construct of self-disgust, it is key to identify the words to use at the outset. Developing a set of words to measure feelings of disgust and happiness allow them to also be used side-by-side and compared with minimal extraneous variables impacting any findings. Happiness was chosen to compare against the disgust words, due to research suggesting a polar opposite emotion was necessary when measuring and matching words based on valence (Kousta et al., 2009) and out of the basic emotions, happiness is the only positive emotion.

Method

Participants

Participants (N=109) from Sheffield Hallam University were recruited through university emails. Students were provided with SHUCreds (university credits for taking part in research, needed for students to progress in their degrees) for taking part. No other demographic information was collected to make participation as simple as possible. There was a small amount of missing data, most likely due to mistakes from participants. Due to this, all available data for each word was still used due to the analyses being conducted by word independently, and no missing data was seen within the per word comparisons. Sample size for each statistical test ranged from N= 101 to N=109. Imputation was not used due to the reason above and without wanting to risk including bias and untrue responses (Jamshidian & Bentler, 1999).

Materials

Using previous words found in other available word databases to denote disgust (ANEW, Bradley & Lang, 1999; WordNet, Fellbaum, 1998) and using an online thesaurus (thesaurus.com), a list of 74 words (36 disgust and 38 positive) was compiled (see Appendix 3). The words were chosen by finding as many words as possible that may represent disgust or were synonyms of disgust and then finding a set of happiness words (referred to here as positive words), that were of varying lengths to be measured in tandem. Positive words were needed to assay an emotion that is in opposition to disgust, allowing any differences between groups to be seen clearly and for it to be possible for words to be equidistant on scales of valence between the two groups.

Procedure

Ethical approval was granted by Sheffield Hallam University before any data collection took place (Converis ID: ER10771866). Participants followed a link which took them to the Qualtrics study online. Participants were presented with all of the 74 words in alphabetical order (e.g. abhorrent, gallant, overjoyed and yucky), and asked to assess each word in respect to how much they relate to each of the five discrete emotions, e.g. “To what extent does the word ‘repulsive’ relate to the following emotions?” on a 5 point Likert scale (1= ‘not at all’ to 5= ‘extremely’). The words were then rated in terms of valence, e.g. “To what extent do each of the words relate to something positive?”, on a 7 point Likert scale, (1= ‘very negative’ to 7= ‘very positive’) and arousal, e.g. “To what extent do each of the words make you feel aroused”, on a 7 point Likert scale, (1= ‘very calm’ to 7= ‘very active’), the rating scales were devised based on similar scales used in previous studies by Ferré et al. (2017) and Moors et al. (2013) (see Appendices 4-5 for the materials and rating scales used in this study). All words were rated for the discrete emotions before rating all the words in the same order for valence and arousal. The task took around 10 minutes to complete.

Results

Repeated measures ANOVAs were conducted for each word and the five emotions as dependent variables to allow a comparison across the five emotions (see Appendix 6 for the ANOVAs output). The disgust or positive words had to be significantly different from all other emotions for any word to be accepted at this phase, to ensure the emotion base was disgust or happiness and there was no question in demarcation. Out of the ANOVAs conducted, all of the positive words were found to significantly represent solely happiness and not any of the other emotions. With the disgust words, six words were removed at this stage, due to not being significantly different from another emotion (mostly anger). The words were then matched for length (Acha & Perea, 2008), valence (disgust words were oppositely matched with positive) and the words were matched to be equal in arousal ratings. The mean valence scores were compared on the 7-point Likert scale to make sure the valence scores were equal distance away from the neutral centre point. The average valence (on a scale 1 to 7) for the positive words was 5.77 (*SD*= 0.21) and the average valence for the disgust words was 1.87 (*SD*=0.38). The difference between the two arousal scores within a matched word pair were taken, and any scores further than 0.5 apart were discarded. The arousal mean score for positive words was 3.88 (*SD*= 0.18) and the arousal mean for disgust words was 3.89 (*SD*= 0.32). Overall, these matching steps resulting in removing 20 words, leaving a total of 27 word pairs (see Table 1 for the final words and see Appendix 7 for the arousal and valence scores for each word).

A split-half reliability was conducted to ensure the alphabetical ordering of the words in the study had not impacted on the results and this proved to be very similar, determining the order of the words was not an issue, r_{SB}= .940. Partial eta squared for the ANOVAs described above to distinguish the emotion bases of the selected words all showed large effects (ranging from η_p^2=0.271 to η_p^2=0.885), see Table 2 for the effect size for each word.

Table 1

Final 27 matched word pairs.

Disgust Words	Positive Words
Revolting	Beautiful
Vile	Nice
Atrocious	Inspiring
Repulsive	Brilliant
Disgusting	Optimistic
Rotten	Strong
Gruesome	Terrific
Sickening	Desirable
Rancid	Elated
Repugnant	Overjoyed
Reeking	Amiable
Appalling	Resilient
Foul	Kind
Vulgar	Joyful
Hideous	Gallant
Filthy	Bright
Putrid	Heroic
Repellent	Fulfilled
Gross	Proud
Horrid	Worthy
Grim	Wise
Contaminated	Advantageous
Abhorrent	Efficient
Dirty	Happy
Ghastly	Sincere
Yucky	Merry
Festering	Proactive

Table 2

Arousal, valence and effect size data for matched word pairs.

Disgust	Valence	Arousal	Effect Size	Positive	Valence	Arousal	Effect Size	Arousal change	Length
Revolting	1.57	4.11	0.594	Beautiful	6.37	4.17	0.752	-0.06	9
Vile	1.62	4.12	0.618	Nice	5.61	3.71	0.828	0.41	4
Repulsive	1.63	4.22	0.612	Brilliant	6.31	4.24	0.861	-0.02	9
Atrocious	1.63	3.99	0.689	Inspiring	6.17	4.48	0.746	-0.49	9
Disgusting	1.65	4.07	0.619	Optimistic	5.88	4	0.760	0.07	9
Rotten	1.65	3.86	0.642	Strong	5.73	3.99	0.373	-0.13	6
Gruesome	1.68	3.88	0.601	Terrific	5.85	4.12	0.667	-0.24	8
Sickening	1.69	3.95	0.583	Desirable	5.9	3.82	0.66	0.13	9
Rancid	1.72	3.94	0.608	Elated	5.67	3.94	0.775	0	6
Repugnant	1.73	4.02	0.540	Overjoyed	6.13	4.35	0.820	-0.33	9
Reeking	1.75	3.92	0.617	Amiable	5.21	3.48	0.471	0.44	7
Appalling	1.81	4	0.613	Resilient	5.14	3.99	0.271	0.01	9
Foul	1.81	3.88	0.644	Kind	6	3.49	0.784	0.39	4
Vulgar	1.87	4.02	0.556	Joyful	6.15	4.2	0.885	-0.18	6
Hideous	1.9	3.84	0.577	Gallant	4.9	3.47	0.542	0.37	7
Filthy	1.92	3.8	0.602	Bright	6.05	3.81	0.809	-0.01	6
Putrid	1.93	3.96	0.557	Heroic	5.87	4.03	0.553	-0.07	6
Repellent	1.97	3.87	0.530	Fulfilled	5.73	3.43	0.751	0.44	9
Gross	2.01	3.71	0.639	Proud	5.9	4.09	0.781	-0.38	5
Horrid	2.04	3.69	0.646	Worthy	5.88	3.67	0.581	0.02	5
Grim	2.05	3.65	0.582	Wise	5.58	3.45	0.550	0.2	4
Contaminated	2.07	3.97	0.576	Advantageous	5.56	4.04	0.597	-0.07	12
Abhorrent	2.09	3.65	0.568	Efficient	5.25	3.67	0.572	-0.02	9
Dirty	2.1	3.93	0.561	Happy	6.28	3.92	0.877	0.01	4
Ghastly	2.18	3.7	0.484	Sincere	5.26	3.3	0.368	0.4	7
Yucky	2.26	3.39	0.617	Merry	5.84	3.74	0.885	-0.35	5
Festering	2.28	3.94	0.452	Proactive	5.62	4.27	0.568	-0.33	9

Discussion

This study allowed a list of 27 pairs of words to be developed depicting disgust and happiness. These words were matched in word length and on both arousal and valence. The word pairs from this study provide a useful, valid tool to measure disgust experimentally. To our knowledge, this is the only set of words in the English language to be matched in arousal and valence while also taking into account the specific emotions they represent.

Having a set of words that has been validated to reliably measure disgust and matched in an opposite positive emotion, is the building block to creating a new measure. The word list created as a result of this study allows a multitude of new measures to be developed for the area of disgust, such as lexical decision tasks, dot probe tasks, Stroop tasks with priming and implicit association.

It is important to note that this study used the most common five basic emotions in the discrete ratings, a design feature which could be argued miss some other emotions which are similar to disgust but different constructs, such as shame and guilt. Further to this, the ratings of these words are due to individual's conceptualisation of disgust and although disgust has a unique identity, individuals may have different meanings attached to this emotion. This therefore could have impacted in the rating task by individuals considering or rating words to be disgust based, when in fact they are more suited to an emotion base of anger (e.g. words similar to hate). However, the sample size of this study demonstrates the consistency of the ratings and so the words should capture the broad definition of disgust, when measuring disgust in a new implicit measure.

Another limitation of this study is that the words are not matched for frequency of use in everyday language. Research suggests that this can impact the speed individuals process and react to words (Ottoway et al., 2001) and thus, this would be a good avenue to explore in future studies. This could have an impact in lexical decision tasks, based on speed of singular word processing. However, using the words in an IAT focuses more on implicit associations between two categories, with multiple exposures of each of the selected words and as such it does not measure the speed of recognising singular words alone. Hence, their frequency of use should not have a big impact.

Finally, as no demographic data were collected, the gender split and age details of the participants are unknown. This could have had an impact on the results, however all the words pre-selected were words already used in different contexts to measure disgust and therefore these analyses are really just confirmatory analyses, with the main aim being to match words together for a tighter control on variables as suggested by Ferré et al. (2017).

Summary

The aim of the study in Chapter 5 was to validate a set of words to use within a new measure that captures the essence of the emotion of disgust (and happiness as the control construct). The data driven selection of the disgust and happiness words and the close matching on valence, arousal and word length should enhance the reliability of their inclusion in future work on disgust and self-disgust.

Chapter 6 - Study 2: Developing a self-disgust implicit association test.

Study 1 produced a total of 27 pairs of words validated to measure disgust and happiness (positive emotion) that were matched based on word length, valence and arousal. The members of each pair have the same number of letters so the visual length as well as time taken to read should not differ. The valence, how positive or negative the words were, was diametrically matched, being equidistant from the centre of the scale and arousal was also matched between the words in each pair. These words can now be used in a disgust and happiness/positive emotion based task.

The aim of Study 2 is to develop and validate a self-disgust IAT, using the words developed in Study 1 (Chapter 5). Research has identified the difficulties with self-report measures (such as the impact of social desirability) (Bensch et al., 2019; Stöber, 2001) and thus there is a need to develop an implicit measure which would remove such negative aspects of the current self-report measures.

IATs assess the strength of associations between concepts by observing response latencies on computer administered categorisation tasks (Greenwald et al., 2009). Two categories (one target and one attribute) are grouped together, and faster responses are seen as indicating a stronger association between the two concepts (Greenwald et al., 2009; see Chapter 4 above). The assumption is that an individual who has self-disgust will have already made an association between themselves and the emotion of disgust, and therefore, will be able to process these categories ("self and disgust'") being in the same group faster than those who have low self-disgust. This should also be evident in comparison to the happiness words, if individuals have an association between the "self" and "disgust" (i.e. they have high levels of self-disgust), they are less likely to have an association between "self" and "happiness", and thus their responses should be quicker categorising “self” with “disgust” rather than “happiness”. Conversely, individuals with low self-disgust would be expected to react more quickly to the “self” and “happiness” pairing. Implicit tasks are found to be useful due to the reliance on automatic processes determining the strength within associative groups (Devine et al., 2002), making it difficult for results to be faked.

As a result of previous research highlighting low correlations between explicit and implicit measures of the same construct (Hofmann et al., 2005), other measures including self-esteem and loneliness, known to be related to self-disgust are also included to ascertain whether the new implicit measure captures these relationships and is effectively measuring self-disgust.

It was hypothesized that an implicit measure for self-disgust would correlate with explicit self-disgust measures as well as depression, known to be impacted by self-disgust (H1). Individuals with higher levels of self-disgust were predicted to categorise compatible words of “self” and disgust more quickly than individuals with lower levels of self-disgust (H2). It is also expected that individuals who have high levels of self-disgust will respond more quickly to categorise “self” and “disgust” words than “self” and “happiness” words (H3).

Method

Participants

Participants (N=81) were selected in an opportunity sample in the areas of Sheffield and Birmingham. The only inclusion criteria were that the individuals must be native English speakers (n=78) or attain a minimum International English Language Testing System (IELTS) score of 6.5 (n=3), identifying the individuals as competent

English users. The participants were aged between 18 and 76, with a mean age of 28 (*SD*= 14). An a priori power analysis was conducted using the G*Power 2 software package, identifying for correlational analysis, for a medium effect size (0.3) and an alpha level of 0.05, and power of 0.80, to achieve a statistically robust outcome a total sample size of 82 was required.

Participants were grouped into high and low self-disgust groups for some of the analyses, based on their responses to the SDS questionnaire and using lower and upper quartiles as cut off points as demonstrated in Ypsilanti et al. (2020b). Due to the research demonstrating the large range in self-disgust scoring, and research suggesting that individuals who have higher levels of self-disgust can develop further mental health difficulties as a result of this (Powell et al., 2013), it was anticipated the implicit measure for self-disgust would be more effective at picking up self-disgust levels in a group with high levels of self-disgust. The lower self-disgust group (n=24) was used as a comparison for the high self-disgust group (n=20).

Materials

Demographics

Demographic details were collected, asking participants their age, native language and highest educational qualification (selected from a pre-written list) (see Appendix 8).

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

The SDS is an 18 item self-report questionnaire of disgust towards the self. Responses are recorded on a 7-point Likert scale (1 = strongly agree, 7 = strongly disagree) with participants rating how much they agree each statement is descriptive of them (e.g. “I find myself repulsive”). Possible scores range from 12 to 84, with 9 items reverse coded, and a higher score indicating a higher level of self-disgust. The scale is comprised of 2 subscales; disgusting self (disgust directed towards enduring aspects of the self) and disgusting ways (disgust directed towards one’s behaviour), totals of each subscale are used as well as a total score. The scale possesses excellent internal consistency (α = .91; Overton et al., 2008; α = .88; Simpson et al., 2010). See Appendix 9.

Disgust Propensity and Sensitivity Scale (DPSS-R; Van Overveld et al., 2006)

The DPSS-R is comprised of 8 items measuring disgust propensity (i.e., the tendency to experience disgust; “I avoid disgusting things”) and 8 items measuring disgust sensitivity (i.e., how awful do participants consider this disgust experience to be; “I think feeling disgust is bad for me”). Items are rated on a 5-point Likert scale (1 = never, 5 = always) with total scores ranging from 16 to 80. The DPSS-R and its subscales have been found to be internally consistent with alphas > .71 (van Overveld et al., 2006; van Overveld et al., 2008). See Appendix 10.

Positive and Negative Affect Scale (PANAS; Watson et al., 1988)

The PANAS is a combined 20-item scale of affect, measuring positive and negative affect. Participants are asked to report their experiences of 10 positive feelings (e.g. interested) and 10 negative feelings (e.g. nervous) over the past 4 weeks. Responses are recorded on a 5-point Likert scale (1 = very slightly/ not at all, 5 = extremely). Both subsections of the scale show good reliability (positive affect, α = .92; negative affect, α = .88) as well as the overall scale (α = .79); von Humboltd et al., 2017). See Appendix 11.

Depression, Anxiety and Stress Scales (DASS-21- depression only; Lovibond & Lovibond, 1995)

The DASS consists of three sets of 7 items, designed to measure depression, anxiety and stress. Only the 7 items relating to depression were used in this study. Participants are asked to rate the items (e.g. “I felt that I had nothing to look forward to”) on a four-point Likert scale, according to how much they feel each statement has applied to them over the past week (0 = did not apply at all, 3 = applied most of the time). Higher scores represent higher levels of depression. Internal consistency is high for the depression subscale (α = .85; Osman et al., 2012). See Appendix 12.

Test of Self-Conscious Affect (TOSCA; Tangney et al., 2000)

The TOCSA-3 is composed of 11 negative and 5 positive scenarios yielding indices of Shame-proneness, Guilt-proneness, Externalization, Detachment/Unconcern, Alpha Pride, and Beta Pride. Individuals are asked how likely they are to react in a number of ways to each scenario. Responses are rated on a 5-point Likert scale, (1 = not likely, 5 = very likely), with higher scores indicating a greater proneness to react in a certain way. Internal consistency ranges between α = .57 to .76 for the different subscales (Luyten et al., 2002). See Appendix 13.

Loneliness (UCLA Version 3; Russell, 1996)

The UCLA-3 is a 20-item self-report measure of loneliness. Participants rate how often each item is descriptive of them (e.g. “How often do you feel alone?”), on a 4-point Likert scale (1 = never, 4 = often). Scores range from 20 to 80; higher scores indicate greater loneliness. The UCLA-3 has demonstrated good in previous studies (α = .96; Russell, 1996). See Appendix 14.

Self-Esteem Scale (RSE; Rosenberg, 1965).

The RSE is a 10-item self-report questionnaire of global self- esteem. It contains ten statements relating to feelings of self-worth and self-acceptance (e.g. “I certainly feel useless at times”), and the participant is required to indicate the extent to which they agree with the statements on a four-point Likert scale (strongly agree, agree, disagree and strongly disagree). Scores range from 10 to 40. Higher scores represent higher levels of self-esteem. Excellent internal consistency is seen in this scale (α = .85 to α = .88; Martín-Albo et al., 2007). See Appendix 15.

Self-Disgust Implicit Association Test (SD IAT)

There is a standard structure for IAT using two target categories and two attribute categories (Siegel et al., 2012; Meissner & Rothermund, 2013; van Tuijl et al., 2014); in this case the target categories were defined as “self” and “other”, and the attribute categories were defined as “disgust” and “positive” (using happiness words). Research has identified the importance of the name of the category in implicit tasks, due to the normative information attached to labels which can cause results to be altered from extrapersonal associations (Olson & Fazio, 2004). The categories of “self” and “disgust” were straightforward to name as this ensures self -disgust is focused upon. To choose the other categories, it was decided to choose ones that were clearly opposite to “self” and “disgust”. For this reason, “other” was chosen to represent the target of “not self”. This does not specifically represent any particular person or group that an individual may hold beliefs about. To choose the opposing attribute category, positive seemed most appropriate, as it is not a specific emotion but captures contrasting feelings to that of “disgust”. The “self” and “other” target words were selected from previous IAT tasks that have used “self” and “other” as categories in an IAT (Schnabel et al., 2006; Rudman et al., 2001). For the attribute words, 5-8 words were needed (as per the research above) and therefore 8 of the matched pairs with the highest valence (strongest activation) validated in Study 1 were used. See Table 3 for the target and attribute words used in the self-disgust IAT.

Table 3

Words used in the self-disgust implicit association test.

Category	**Words**
Target 1: Self	Myself, Me, Self, I
Target 2: Other	They, Them, Other, Their
Attribute 1: Disgust	Revolting, Vile, Atrocious, Repulsive, Disgusting, Rotten, Gruesome, Sickening
Attribute 2: Positive	Beautiful, Nice, Inspiring, Brilliant, Optimistic, Strong, Terrific, Desirable

Using Inquisit software and an IAT template, an IAT was developed (Millisecond Software, 2015a). The 7 block sequence frequently used in IATs (Slabbinck et al., 2012; Yovel & Friedman, 2013) was utilised (see Appendix 16). Block 1 is a practice round to ensure the participants understand the task. In this block, the participants are only presented with one category on either side of the screen, for example, sorting the target words into the target categories “self” or “other”. Block 2, another practice block, is similar to Block 1. However, in this block the attribute words are categorized into “disgust” and “positive”. Blocks 1 and 2 are also used to ensure the participants get used to all the words used within the task.

Block 3 is when dual categories are introduced. Two categories are on either side of the screen (one attribute and one target) e.g. “self” and “disgust” on the left and “positive” and “other” on the right and the participants have to match both attribute words and target words here. Block 3 consists of 20 trials. Block 4 is identical to block 3 for all participants, but there are double the amount of trials (40). Block 5 is similar to Block 1, in that there is only one target on either side of the screen. However, in this instance, the targets swap to the opposite sides of the screen. This block is practice and is not used in the final analysis. In Blocks 6 and 7, dual categories are employed again (20 and 40 trials respectively). However, the targets are on the opposite sides to ensure the coupling categories are different. For example, if “disgust” and “self” are presented together in round 3 and 4, then “self” and “positive” will be presented as a pair in round 6 and 7. Please see Appendix 24 for an example of the screen presented to participants in trials 3, 4, 6 and 7. Before each block there was an instruction screen presented to participants to ensure their task was clear. See Appendices 17-30 for examples of all stages of the IAT. The words used in this task can be seen in Table 3. The IAT block sequence can be seen in Figure 4.

The response keys used typically in IATs are “E” and “I”, to categorise words onto either side of the screen as these keys on a keyboard are equidistant from the centre and on the same height line. In this self-disgust IAT, the use of “I” as a response key when one of the categories was the self, was deemed potentially confusing for the participants. To combat this, the response keys used instead for self-disgust were “A” and “L”, respectively. “A” and “L” are also equal distance from the centre and on the same height keyboard line as one another but do not identify as linked to the target categories. Within the task only "A" or "L" could be pressed to progress onto the next word, to ensure that if a response is incorrect, it reflects the individual placing the item into the wrong category rather than pressing a different key. No fixation points were used - after a response has been given, the next word appeared.

To account for order effects, the block sequence was counterbalanced for participants with regards to category grouping (half of participants have "self" and "disgust" grouped together first, whereas the other half have "self" and "positive" grouped together): it is expected that individuals find the second pairing more difficult (Lane et al., 2007). The block sequence was also counterbalanced according to the side of the screen (left and right) between participants to ensure there was no preference to a particular side. Error messages were removed as suggested in the literature, given that error latencies can impact subsequent performance and can give conflicting messages to extrapersonal or categorisation beliefs which could then impact the results (Olson & Fazio, 2004).

Procedure

Ethical approval for this study was accepted by Sheffield Hallam University prior to data collection (Converis ID: ER11056525). After reading the information sheet and signing the consent form (see Appendix 31), participants were asked to complete a short demographics sheet. Participants were then asked to follow a hyperlink to the online study. The link opened up the Inquisit Software and asked participants to insert their participant code, which they would find on the demographics sheet. The Inquisit software would randomly assign the participants to a condition order and screen side preference (see IAT design in materials). Participants then completed the IAT as detailed in the method section above. Once all the blocks are completed, the participants are presented with a completion screen and prompted to press the space bar to be directed to the Qualtrics questionnaires. The Inquisit software is programmed to direct the participants straight from the IAT to the questionnaires on Qualtrics where they are presented with the questionnaires measuring; Self-Disgust, Disgust Propensity and Sensitivity, Positive and Negative Affect, Depression, Self-Conscious Affect, Loneliness and Self-Esteem in a counterbalanced order. After completing the measures, the participants were shown a debrief (see Appendix 32) and thanked for their participation.

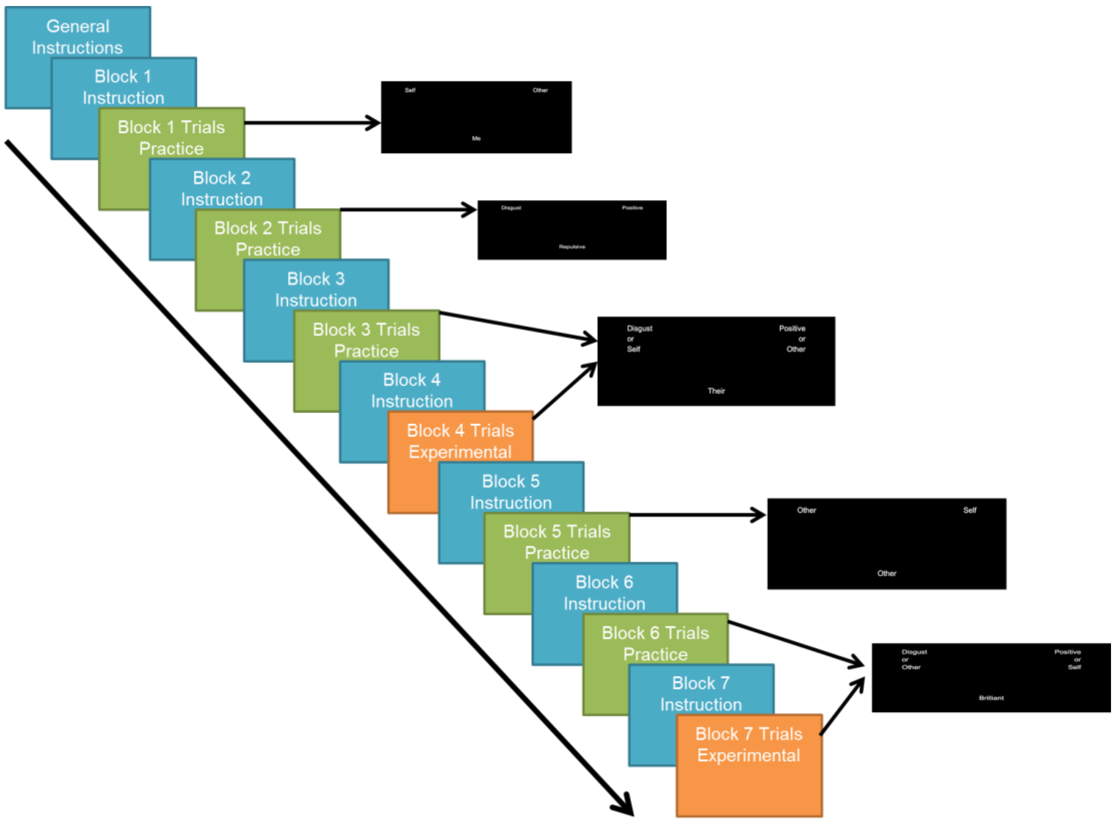
The IAT task takes approximately 5.5 minutes, and all participants completed this measure first before the questionnaire tasks to ensure that the negative nature of the questionnaire-based measures did not prime them.

There was no time limit set for how long participants had to respond to each word, but they were asked to respond as quickly as possible. Participants were not made aware of trial or experimental blocks in the hope that full effort and participation would be put into all blocks equally. The task screen always filled the size of the computer screen being used by the participant.

The first 15 participants were asked to complete a tick box comprehension sheet following the study to enable them to record whether the instructions were clear and all the words used for the attributes were known and understood (see Appendix 33). The first 15 were chosen to act as a pilot study so changes could be made if necessary, however, no issues were identified from this. After completion, participants were asked to repeat the IAT section of the study again 7 days post participation, to allow for measuring test-retest reliability, due to the IAT being a new measure.

Figure 4

IAT Task Block Sequence. T= 5.5minutes.



Results

Greenwald et al. (2003) investigated different ways to score and measure IAT responses. It was suggested that a measure referred to as D scores are most effective in understanding a response rather than latencies. D scores are the mean of incompatible trials within the block minus the mean of compatible trials within the block, all divided by the standard deviation of all the trials within the block (see Appendix 34 to see how D scores are created). Compatible pairings refer to self and disgust paired together as well as positive and other, incompatible pairings are pairs of self and positive words and other and disgust words. D scores involve creating Da and Db scores, D scores for the short and long blocks respectively. Da and Db scores are combined to create an overall D score by adding Da and Db and dividing by two to create an unweighted mean. Including the trial practises and solely using D scores, rather that Da and Db is deemed most valid scoring method (Greenwald et al., 2003; 2009). D scores are presented as a number between +2 and -2. A positive score represents a stronger association between the compatible pairings (disgust and self, positive and other), whereas a negative score represents a stronger association between the incompatible pairings (self and positive, disgust and other). For incorrect trials, the prominent judgement is to ensure they are included. In this study, participants were not asked to correct an incorrect answer (as is the case in some paradigms), and hence a latency that would incorporate this was not available. Instead, following the literature, all incorrect response latencies were replaced with the block mean +600ms, which acts as a time penalty. This was found to be the best method for the treatment of errors (Greenwald et al., 2003).

All data were analysed in SPSS v. 22 (IBM Corp., Armonk, NT, USA). From the raw data, totals were created for the self-report measures and descriptive statistics can be seen in Table 4. Normality tests and histograms identified extreme values and violations of the assumption of normality for all variables apart from the Self-Esteem Scale (RSE) and Positive Affect (PANAS- positive). Therefore, non-parametric analyses were conducted. See Appendix 35 for normality tests.

Table 4

Descriptive statistics for all variables split by self-disgust groups.

	Median			IQR		
	All	Low	High	All	Low	High
SDS total	28.00	20.00	46.50	15.00	3.00	22.00
SDS Self	12.00	8.00	20.00	9.00	2.25	8.00
SDS Ways	12.00	8.50	19.00	7.00	2.00	8.50
Positive Affect	33.00	37.50	23.50	14.00	6.25	8.25
Negative Affect	19.00	14.50	27.00	10.00	4.25	7.50
Depression	10.00	8.00	15.50	6.00	2.00	7.75
Self-Esteem	21.00	17.00	26.50	7.00	3.25	4.50
Loneliness	38.00	31.50	54.50	18.00	13.25	10.50
Disgust Propensity	14.00	13.00	15.00	6.00	4.25	6.00
Disgust Sensitivity	10.00	9.00	13.00	6.00	3.75	10.25
Shame	51.00	45.00	55.00	9.50	6.00	5.00
Guilt	57.00	57.00	59.00	6.50	8.50	5.50
D scores	-0.61	-0.53	-0.65	0.44	0.35	0.66

Note. Whole sample N=81. Groups made using SD quartiles. Low SD n=24, High SD= 20.

Spearman's correlations were used to assess the associations among the study variables, see Table 5 and 6. The zero order correlations showed expected relationships between the self-disgust scale and other explicit measures that are consistent with the literature, such as the strong positive correlation between depression and explicit self-disgust (r_s(79)=-0.68, p< .001) and the strong positive correlation between loneliness and explicit self-disgust (r_s(79)= 0.76, p< .001). D scores did not significantly correlate with any measure. The range of percentage of correct trials in the IAT ranged from 70.83%-100% (*Med*= 95.82, *IQR*= 5.83). See Appendix 35 for correlations including *p* values.

Table 5

Spearman's correlations between study measures (N=81).

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. SDS total	—												
2. SDS Self	0.92***	—											
3. SDS Ways	0.87***	0.66***	—										
4. PANAS Positive	-0.60***	-0.48***	-0.57***	—									
5. PANAS Negative	0.69***	0.59***	0.70***	-0.52***	—								
6.DASS	0.68***	0.59***	0.67***	-0.66***	0.70***	—							
7. RSE Total	0.83***	0.77***	0.72***	-0.69***	0.61***	0.64***	—						
8. UCLA	0.76***	0.64***	0.72***	-0.72***	0.72***	0.74***	0.73***	—					
9. DPSS-Propensity	0.13	0.05	0.20	0.08	0.18	0.10	0.02	0.07	—				
10. DPSS-Sensitivity	0.35**	0.30**	0.30**	-0.31*	0.36**	0.35**	0.35**	0.29**	0.37**	—			
11. Tosca Shame	0.49***	0.48***	0.41***	-0.47***	0.54***	0.59***	0.47***	0.50***	0.14	0.32**	—		
12.Tosca Guilt	0.13	0.21	-0.01	-0.26*	0.16	0.23*	0.25*	0.18	-0.11	0.14	0.32**	—	
13. D scores	-0.03	-0.05	-0.02	-0.08	-0.12	0.08	0.00	0.06	0.10	0.00	-0.12	-0.04	—

Note. * p < .05, ** p < .01, *** p < .001

Table 6

Spearman's correlations between study measures split into self-disgust groups (low self-disgust, bottom left, N=24, high self-disgust, top right, N=20).

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. SDS total	—	0.63**	0.67**	0.34	0.12	0.41	0.02	0.07	0.03	0.10	0.18	-0.27	0.10
2. SDS Self	0.82***	—	0.03	0.37	-0.09	0.24	-0.06	-0.16	-0.27	0.13	0.16	-0.17	-0.228
3. SDS Ways	0.90***	0.57**	—	0.25	0.30	0.43	0.06	0.30	0.51*	-0.05	0.23	-0.23	0.28
4. PANAS Positive	-0.73***	-0.65***	-0.68	—	-0.17	0.06	-0.22	-0.43	0.16	0.06	-0.04	-0.03	-0.04
5. PANAS Negative	0.61**	0.48*	0.51*	-0.40	—	0.28	-0.19	0.25	0.19	0.11	0.48*	-0.10	-0.46*
6.DASS	0.43*	0.37	0.40	-0.51	0.42*	—	-0.08	0.27	0.33	-0.07	0.61**	-0.11	0.05
7. RSE Total	0.76***	0.61**	0.67***	-0.78***	0.52**	0.54**	—	0.39	0.05	0.16	-0.15	0.07	0.38
8. UCLA	0.47*	0.44*	0.30	-0.46*	0.46*	0.50*	0.55**	—	0.12	-0.16	0.23	-0.33	0.46*
9. DPSS-Propensity	0.08	0.28	-0.03	0.06	0.41*	0.25	0.00	0.10	—	0.26	0.14	-0.19	-0.04
10. DPSS-Sensitivity	0.21	0.29	0.16	-0.11	0.55**	0.29	0.00	0.40	0.59**	—	0.35	0.29	-0.20
11. Tosca Shame	0.32	0.31	0.27	-0.48*	0.50*	0.25	0.27	0.20	0.27	0.34	—	0.22	-0.24
12.Tosca Guilt	0.04	0.25	-0.07	-0.28	-0.01	0.24	0.26	0.18	0.20	-0.04	0.42*	—	-0.26
13. D scores	-0.21	0.12	-0.30	0.19	0.03	0.00	-0.23	-0.07	0.31	0.07	-0.12	0.22	—

A Mann-Whitney U test was conducted in all the variables comparing the low and high self-disgust groups. There was a significant difference between low and high self-disgust individuals in the responses to the variables, the group in high self-disgust showed significantly higher scores than the lower self-disgust group in; negative affect (PANAS) U=38.50, p<.001, r_{rb}=0.84, depression (DASS) U=36.00, p<.001, r_{rb}=0.85, self-esteem (RSE) U=0.00, p<.001, r_{rb}=1.00, loneliness (UCLA) U=7.00, p<.001, r_{rb}=0.97, disgust sensitivity (DPSS-S) U=132.50, p=.011, r_{rb}=0.45 and shame (TOSCA) U=91.50, p=.001, r_{rb}=0.58. The low self-disgust group had significantly higher scores in comparison to the high self-disgust group in positive affect (PANAS) U=41.50, p<.001, r_{rb}=0.83. There were no significant differences between the high and low self-disgust groups in D scores (SD IAT), disgust propensity (DPSS-P) or guilt (TOSCA).

Despite the D scores not showing significant differences between the high and low self-disgust groups, the descriptive statistics demonstrate that both groups seemed to have a more positive association with the self with median D scores for both groups and overall (high SD group med= -0.65, low SD group med= -0.53, overall D med= -0.61) with 0 representing no association, +2 demonstrating an association between the self and disgust, other and positive and -2 representing self and positive, other and disgust pairings. Further to this, the high self-disgust group demonstrated a bigger range of scores (IQR=0.66) in comparison to the low self-disgust group (IQR= 0.35).

To test for test-retest reliability, one week after participation, participants were asked to repeat the IAT task. Only 11 participants responded to this. A moderate degree of reliability was found between D scores and the re-test D scores. The average measure ICC was .63 with a 95% confidence interval from -.136 to .896 (F(10,10)= 3.234, p=.039). However, the low sample number must be taken account of here.

Discussion

The study set out to develop an IAT to measure self-disgust. Hypothesis 1 predicted a relationship between the implicit and explicit measures of self-disgust. This hypothesis is not supported, the D scores showed no correlation to the explicit measure of self-disgust.

The second hypothesis envisaged individuals in the higher self-disgust group to respond to self-disgust pairings more quickly than individuals in the low self-disgust group. This hypothesis is also not supported by the data. There were no significant differences between groups, but D scores demonstrated that the high self-disgust group were slightly more positive in their association towards themselves than the low self-disgust group.

The final hypothesis for this study predicted the high self-disgust group would categorise the self to disgust more quickly than to positive words. This would be evident in seeing D scores between 0 and 2 for the high self-disgust group. Conversely, the group seemed to react more quickly to associations between self and positive stimuli. These findings are in line with research suggesting a universal positive bias is seen in evaluations of self-associated stimuli (Nuttin, 1985, 1987).

The lack of findings from the IAT in this study bring into question whether the task is indeed measuring self-disgust. Despite these questions as to whether self-disgust was being measured, it is important to remember, the word stimuli used for this were validated to disgust in Study 1 and therefore have demonstrated the clear mapping to the emotion of disgust. In addition to this, the IAT was developed with carefully designed and controlled stimuli such as removing error messages, choosing the category labels and changing the response keys.

Research shows there is a clear gap in measurements for self-disgust, relying solely on a self-report questionnaire only and this research has attempted to delve deeper into the properties of the distinct negative emotion schema. Understanding whether or not an implicit task will measure self-disgust will allow further knowledge as to how self-disgust presents.

A key difficulty with the implicit task, is the D scoring used to represent the associations takes into account both the targets and attributes. However, D scores are seen as superior than using latencies and the gold standard to score an IAT (Richetin et al., 2015). To incorporate both attributes (disgust and positive) would not cause any problem as positive stimuli can compare to disgust stimuli both focused on the self. However, using both attributes (self and other) is a cause for concern. The emotion someone feels towards themselves does not necessarily have any bearing on how they see “others”, and there is no hypothesis associated to the “other” target category, therefore, it is still difficult to make any conclusions at this point. A possible way to use a D score within an IAT while removing the “other” category, would be to progress to a single target IAT.

Summary

This chapter involved the development of an IAT to measure self-disgust. Using customary D scores, the findings of the IAT did not demonstrate any relationships to other measures and questions whether the IAT is measuring and capturing self-disgust. Potential issues as to why the IAT did not show any findings in this study focus around the use of two targets (self and other), whereas, using previous literature, the hypotheses only revolve around the “self” target and the “other” target may be impacting the D scores. Therefore, the next step in the development of an implicit task to measure self-disgust is to develop a task without the second target of “other”.

Chapter 7 - Study 3: Developing a single target self-disgust IAT.

Study 2 was the first study to develop and explore an implicit measure of self-disgust. D scores did not show any relationship with the other measured variables in the study. One possibility is that it was due to the design of the IAT, using two targets: the self and other. D scores that are produced in the IAT take into account timings of all pairings. Using D scores to analyse and interpret the IAT findings is the recommended avenue to take (Greenwald et al., 2003). However, there is no research to suggest individuals' self-disgust scores would impact their disgust or positive attitude of others and thus incorporating this factor into the design detracts from the hypothesis to focus on disgust focused towards the self.

The aim of Study 3 was to improve on the implicit task developed in Study 2. Using the same IAT methodology but removing the "other" target category, could make the D scores more reliable for self-disgust. Single target implicit association tests (ST-IATs) are used to compare one target (i.e. the self) with two attributes (i.e. positive and disgust) (Bluemke & Friese, 2008). The premise of the IAT stays the same and response latencies are recorded to ascertain the strength of associations between the target and attributes. Using a ST-IAT reduces arbitrary influence on a contrast concept, such as including the influence of implicit attitudes towards others in comparison to the self. With this in mind, Study 3 aims to develop a ST-IAT for self-disgust. The hypotheses for this study are that the implicit task will show a positive correlation with the explicit measure of self-disgust (H1). Further to this, it is predicted that the self-disgust ST-IAT will show significant differences between individuals with low and high levels of self-disgust (H2). It is expected that associations between the implicit task will show correlations with variables known to be highly associated with self-disgust, namely, depression and anxiety (H3).

Method

Participants

The study was conducted in two stages – a screening stage and an IAT task phase. The screening phase was included to determine participant's trait self-disgust levels (with the aim of selecting a similar number of participants with low, medium or high levels of self-disgust). A sample of 223 participants took part in the first stage of the study, 166 providing complete data sets with no missing data and with a way to contact them for stage 2. Data from the first part of the study allowed groups to be made based on self-disgust scores. Due to this, not all individuals who completed stage 1 were asked to continue to stage 2.

A final sample of 83 participants completed stage 2 and were recruited online via social media and using the recruitment platform Prolific Academic (www.prolific.co) and were paid for their participation. Inclusion criteria specified participants must be aged between 18 and 60 and either have English as a native language or attain a minimum level 6.5 IELTS score. All participants were native English speakers, and aged between 19 and 59 (*M*=32.30, *SD*= 12.12). A large proportion of the sample were female (78%) and the majority of participants were right handed (92%). 28% of participants identified they had a history of mental health difficulties.

The a priori power analysis used in Study 2 was deemed relevant here, requiring a total sample size of 82 for a power of 0.80, alpha level of 0.05 and a medium effect of (0.3): a statistically robust outcome (using the G*Power 2 software package).

The final sample were grouped into low, middle and high self-disgust groups using quartile cut off scores from Study 2 (low <24, high >39 on the SDS), a method used previously (Ypsilianti et al., 2020) to capture extreme self-disgust scores in a non-clinical population. 30 individuals had low self-disgust, 30 were in the middle group, and 23 participants had high levels of self-disgust.

Materials

Demographics

Participants were asked their age, gender, dominant hand, native language and mental health history. (See Appendix 36).

Depression, Anxiety and Stress Scales (DASS-21, Lovibond & Lovibond, 1995)

As described in Study 2, but this time all three subscales were used, for depression, anxiety and stress, with 7 items in each. The present study demonstrated a high internal consistency for total scores (Cronbach's $\alpha = 0.93$). (See Appendix 37).

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

As described in Study 2. Internal consistency coefficients were high for the present study in both subscales (self-disgust ways $\alpha = 0.87$ and self-disgust self $\alpha = 0.88$) as well as the total scale ($\alpha = 0.93$).

Test of Self-Conscious Affect (TOSCA 3SC; Tangney et al., 2000)

Similar to the TOSCA described in Study 2, the TOSCA 3SC version consists of 11 items and only measures subscales of shame, guilt and blame. There was an acceptable internal consistency in this study ($\alpha = 0.71$). (See Appendix 38).

Self-Disgust Visual Analogue Scale (SD VAS)

Participants were asked to rate on a 1-100 scale how disgusting they felt; "Thinking about myself now, it makes me feel…" from "Not at all disgusted" to "Extremely disgusted". This was adapted from the disgust VAS used by Powell et al. (2015). This was used before or after the implicit task to see whether it had a priming effect on participants. As a result of the schema structure of self-disgust, it was thought this question could activate the self-disgust schema and thus may have an impact on the proceeding task. (See Appendix 39).

Self-Disgust Single Target Implicit Association Test (SD ST-IAT)

For the single target IAT, there is one target category (self) and two attribute categories (positive and disgust). The words used were validated in the previous studies and can be seen in Table 7.

Table 7

Words selected for the ST-IAT task.

Category	**Words**
Target 1: Self	Myself, Me, Self, I
Attribute 1: Disgust	Revolting, Vile, Atrocious, Repulsive, Disgusting, Rotten, Gruesome, Sickening
Attribute 2: Positive	Beautiful, Nice, Inspiring, Brilliant, Optimistic, Strong, Terrific, Desirable

Inquisit software was used to develop the task with the ST-IAT template (Millisecond Software, 2015b). The ST-IAT utilizes a 5 block structure (Bluemke & Friese, 2008) (Appendix 40) and takes approximately 3.5 minutes to complete. Block 1 consists of attribute sorting - participants are asked to categorize words into disgust or positive. A word is presented in the centre of the screen and participants must choose the side of the screen with the correct category by pressing keys “A” or “L”, this block has 20 trials.

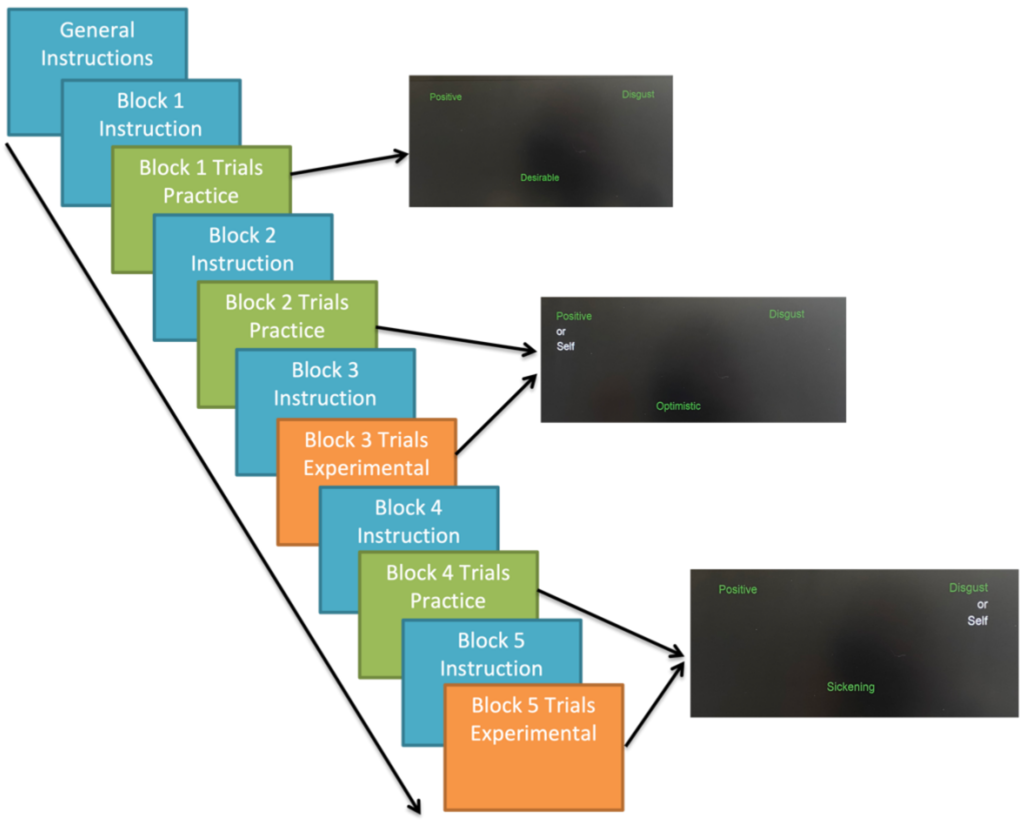
In Block 2, the target is added, 2 categories are presented on one side (e.g. positive and self) and the other attribute on its own on the other side (disgust). Once again participants are asked to categorize the words into these groups. Block 2 has 20 trials and is identical to Block 3 but it has 40 trials.

For Blocks 4 and 5, the target is swapped to the other side of the screen so it is paired with the opposite attribute (e.g. positive on left and disgust and self on the right). Block 4 consisted of 20 trials and Block 5 of 40 trials.

The block sequence was counterbalanced with respect to the side of the screen that disgust was presented as well as the first pairing (whether self was paired with positive or disgust first). As per Study 2, no error message was displayed if the wrong category was selected to avoid a subsequent delay or change in responses. The ST-IAT block sequence can be seen in Figure 5. Examples of the task can be seen in Appendices 41-44.

Figure 5

ST-IAT Task Block Sequence. T= 3.5minutes.



Procedure

This study was given ethical approval by Sheffield Hallam University prior to any data collection (Converis ID: ER22573713). This study was split in 2 parts for the participants to complete. Part 1 consisted of demographics and questionnaires and was conducted on Qualtrics. Participants were given the information sheet and after consenting to take part, the participants were directed to the demographic questions (see materials) followed by the questionnaires in a counterbalanced order (SDS, DASS and TOSCA). Participants were then asked to leave an email address to be contacted for the second part of the study. For participants joining via Prolific Academic, the Prolific ID was left in this instance.

One week after part one completion, participants were contacted with a link to complete stage 2. Scores from the SDS in part 1 determined the group individuals were directed to, to ensure there were equal numbers of all SD levels in all groups. A minimum of one week delay between the two phases of the study was decided to ensure the participants were not primed by the negative nature of the questionnaires. Part two involved completing the SD VAS and the SD ST-IAT task. The VAS was used to see if participants were primed by the IAT and thus half of the participants completed this before the IAT and the other half after. Once both these tasks were completed, participants were thanked for their participation and debriefed. Information, consent and debrief forms can be seen in Appendices 45-47.

Participants who left their details after part 2, were contacted after a further 2 weeks to repeat the SD ST-IAT to test for test-retest reliability.

Results

All data were analysed in Jamovi Version 1.6 (The jamovi project, 2021).

Again, D scores were used for the IAT calculations. D scores are calculations designed for IAT explained in more detail in the chapter above. Three scores are calculated for the single-target IAT, those for the trial blocks (blocks 2 and 4) known as Da, those for the experimental blocks (blocks 3 and 5; Db) and a combined total D score (blocks 2-5). Greenwald et al. (2003) suggest the D score (including the practice trials) is the best performing score for measuring IAT performance. D scores were reversed for individuals who experienced the attributes on the opposite sides to ensure they were comparable with one another.

Totals were created for the self-report measures and distribution properties of the variables were checked. Participants were also grouped into low, medium and high self-disgust groups using the cut-off scores produced by the SDS quartiles in Study 2 (chapter 6), a grouping method used by Ypsilanti et al. (2020b). Tests of normality and histograms identified that all the variables apart from D scores and TOSCA blame showed significant violations of the assumption of normality and so non-parametric analyses were conducted (see Appendix 48 for the normality test outputs). See Table 8 for descriptive statistics of the variables split between groups.

Table 8

Descriptive statistics for all variables split by self-disgust groups.

	Median			IQR		
	All	Low	High	All	Low	High
D scores	-0.29	-0.36	-0.24	0.29	0.29	0.28
SDS total	29.00	19.00	51.00	20.50	6.50	9.00
SDS Self	13.00	7.00	23.00	10.50	2.00	4.00
SDS Ways	11.00	7.00	20.00	11.00	1.75	4.00
Depression	11.00	9.00	16.00	5.00	3.75	7.00
Anxiety	9.00	7.50	11.00	3.00	2.00	4.50
Stress	13.00	11.50	16.00	5.00	5.00	4.50
Shame	36.00	34.50	40.00	6.00	7.50	5.00
Guilt	48.00	48.00	48.00	6.00	7.00	6.50
Blame	24.00	23.00	23.00	7.50	4.75	9.50
SD VAS	20.00	1.00	51.00	42.50	0.00	20.00

Note. Whole sample N=83. Groups made using SD quartiles. Low SD n=30, High SD n=23.

Spearman's correlations were run between the D scores and other study variables (see Table 9 and 10). The range of percentage of correct trials in the IAT ranged from 57.50%-100% (*Med*= 95.00, *IQR*= 9.17). The D scores did not correlate with any other variable apart from TOSCA blame scores (r_s(81)=-0.25, p= .025). A more comprehensive correlational table, including *p*-values can be seen in Appendix 48.

Table 9

Spearman's Rho correlations between all measures (N=83).

	1	2	3	4	5	6	7	8	9	10	11
1. D scores	—										
2. SDS_Tot	0.20	—									
3. SDS_SEL	0.18	0.93***	—								
4. SDS_WAY	0.16	0.92***	0.74***	—							
5. DASS_DEP	0.11	0.68***	0.56***	0.68***	—						
6. DASS_ANX	0.01	0.58***	0.55***	0.51***	0.65***	—					
7. DASS_STR	-0.01	0.53***	0.47***	0.51***	0.72***	0.61***	—				
8. TOSCA-SHA	0.01	0.55***	0.52***	0.54***	0.49***	0.43***	0.53***	—			
9. TOSCA-GUI	0.07	0.11	0.10	0.11	0.05	0.03	0.21	0.52***	—		
10. TOSCA-BLA	-0.25*	0.12	0.03	0.20	0.28*	0.17	0.30**	0.13	-0.24*	—	
11. VAS	0.16	0.72***	0.72***	0.59***	0.49***	0.42***	0.43***	0.43***	0.15	0.05	—

Note. * p < .05, ** p < .01, *** p < .001, (two-tailed).

Table 10

Spearman's Rho correlations between study measures split into self-disgust groups (low self-disgust, bottom left, N=30, high self-disgust, top right, N=23).

	1	2	3	4	5	6	7	8	9	10	11
1. D scores	—	0.29	0.37	0.28	0.15	-0.19	-0.26	0.23	0.28	-0.05	0.27
2. SDS_Tot	-0.09	—	0.90***	0.61**	0.36	0.21	0.15	0.62**	0.30	-0.47*	0.48*
3. SDS_SEL	-0.21	0.79***	—	0.37	0.28	0.20	0.14	0.57**	0.28	-0.39	0.42*
4. SDS_WAY	-0.13	0.75***	0.30	—	0.32	0.14	0.12	0.47*	0.25	-0.22	0.38
5. DASS_DEP	-0.13	0.20	0.18	0.17	—	0.48*	0.57**	0.43*	-0.06	0.05	0.39
6. DASS_ANX	-0.36	-0.14	0.12	-0.26	0.61***	—	0.35	-0.06	-0.43*	0.08	0.11
7. DASS_STR	-0.05	0.23	0.27	0.04	0.70***	0.57**	—	0.30	0.11	-0.01	0.43*
8. TOSCA-SHA	-0.25	0.21	0.40*	-0.01	0.20	0.35	0.46*	—	0.62**	-0.31	0.55*
9. TOSCA-GUI	0.03	-0.11	-0.08	-0.18	0.04	0.21	0.28	0.53***	—	-0.55**	0.46*
10. TOSCA-BLA	-0.43*	0.47**	0.57***	0.29	0.13	0.16	0.31	0.20	-0.21	—	-0.16
11. VAS	-0.26	0.19	0.45*	-0.12	-0.05	0.06	-0.00	0.11	-0.02	0.27	—

Note. * p < .05, ** p < .01, *** p < .001, (two-tailed).

The only directional hypothesis that was made, was based on previous literature (Hofmann et al., 2005), and was between implicit and explicit tasks. One-directional Spearman's correlations were run between SDS-total, self and ways and D scores. Small to moderate associations were identified between SDS-total and D scores (r_s(81)= 0.20, *p*= .036) and SDS-self and D scores (r_s(81)= 0.18, *p*= .048). There was no significant association seen between SD-ways and D scores (r_s(81)= 0.16, *p*= .077).

Mann-Whitney U tests were run to identify if the grouping variables had impacted the IAT scores. The side of the screen disgust was presented on had no impact on the implicit scores (*U*=783.00, *p*= .499). Categorisation order (whether the first grouping was disgust and self or disgust and positive), also had no significant bearing on the D scores (*U*=745.00, *p*= .294). The VAS order, whether participants were presented with the VAS before the IAT or afterwards, showed a no significant difference in the implicit task D scores (*U*=739.00, *p*= .274).

A Mann-Whitney U Test was conducted to determine whether when split into groups based on self-disgust scores, whether being in the low or high groups was predictive of the D scores. The results show there was no significant effect of self-disgust group on the D scores (*U*=263.00, *p*= .145). However, the rank-biserial correlation suggests a small to moderate effect size (r_{rb}=0.24).

Correlations showed a strong positive correlation between SD VAS and SDS total (r_s=0.72, *p*<.001). Both of these measure self-disgust, however, the SDS is thought to be a measure of trait self-disgust, whereas the VAS indicates a state score of SD.

A total of 34 participants completed the IAT again over 1 week after they had completed it the first time to measure test-retest reliability. A moderate degree of reliability was found between D scores and the re-test D scores. The average measure ICC was .52 with a 95% confidence interval from .016 to .759 (*F*(33,33)= 2.033, *p*=.023).

Discussion

Study 3 employed a single target IAT to measure self-disgust within the general population. The first hypothesis predicted that the implicit and explicit measures of self-disgust will be positively correlated. This was supported by the data, with a small to moderate correlation between the measures. This study also predicted the implicit task to demonstrate significant differences between individuals with low and high levels of self-disgust. However, when grouped into self-disgust groups, no significant differences were seen in the D scores, supporting the null hypothesis. Finally, the third hypothesis predicted associations between the implicit task and other variables highly associated with self-disgust such as depression. Results found that D scores did not seem to be related to any of the closely related constructs to self-disgust. Despite this, there was a significant negative correlation between D scores and Tosca blame, suggesting that individuals with high self-disgust (implicit), blame others less. This falls in line that individuals with higher levels of self-disgust will blame themselves more, rather than others, due to the negative feelings they have in relation to themselves (both behaviour and physically).

The strong positive correlation between the VAS and the SDS total is suggestive that state and trait SD are not only related but that the VAS is tapping into the SD construct and to an extent, able to measure self-disgust. The fact that the VAS order did not impact the D scores suggests that individuals were not primed by this. Further to this, the lack of differences seen in D scores between those with high and low self-disgust scores implies the task has not been effective in capturing self-disgust levels within this population, however, the reduced power in dichotomising variables may also be the reason for this. This could therefore be as a result of the task used to measure self-disgust (the ST-IAT), or this could be due to the population used. The population did not have clinical levels of self-disgust, Ypsilanti et al. (2020a) reported levels of self-disgust in a group of veterans with PTSD to be almost three times higher than in the general population, the absence of these extreme differences could explain the differences not being significantly different.

The development of an implicit task to measure self-disgust commenced with validation of the words for “disgust” and “positive” to use as stimuli in the task (Study 1). These words were then used in an IAT task with the targets of “self” and “other”. The D scores in the IAT did not relate significantly to any of the measured variables, including those assessing self-disgust (Study 2). It was thought that a critical problem with the SD-IAT could be the inclusion of the “other” category which would impact the D scores for each participant. To build on this, a self-disgust ST-IAT was created to measure implicit attitudes towards self-disgust and to be able to use the preferred scoring method of D scores without arbitrary influence from implicit attitudes of others. The self-disgust ST-IAT showed a small to moderate correlation between the implicit task (D scores) and the explicit measure of self-disgust (SDS), and a relationship between blame and D scores. Hofmann et al. (2005), in a meta-analysis identifies that the relationships between explicit and implicit measures is generally small to moderate if evident at all, supporting the findings of this study. However, there were still no relationships seen between D scores and constructs related to self-disgust such as depression, which would be expected. In addition, there were no significant differences between the high and low self-disgust groups in the implicit task scores. One possible explanation for this is that the self-disgust groups did not represent extreme scores. The sample was from the general population and so naturally, self-disgust scores would be lower than those in a clinical sample as seen in the literature (Ille et al., 2014). The next step to develop this further is to understand the use of the self-disgust ST-IAT in a clinical group, to ascertain the efficacy of the measure and if the findings are more defined within a clinical population. Continuing development by trialing the task in a clinical population would allow a more conclusive assessment as to the properties of self-disgust within individuals and the value or uses of the IAT in measuring implicit self-disgust.

Summary

In the progression of developing an implicit measure for the construct of self-disgust. Study 3 involved the development of a single target IAT. The IAT measure (D scores) showed negative correlations to scores of blame, indicating individuals with high self-disgust blame others less than individuals with lower self-disgust scores. A small correlation was identified between the D scores and the self-disgust self-report measure (SDS) in line with implicit-explicit correlations seen in other constructs. These findings suggest the task may be measuring implicit self-disgust, however, using individuals with more extreme levels of self-disgust could emphasise the differences to make it easier to ascertain the validity and reliability of the measure.

Chapter 8 - Study 4: Single target IAT in a population with extreme self-disgust levels.

Study 3 involved the development of the single target IAT as a way to implicitly measure self-disgust with the ability to use D scores as the scoring methodology. The findings revealed negative correlations between D scores and TOSCA blame scores, suggesting individuals with higher implicit self-disgust may blame others less. There were small correlations seen between D scores and self-reported self-disgust, both self and total scores. These correlations between the implicit and explicit measures indicate they are both measuring similar concepts (such as explicit and implicit attitudes of the same construct). However, when split into groups based on low and high self-disgust scores, D scores did not significantly differ between these groups, which could be as a result of loss of power due to sample size or a lack of discriminatory power. The self-disgust VAS measure was strongly correlated to the SDS self-disgust measure suggesting trait and state levels of self-disgust were related.

Study 4 set out to ascertain the relationship between implicit and explicit self-disgust. In the development of an IAT to measure self-disgust, words were validated in Study 1 to ensure they reflected “disgust” and an opposite attitude of “positive”. These words were then used in a standard IAT, which failed to show promising results. However, a single target self-disgust IAT was then developed to mitigate any possible problems with the use of an “other” group. This task demonstrated limited findings, however, potential correlations between implicit and explicit tasks were observed as expected within the literature surrounding implicit and explicit relationships (Hofmann et al., 2005). The lack of findings between the implicit task and other variables were possibly a result of the sample used. It would therefore be of use to trial the task in a clinical sample to identify if the same results are found. The final study within this thesis will explore the use of the task in a clinical sample with extreme levels of self-disgust to understand the efficacy and value of this measure.

The literature review (Chapter 3) identified many clinical populations that have been found to have high levels of self-disgust. These clinical groups vary between anxiety and depression (e.g. Overton et al., 2008); suicidal ideation (e.g. Schienle et al., 2020); schizophrenia (Vivas et al., 2021); BPD (e.g. Abdul-Hamid et al., 2014); traumatic experiences (e.g. Ypsilanti et al., 2020a); body image and eating disorders (e.g. Bell et al., 2017) as well as in health conditions and diseases (e.g. Tsatali et al., 2019). However, the levels and presentation of self-disgust within these groups are not always consistent. To ensure more control over variables and less extraneous variables, at this point, it was deemed necessary to employ the self-disgust ST-IAT within a group with extreme self-disgust levels similar to those seen in clinical samples. Research has found that individuals with PTSD consistently report almost 3 times higher scores of self-disgust than the general population (Ypsilanti et al., 2020a; Sonnier et al., 2019). Study 4 thus intended to trial the ST-IAT within a population of individuals of PTSD or trauma related experiences, in comparison to a sample of the general population.

The use of a prime was also previously trialed (Study 3), using a self-disgust VAS directly before completing the IAT. This showed no effect on participants in terms of whether they were given this prime or not. That said, the use of a prime is still of interest as a potential way to maximise self-disgust scores and identify if state self-disgust can have an impact on the implicit task. The use of a more comprehensive priming task would allow this to be explored.

The aim of this study is to explore the efficacy of the self-disgust ST-IAT in a population with PTSD or trauma related experiences known to have high levels of self-disgust. The hypotheses for this study are that individuals in the PTSD group will have significantly higher incidences of self-disgust than the control group (H1). It is predicted that there will be a relationship between the implicit task and PTSD grouping and severity (H2) and that the priming task would impact scores on the implicit task (H3).

Method

Participants

100 participants took part in the study in two groups. 50 participants were recruited as an experimental group. They were required to have PTSD or experience Trauma Related Experiences (TRE). This was ascertained via self-report, and participants were recruited through Prolific Academic (www.prolific.co). The experimental group were aged between 18 and 44 (*M*=24, *SD*= 6.16), 54% were female, 42% identified as male and 4% identified as other. The majority of participants were right-handed (N=42), with a small proportion who were left handed (N=7) and 1 participant who was ambidextrous. 38 participants report having a mental health diagnosis. The control group (N=50), also recruited through Prolific Academic, specifically did not have PTSD or TRE. The control group were aged between 18 and 49 (*M*=24.82, *SD*= 7.15). 66% were males and 34% identified as female. The majority were right-handed (N=42) with the remaining 8 participants being left-handed. Two of these participants stated they have a mental health diagnosis.

For the correlational analyses, the a priori power analysis used in Study 2 was referred to: using the G*Power 2 software package, for a medium effect size (0.3), an alpha level of 0.05, and power of 0.80, a total sample size of 82 was required.

All participants were reimbursed for their time with Prolific credit. Other inclusion criteria for both groups were that individuals had to be over the age of 18 and either be a native English speaker or attain an IELTS score of 6.5 or higher.

Materials

Demographics

Participants were asked their age, gender, dominant hand, native language and mental health history. (See Appendix 49).

Emotion Induction Prime

An emotion induction prime was used, based on the self-disgust emotion induction task used by Tsatali et al. (2019), where participants recounted experiences that made them feel disgusted with themselves. Tsatali et al. (2019) used verbal narrations, but for this study, a writing task was used instead of a narrative task. Participants were randomly split into two groups for which prime they experienced. Half of them were presented with the self-disgust prime and asked "*I want you to write about one of the most traumatic and upsetting experiences of your life; please focus on an experience that you felt disgust towards the self. It could be an experience which made you feel negatively about yourself or a past experience when you did not like yourself. The important thing is that you write about your deepest thoughts and feelings. Ideally, whatever you write about should deal with an event or experience that you have not talked with others about in details",* the other participants were presented with the neutral prime and asked "*I want you to write about what you did during the past 24 hours. You should describe your activities and schedule in detail, discussing the facts and circumstances as objectively as possible. You might describe what you had for dinner last night, what time you got up this morning, and so forth. The important thing is you discuss the facts and try to remain objective about your activities".* There was no time limit or any instructions on the required length of these passages. See Appendices 50 and 51.

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

As described in Study 2. Internal consistency reliability coefficients were good for the present study in both subscales (self-disgust ways $\alpha = 0.77$ and self-disgust self $\alpha = 0.85$) and there was excellent internal consistency for the total scale ($\alpha = 0.90$).

Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983)

The HADS is a 14-item scale used to measure depression (e.g. I feel as if I am slowed down) and anxiety (e.g. worrying thoughts go through my mind), specifically within clinical groups (Herrmann, 1997). Participants score items on a 4-point Likert scale of how often they have had certain feelings within the past week. The HADS-anxiety subscale demonstrated a good internal reliability $\alpha = 0.84$, and the HADS-depression subscale demonstrated an acceptable level of internal consistency, $\alpha = 0.76$. (See Appendix 52). The HADS was used to measure depression in this study, due to the PTSD population having clinical characteristics.

PCL-5 with LEC-5 and Criterion A (Weathers et al., 2013)

The PCL-5 with LEC-5 and Criterion A is comprised of 3 subscales to measure key symptomology of PTSD based on DSM-5 criteria. Part 1 is the Life Events Checklist (LEC-5) and includes 17 items. In the LEC-5, participants are asked to respond for each type of life event (e.g. sexual assault, or a fire or explosion etc.), whether they have experienced this and if so, to what extent were they involved (e.g. happened to them, witnessed it, heard about it, part of their job). Part 2 is known as the Criterion A subscale, focusing on trauma details. The criterion A subscale focuses on the most traumatic experience of the individual and asks for more details, including how long ago it happened, who was involved, how many times it has happened and a brief description of the event. Part 3 is the PTSD Checklist (PCL-5). The PCL-5 is made up of 20 items - participants are asked to rate how often they have experienced these during the past month on a 5-point Likert scale (0= not at all, 4= extremely) (e.g., repeated, disturbing and unwanted memories of the stressful event). This was only given to the group with PTSD or trauma related experiences. The PCL-5 has shown high internal consistency in previous studies $\alpha = 0.95$ (Blevins et al., 2015). In the current study there was also excellent internal consistency, $\alpha = 0.95$. (See Appendix 53).

Self- Disgust Visual Analogue Scale (SD VAS)

As described in Study 3. Participants were asked to rate on a 1-100 scale how disgusting they felt. Adapted from the disgust VAS used by Powell et al. (2015). (See Appendix 54).

Self-Disgust Single Target Implicit Association Test (SD ST-IAT)

This was largely as described in Study 3. However, due to Study 3 showing no impact of the side of screen that the attribute was presented on, this was no longer counterbalanced. The task was only counterbalanced in respect to the first pairing that was given to the participants. E.g. whether they saw “self and disgust” vs “positive”, or “self and positive” vs “disgust” first. Even though this did not have an impact either in Study 3, there is a background of literature suggesting the pairing order can have an impact (Nosek et al., 2003) and so to be cautious this was continued in this study.

Procedure

Sheffield Hallam University gave this study ethical approval before data collection commenced (Converis ID: ER29030976). This study consisted of 3 parts, all of which were completed consecutively in one time sitting. All participants followed the link from Prolific Academic for the study to commence. Participants were first shown an information sheet and then asked to complete a consent form, making them aware of the risks involved due to the sensitive nature and explaining their rights to withdraw as well as contact details for support networks. All participants were also made aware they may be asked about their experiences which could be distressing and/or triggering.

For stage 1, participants were asked demographic questions (see materials) and then were presented with an emotion induction priming writing task (participants were randomly shown either the neutral or the disgust prime). Following the writing task, all participants were presented with the SD VAS. All of stage 1 was conducted using Qualtrics. For stage 2, participants were automatically taken to Inquisit where they were asked to complete the single target SD-IAT. For stage 3, participants were directed back to Qualtrics where they were presented with the questionnaires (HADS, SDS and PCL-5 (PTSD group only)) in a counterbalanced order. Once these were completed, participants were debriefed, thanked for their participation, and led back to the prolific site. The study took approximately 20 minutes to complete. Information, consent and debrief forms can be seen in Appendices 55-58.

Results

There was a total of 100 responses submitted (50 participants in each group). Two participants did not respond to the prime and therefore were removed due to non-adherence. The written responses to the prime were checked to ensure that those in the prime group did indeed talk about a trauma (this is true for all participants) and for those in the control group, that they did not have a particularly traumatic past 24 hours, which could subsequently lead them to being primed by this task. Four participants were removed from the control prime due to a traumatic previous 24 hours. One further participant was removed from the PTSD group for missing data. This resulted in a final group of 93 participants (48 in the control group and 45 in the PTSD group).

For analysis, comparing the groups (PTSD and control), a cut-off score of 33 was used on the PCL scale to identify probable PTSD (Weathers et al., 2013). When this cut-off was employed, the PTSD group included 26 participants.

Participants in the PTSD group were asked to describe their worst trauma (as part of the PCL). From this, the type of trauma was categorised. There was a large range of trauma types: 10 individuals reported trauma from bullying/ abuse, 9 participants had sex-related trauma and another 9 had trauma related experiences as a result of a death. 6 reported their trauma was due to another person being injured and 3 were robbed/ threatened. 2 described an accident and the further groups only had one participant in each: eating disorder, abandonment, fighting, natural disaster, illness other and illness to the self.

The lengths of the prime written texts were checked. In the whole sample, this ranged from 3 words to 866 words (*M*= 131.15, *SD*= 115.73). When grouped by experimental group and whether they had been primed or not, those in the PTSD group who were also primed on average wrote the longest texts (*M*=165.04, *SD*= 182.15), compared to those in the PTSD group who were in the neutral prime condition (*M*= 133.90, *SD*=91.55). Within the control group, the written task lengths were longer for those with the neutral prime (*M*=128.56, *SD*= 82.60) in comparison to those presented with the self-disgust prime induction (*M*=93.00, *SD*= 57.29).

Total scores were created for all the measures and their subscales and normality checks were conducted. Multiple measures showed skewed data and therefore non-parametric analyses were conducted. Descriptive statistics can be seen in Table 11, for the control sample, PTSD sample and reduced PTSD sample, with individuals with probable PTSD. As expected, individuals with probable PTSD had significantly higher self-disgust total scores (N=26, *Med*=53.00, *IQR*= 12.50) than the control group (N=48, *Med*=34.00, *IQR*=16.25), *U*=188.50, *p*<.001, mean difference= 18. However, there were no significant differences seen in the implicit task, between the D scores in the control group compared to the PTSD group, *U*=623.00, *p*=.996. The range of percentage of correct trials in the IAT ranged from 37.50%-100% (*Med*= 91.67, *IQR*= 13.25).

Table 11

Descriptive statistics split by group.

	Median			IQR		
	Probable PTSD	PTSD Group	Control	Probable PTSD	PTSD Group	Control
SD VAS	60.50	40.00	20.00	42.75	47.00	41.00
Anxiety	13.00	12.00	9.00	3.00	3.00	4.00
Depression	10.00	7.00	5.00	5.75	5.00	5.50
SDS total	53.00	45.00	34.00	12.50	19.00	16.25
SDS self	23.00	20.00	13.00	6.75	8.00	8.25
SDS ways	22.00	19.00	15.00	6.50	9.00	7.00
Total PCL	53.50	40.00	-	13.75	32.00	-
PCL re-experiencing	13.50	9.00	-	5.75	9.00	-
PCL avoidance	6.00	6.00	-	1.75	5.00	-
PCL neg alterations in cognition and mood	18.00	13.00	-	6.75	13.00	-
PCL hyperarousal	15.50	12.00	-	3.75	9.00	-
D scores	-0.27	-0.37	-0.21	0.47	0.48	0.42

Note. Probable PTSD n=26, Full PTSD group n=45, Control = 48.

Spearman's Rho zero-order correlations were conducted between all the measures (see Table 12 and 13). The only significant correlations with the IAT task D scores were moderate positive correlations with the total PCL score (r_s=0.39, p=.008), PCL re-experiencing (r_s= 0.30, p=.042), as well as the PCL subscale of negative alterations in mood and cognition (r_s= 0.45, p=.002). The self-report measures for depression, anxiety, self-disgust and overall PTSD severity (PCL), seemed to correlate well with one another.

Table 12

Spearman's Rho correlations between measures N=93 (N= 45 for PCL related scores).

	1	2	3	4	5	6	7	8	9	10	11	12
1. Disgust VAS	—											
2. Total HADS-A	0.50***	—										
3. Total HADS-D	0.41***	0.47***	—									
4. Total SDS	0.50***	0.63***	0.67***	—								
5. SDS-Self	0.43***	0.55***	0.63***	0.93***	—							
6. SDS-Ways	0.51***	0.60***	0.60***	0.90***	0.72***	—						
7. Total PCL	0.42**	0.63***	0.46**	0.54***	0.54***	0.49***	—					
8. PCL Re-experiencing	0.40**	0.53***	0.33*	0.42**	0.36*	0.43**	0.88***	—				
9. PCL Avoidance	0.33*	0.35*	0.18	0.24	0.33*	0.16	0.70***	0.60***	—			
10. PCL Neg alterations in cognition and mood	0.38*	0.59***	0.50***	0.60***	0.60***	0.52***	0.95***	0.77***	0.55***	—		
11. PCL Hyperarousal	0.43**	0.66***	0.41**	0.55***	0.55***	0.48***	0.93***	0.74***	0.63***	0.89***	—	
12. D scores	0.04	0.20	0.14	0.04	0.04	0.02	0.39**	0.30*	0.28	0.45**	0.29	—

Note. * p < .05, ** p < .01, *** p < .001

Table 13

Spearman's Rho correlations between measures split between groups (control group bottom left, N=48, PTSD group top right N=45).

	1	2	3	4	5	6	7	8	9	10	11	12
1. Disgust VAS	—	0.38**	0.47**	0.61***	0.53***	0.50***	0.42***	0.40***	0.33*	0.38*	0.43**	-0.01
2. Total HADS-A	0.56***	—	0.30*	0.50***	0.44**	0.47**	0.63***	0.53***	0.35*	0.59***	0.66***	0.27
3. Total HADS-D	0.29*	0.52***	—	0.53***	0.49***	0.45**	0.46**	0.33*	0.18	0.50***	0.41**	0.24
4. Total SDS	0.37*	0.52***	0.66***	—	0.87***	0.88***	0.54***	0.42**	0.24	0.60***	0.55***	0.23
5. SDS-Self	0.26	0.40**	0.60***	0.93***	—	0.59***	0.54***	0.36*	0.33*	0.60***	0.55***	0.27
6. SDS-Ways	0.47***	0.58***	0.62***	0.89***	0.68***	—	0.49***	0.43**	0.16	0.52***	0.48***	0.11
7. Total PCL	—	—	—	—	—	—	—	0.88***	0.70***	0.95***	0.93***	0.39**
8. PCL Re-experiencing	—	—	—	—	—	—	—	—	0.60***	0.77***	0.74***	0.30*
9. PCL Avoidance	—	—	—	—	—	—	—	—	—	0.55***	0.63***	0.28
10. PCL Neg alterations in cognition and mood	—	—	—	—	—	—	—	—	—	—	0.89***	0.45**
11. PCL Hyperarousal	—	—	—	—	—	—	—	—	—	—	—	0.29
12. D scores	0	0	0	0	0	0	0	0	0	0	0	—

Note. * p < .05, ** p < .01, *** p < .001

A Mann-Whitney U test was conducted on the full data set (N=93) to see whether the emotion induction task had an impact on the VAS scores. The results showed that those that were primed scored themselves significantly higher (*Med*= 40) on the self-disgust VAS, than those who were presented with the neutral prime (*Med*=20), *U*=784.50, *p*=.023, mean difference= 14. This suggests the priming task was effective in priming participants in both the experimental and the control groups. However, there were no differences between D scores in those that had been primed and those who were given the neutral prime within either the control sample (N=48, *U*=233.00, *p*=.302) or the PTSD sample (N=45, *U*=239.00, *p*=.778).

Due to the correlations seen between the PCL and both the D scores and the self-disgust scale, a multiple linear regression was conducted to determine whether SDS total and D scores together can predict PCL scores. Shapiro Wilk showed no violation to the assumption of normality (*W*=0.98, *p*=.713). The overall model showed that SDS total and D scores together can significantly predict PCL scores $F(2,42)=12.87$, $p<.001$, $R^2=0.38$. SDS total was a significant contributor to this model ($p<.001$) whereas D scores were not ($p=.064$).

The same regression analyses were conducted again but using the PCL cut-off of 33 (N= 26) so the sample includes only individuals with probable PTSD showed no normality violations (Shapiro Wilk: $W=0.98$, $p=.824$). Results showed that D scores can significantly predict PCL scores $F(1,24)=6.10$, $p=.021$, $R^2=0.20$, unstandardized B= 14.96. When SDS total is added into this model, PCL scores can still be significantly predicted $F(2,23)= 3.57$, $p=.045$, $R^2=0.24$. In this model, D scores are a significant contributor (unstandardized B= 13.71) whereas, total SDS is not (unstandardised B= 0.19).

For all regression analyses, residual plots showed no skew or heteroscedasticity, Cook's distance did not identify any particularly influential cases that could be biasing the results and collinearity statistics and Durbin-Watson Autocorrelation test were all in normal ranges and showed no cause for concern. See Appendix 59 for the analysis output.

Discussion

The aim of Study 4 was to use the ST-IAT for self-disgust in a population with PTSD or trauma related experiences, known to have elevated levels of self-disgust to ascertain its efficacy. It was predicted that individuals in the probable PTSD group would display significantly higher incidences of self-disgust than those in the control group (H1) and this was supported in analyses of the total SDS scores. The second hypothesis (H2) predicted a relationship between the IAT and PCL grouping and severity, and again this hypothesis was partially supported. Although there were no significant differences in D scores between the control and PTSD group (and therefore no relationship was seen between PCL grouping and the implicit task) the correlations seen between D scores and PCL scores shows an association with D scores and PTSD severity.

D scores were able to predict scores on the PCL scale. In a model using SDS and implicit self-disgust to predict PCL scores, D scores only significantly contributed to this when the sample was restricted to individuals with probable PTSD. This suggests the D scores are most effective at predicting PCL scores in individuals in a sample where SDS is at its highest. These findings have implications that although the explicit and implicit self-disgust scores do not correlate, they may be both informative in understanding self-disgust within different populations. Previous research evidenced by Hofmann et al. (2005) in a meta-analysis of IAT tasks, identified the problem of inconsistencies between implicit and explicit measures and suggests the low correlations between implicit and explicit measures may be due to one of many possibilities, such as moderator variables, order of explicit and implicit tasks and sampling error. Further to this, correlational analyses here showed no significant correlation between the implicit and explicit measures of self-disgust nor with the implicit measure with any of the other self-report measures known to be related to self-disgust (e.g. depression) as shown in the results section. Although a significant correlation was seen in Study 3 between the explicit measure of self-disgust and D scores, this study failed to replicate this finding. This is a cause for concern as it makes it very difficult to ascertain whether the task is measuring levels of self-disgust if it does not show any associations with constructs known to be highly related to self-disgust itself.

The third hypothesis (H3) predicted that the priming task would impact scores on the implicit task. The emotion induction prime was meant to prime individuals to experience self-disgust. This prime has been effectively used for this aim before (Tsatali et al., 2019) and the statistics demonstrate that it was effective at inducing self-disgust, given the impact it then had on the reported SD VAS scores. Despite this, whether or not individuals were primed had no significant difference to the D scores. However, some of the individuals in their writing task did not mention feelings of disgust and as such it is possible, they focused on a traumatic task that did not evoke disgust. This is a limitation due to the online nature of this task as more details could not be attained. However, due to all participants also receiving the VAS, it could be argued that all participants were primed as Study 3 demonstrates the priming effect the VAS can have.

The PCL was only given to experimental group, due to the questions being irrelevant to individuals who have not experienced a significant trauma. Thus, we cannot be sure in the current study that those in the non-trauma condition hadn't experienced some significant trauma too. However, the self-report measures of self-disgust, anxiety and depression all demonstrated clear differences between the groups in the direction that would be expected and suggests that there would also be lower levels of trauma in the control group.

Future research could consider splitting down the groups into the types of trauma they suffered (those directly related to the self and those related to others). For example, the trauma of witnessing a natural disaster (such as a tsunami) may not result in self-directed disgust, whereas a trauma such as rape, is much more self-directed and may result in higher levels of self-disgust. This was not possible in this study due to the sample size which would have reduced the power level to an unacceptable level.

This study used a PCL cut-off of 33 to determine probable PTSD, although this is on the high end of the suggested 31-33 cut-off, other research has employed a cut-off of 38 for probable PTSD. It was decided in this study, using a cut-off of 38 would reduce the power and sample size too much. However, it may be that the individuals falling below the 38 score for a cut-off are less likely to have PTSD resulting in the groups not being as extreme from one another. Despite this, the average scores for self-disgust in the probable PTSD group and the control group demonstrate vast differences and so it seems unlikely a higher cut-off would make a difference to the D scores.

Summary

This chapter involved utilising the single-target self-disgust IAT in a population of individuals with self-reported PTSD or trauma related experiences, a group known to have elevated levels of self-disgust. The findings from this study no longer demonstrate a correlation between the self-report measure of self-disgust but the self-disgust ST-IAT demonstrates the ability to predict PTSD severity. Future research in other populations would help to identify the uses and versatility of the measure.

Chapter 9 – Concluding remarks and future work.

The four studies discussed show progression in creating and validating an implicit measure for self-disgust. Self-disgust is a negative self-conscious emotion schema that has been shown to be associated with many psychological, mood and health disorders including, but not limited to, depression, anxiety, BPD, insomnia and PTSD (e.g. Overton et al., 2008; Ypsilanti et al., 2019; Powell et al., 2014; Ille et al., 2014; Brake et al., 2017). Longitudinal research (Powell et al., 2014) identifies self-disgust as the precursor to depression. The large number of associations show the importance of investigating the construct of self-disgust to better help and understand different debilitating mental health, psychological and health disorders, and enable preventative measures as well as effective interventions to be created. To understand the construct of self-disgust, it is important there is a clear and effective measurement tool for it.

Current measures for self-disgust are limited. There are two main self-report measures for self-disgust, SDS (Overton et al., 2008) and the QASD (Schienle et al., 2014). Both these scales have been used in clinical and non-clinical samples. However, there are many difficulties with self-report measures, such as social desirability and self-serving bias. There have also been many other measures used for self-disgust (see Chapter 3), although these other measures have tended to either not be validated or to have been adapted to measure self-disgust, when they were originally developed for another purpose. This brings into question whether these measures do effectively encapsulate self-disgust. To combat the issues seen in self-report measures, as well as to comprehensively and robustly develop a measure to ensure it is measuring the construct of self-disgust, an IAT was considered appropriate. IATs measure implicit social cognition and have been used to measure attitudes, stereotypes, and self-esteem indirectly (Greenwald et al., 2022).

Study 1 developed a set of words to accurately convey disgust and an opposite matched emotion of happiness, within the UK population in the English language. The words were matched for length, arousal and valence. Study 2 used the disgust eliciting words in a standard IAT format. Using the customary D scores, there were no relationships seen between the IAT D responses and the self-report measures. Study 3 developed the self-disgust IAT into a single target IAT, to remove the “other” target, as how an individual with high levels of self-disgust feels towards others is not considered within self-disgust literature. There was a small to moderate correlation between the IAT D scores and the explicit self-disgust measure (SDS) and there was a significant correlation between TOSCA blame and the D scores, identifying that individuals with higher levels of self-disgust blame others less (and subsequently themselves more). However, no other correlations were seen between the self-report measures and the single target SD IAT. These findings suggest the IAT was measuring some aspect of self-disgust or a closely related construct. To conclude the current development of this task, the single target self-disgust IAT was then used alongside a priming task and with a population of individuals with probable PTSD in Study 4. Although the D scores did not correlate with explicit measures of self-disgust or core underlying constructs known to be related to self-disgust (e.g. depression), there were findings in relation to the PCL (PTSD severity). D scores were able to predict PCL scores, over and above the explicit self-disgust scale measure.

The progressive approach used throughout the four studies shows a robust and vigorous methodology. Validating words and matching words (as done in Study 1) is common in developing lexical decision tasks or ERP tasks (González-Nosti et al., 2014), however, to my knowledge has not been used in other priming or IAT task development. Due to IATs using speed in relation to a word the participant reads, it was deemed crucial to ensure minimal extraneous variables impacting the results, and an initial validation of the words to be used was deemed an important way to minimise the impact of those variables. Also due to the closeness and similarity of other constructs, such as shame and guilt (Fox et al., 2018), it was important that the population deemed the words to be specifically “disgust” or “happiness” eliciting words. Although the other self-conscious emotions are not explicitly compared to basic emotions, out of the 5 emotions used in the discrete emotion theory; anger, sadness, fear, disgust and happiness, other self-conscious emotions are more closely associated with other base emotions than disgust. Shame and guilt are more commonly associated with sadness (Ekman & Cordaro, 2011) and self-hatred (another construct often mislabeled as self-disgust, which is more closely related to anger). The focus on validating words (Study 1) therefore segregates the self-conscious emotions from one another to ensure the words used in the tasks were validated to measure disgust specifically in order for them to capture self-disgust in the IAT task.

The first implicit task developed (Study 2) was a standard IAT. The IAT is the gold standard and has considerable literature and research using it (Brownstein et al., 2019). It was helpful to conduct research using a standard IAT and ascertain from this whether the task was successful with two targets or whether it would be better to use a single target IAT. Comparing the speed of categorisations between “self” and “other” with the emotions of “disgust” and “happiness”, allows us to see if individuals have predetermined associations that present as quicker reactions to categorising these. Unfortunately, D scores in the standard IAT did not relate in a meaningful way to the to the study variables, and a single target IAT was developed to enable a more focused implicit task, focusing solely on positive or disgust feelings towards the self, by only having one target category ("self"). The findings from the single target self-disgust IAT were somewhat mixed. The task was trialed in a healthy population (split into self-disgust groups) (Study 3) as well as in a population with probable PTSD (Study 4) with clinically elevated levels of self-disgust. Self-disgust has been seen in both healthy and clinical populations (e.g. Powell et al., 2015; Badour et al., 2012; Simpson et al., 2020) and as such, it was imperative to learn how ST-IAT functioned in both of these populations. Both populations demonstrated some results suggesting the single target self-disgust IAT was capturing something. In the healthy population, there was a small to moderate correlation with the explicit self-disgust scale, which would be expected if the implicit and explicit measures assayed the same construct. Further to this, the final study with the PTSD group showed promising results that the IAT could predict PCL scoring (PTSD severity). This is the first time the task has demonstrated a possible effective use.

As this is the first measure of implicit self-disgust, it is hard to ascertain how effective it truly is, in either population. There are many reasons why it is difficult to establish the efficacy as well as why the results from the studies were somewhat equivocal. One reason for this is that self-disgust may not be an automatic emotion, a conscious awareness may be needed to express the self-conscious emotion and therefore, this could explain why the findings have not identified associations between the IAT and other self-reported scales. Research highlights the need for self-awareness and self-representations in self-conscious emotions (Tracy & Robins, 2004), which may not be exclusive to the development of the emotion but also in the expression as well. A conscious awareness of the self may be needed for activation of self-disgust. Another reason could be that self-disgust is split into explicit and implicit levels that do not always correlate. This could explain why implicit levels of self-disgust are more noticeable in a clinical and high-risk population. Implicit attitudes are conceptualised as automatic, change resistant and independent from context (Albarracín & Vargas, 2010) and it is common that explicit and implicit attitudes of the same construct can differ (Hofmann et al., 2005). Carruthers (2018) argues that although explicit and implicit attitudes often dissociate, this is not due to differing underlying representations but rather the two measures are differentially impacted by other factors. Banaji and Greenwald (2013) maintain implicit attitudes are good at predicting real world behaviour independent of explicit attitudes.

There is an abundance of research in the relationship between implicit and explicit measures. Low correlations are often found between explicit and implicit measures (Nosek, 2007; Payne et al., 2008; Hofmann et al., 2005, Klavina et al., 2012; Schimmack, 2021). The low correlations seen are possibly a result of motivational biases in explicit measures, lack of access to implicit representations, influencing factors and independence of the underlying constructs (Hofmann et al., 2005). Based on a sample of 126 studies comparing IAT responses to explicit self-report measures, the mean effect size (retrieved from Pearson correlations) was 0.24 (Hofmann et al., 2005) which is very close to the correlation seen in Study 3. Notably, the relationship between implicit and explicit measures for self-esteem are particularly low in comparison to other areas such as consumer preferences (Klavina et al., 2012; Hofmann et al., 2005). Greenwald et al. (1998) identified self-esteem as having the lowest correlation (0.128) between implicit and explicit measures in a meta-analysis. Research suggests this specific relationship for self-esteem may be due to the complicated and multifaceted construct based on self-concept (Bosson et al., 2000; Shavelson et al., 1976). Self-disgust is also thought to be part of the self-concept of an individual (Schienle & Wabnegger, 2019) and has shown both direct and reflected appraisal, linking self-disgust to an individual's self-concept (Leary & Tangney, 2012), this should be kept in mind when considering the limited correlations seen between self-disgust explicit and implicit measures.

The findings show a mixed picture and are not conclusive in regard to the reliability of the IAT to measure implicit self-disgust. However, the findings do suggest the task has a place and Study 4 demonstrates it is encapsulating an aspect of PTSD, which is known to be related to very high self-disgust scores. More research is required to ascertain whether these findings are specific to PTSD or to all trauma related difficulties or even wider, to other clinical populations.

A possible limitation of the studies is that the words used in the studies are mapped onto the emotions of "disgust" and "positive emotion". However, these emotions are not polar opposites of one another and therefore could cause some friction in displaying them as such. In addition to this, there is research questioning the speed of processing disgust based words and the speed of processing other categories of negative words. Negative words have previously been shown to be processed slower than neutral words (Hofmann et al., 2009; Larsen et al., 2008). Briesemeister et al. (2011) found that disgust words were processed slowest and require the most processing resources out of the 5 main discrete emotions; happiness, anger, disgust, fear and sadness. This research highlighted the importance of basing the word validation on both theoretical approaches of emotion rating: using discrete emotions as well as arousal and valence to measure word processing. Further to this, as disgust-based words are slowest to process, this highlights the importance of comparing the speed of associations (D scores) between groups of high and low self-disgust, to allow differences to be seen amongst different levels of self-disgust as well as the comparison to positive words, in a task that could be impacted by processing speed.

Further to this, the frequency of use of these words were not matched, which is considered to have an impact on speed of recognition (Perea et al., 2005). Recognising certain words more quickly could have resulted in quicker response times to those words in the IAT task. These potential issues notwithstanding, the task does not measure speed of recognising singular words alone and the words were repeated multiple times, making it unlikely to have made an impact and it is important to emphasise the rigorous word matching process undertaken in this research programme for selecting the words to include in the IAT task.

When trialling the single target IAT in a population known to have extreme levels of self-disgust, due to the differences seen across different clinical sub-groups, it was crucial to focus on one clinical population to try and minimise extraneous variables. PTSD was used for this as previous literature identifies individuals suffering with PTSD to have significantly higher levels of self-disgust. Future research would be encouraged to examine the outcome of the single target self-disgust IAT in more clinical sub-populations known to have high incidences of self-disgust, such as individuals with body dysmorphic disorder (McKay & Presti, 2018).

Due to the COVID-19 pandemic that started in March 2019, some of the data collection was solely online. As the task is a computer task and using software able to collect accurate and reliable timing data over the internet, this did not impact the participants completing the task, however, there were limitations to not having a face-to-face researcher. Individuals were unable to ask questions as freely as they would have been able to with a researcher with them and the environment under which the task was completed could not be monitored. Further to this, it was important to be as open as possible with the participants, especially in Study 4, with the participants with probable PTSD, that the task may be triggering. As a result of this, because of the risk and the individuals were more than likely to be alone when completing the task, individuals were asked only to complete the task if they felt they were able and that the task may be distressing. This may have caused individuals with extreme levels of self-disgust and unstable emotions to withdraw and not complete the task. Although this would have also been the case if it was face-to-face, being able to ask a researcher more questions or knowing they have someone with them in case they find the task triggering, may have impacted the decision of participants to partake. It would be beneficial to conduct this in a face-to-face environment to ensure the participants are confident with how the task works and are able to ask questions of any uncertainties. Face-to-face environments would also allow for quality control to ensure the participants are paying attention in controlled conditions.

Due to the different versions of the IAT developed, all the tasks had a cross-sectional design which was crucial at this point in the development of the measure to understand the efficacy of the measure. Test-retest analyses were conducted to see the repetitive impact of the task, whether the IAT was capturing a more state or trait measure and the reliability of the measure. Test-retest analyses in these studies showed reasonably positive correlations in the D scores which point towards good reliability over a short period of time as well as the IAT capturing a more trait measure of self-disgust. However, unfortunately, the number of participants who responded to re-complete the task was very low and therefore these findings should be read with caution. It would also be of interest to use the IAT in a longitudinal study with self-disgust to see if there are any relationships between the implicit self-disgust and other self-report measures over time. Powell et al. (2013) found that the explicit self-disgust scale (SDS) could predict depression scores over time in a longitudinal study. This longitudinal research may be of paramount importance in understanding the characteristics of implicit self-disgust. Following the findings that the IAT could predict PTSD severity, it would be interesting to see if this could be predicted consistently over time. In addition to this, power calculations for the studies in this thesis were based on medium effect sizes, however, the effects seen were small to medium. This future research should utilise larger sample sizes to ensure that the analyses are suitably powered.

A priori power calculations for all the studies utilised a medium effect of 0.3, given research (Greenwald et al., 2009) suggesting an average correlation between implicit and explicit measures to be medium (r= .36), however, the studies found very small correlations between the implicit and explicit measures of self-disgust. As such, post-hoc power analyses using the implicit and explicit self-disgust correlation coefficients determine power of studies 2, 3 and 4 to be 0.06, 0.45 and 0.07 respectively. This is a clear limitation of the studies and also indicates why there may be limited significant findings in this respect. However, as previously mentioned, a correlation between implicit and explicit measures of the same construct do not always correlate and as such can be validated via correlations to other constructs known to be highly correlated such as depression to self-disgust. A power score this low, is indicative of no correlation being present and is strong evidence for the non-significant correlations observed.

There has been much critique over the methodology of IATs, whether the methodology is valid and reliable, as some research suggests other factors besides underlying attitudes can produce IAT effects (Fiedler et al., 2006). Firstly, the IAT can suffer from influences of many extraneous variables, such as recoding (Rothermund et al., 2009). Recoding describes a way in which participants can simplify the task by categorizing stimuli by the valence. For example, flowers are generally seen as positive, and insects negative, so in an IAT with flowers and insects, in the grouping of positive and flowers vs. insects and negative, participants can simplify this to a binary decision of positive or negative and ignore the targets. This can only be simplified for one configuration of the grouping though and as such causes asymmetry and could lead to the results demonstrating a feature of the stimuli rather than more positive evaluations to one target than another. This could occur in both the self-disgust IAT and the self-disgust ST-IAT, if individuals within one pairing deem the target and attribute to align in valence, however, due to the self being individual and specific, the features of the stimuli are most likely to be in keeping with the evaluations they hold of themselves. Meissner et al. (2019) highlight the issue of measuring associations rather than beliefs, someone may hold an association that is not in line with what they believe, for example, someone may hold the association that women do housework, this is an association that is held in some societies and through the media, knowing of this association does not make an individual believe this to be true. However, the IATs within this thesis use the self as a target, which due to being personal is unlikely to have wider associations not in line with an individual's beliefs, based on media and other influences, and the issue of measuring associations instead of beliefs is more common to occur with stereotypical attitudes. Some research highlights the ability to fake scores on IATs (Röhner et al., 2013), by slowing down all responses and being less reactive or by giving wrong answers. This brings into question how implicit the task is if individuals are able to slow down to think about their responses. Using the D scoring guidance, however, these issues are minimised by discarding data sets with potential issues in speed or incorrect trials. No methodology comes without its faults, but it is important to acknowledge possible issues with the IAT and their relevance or otherwise to the specific tasks developed here.

Summary

To conclude, this thesis has demonstrated the creation of an IAT to measure self-disgust using a rigorous process with the aim to further understand the construct of self-disgust. The self-disgust ST-IAT showed correlates to the explicit measure of self-disgust in one study and also, the ability to predict severity of trauma symptoms in Study 4. While there is still much more to learn about self-disgust, the research conducted has confirmed the complexity of the self-disgust construct and the plausibility of a possible implicit measure of the construct, and its ability to predict an aspect of PTSD. This thesis and the studies within it have demonstrated a plethora of research that is still needed within the area of self-disgust during this time.

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Appendices

Appendix 1 - Risk and Assessment Bias table

	Intro	Methods										Results					Discussion			Other	
	Were the aims/objectives of the study clear?	Was the study design appropriate for the stated aim(s)?	Was the sample size justified?	Was the target/reference population clearly defined? (Is it clear who the research was about?)	Was the sample frame taken from an appropriate population base so that it closely represented the target/reference population under investigation?	Was the selection process likely to select subjects/participants that were representative of the target/reference population under investigation?	Were measures undertaken to address and categorise non-responders?	Were the risk factor and outcome variables measured appropriate to the aims of the study?	Were the risk factor and outcome variables measured correctly using measurements that had been trialled, piloted or published previously?	Is it clear what was used to determined statistical significance and/or precision estimates? (eg, p values, CIs)	Were the methods (including statistical methods) sufficiently described to enable them to be repeated?	Were the basic data adequately described?	Does the response rate raise concerns about non-response bias?	If appropriate, was information about non-responders described?	Were the results internally consistent?	Were the results for the analyses described in the methods, presented?	Were the authors' discussions and conclusions justified by the results?	Were the limitations of the study discussed?	Were there any conflicts of interest that may affect the authors' interpretation of the results?	Were there any funding sources that may affect the authors' interpretation of the results?	Was ethical approval or consent of participants attained?
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Abdul-Hamid, Denman, & Dudas (2014)	Yes	Yes	No	Yes	No	No	No	Yes	Partial	Yes	Yes	Yes	No	Yes	Unknown	Yes	Yes	Yes	No	Yes	Yes
Akram and Stevenson (2020)	Yes	Yes	No	Yes	Partial	Partial	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes

Azlan, Overton, Simpson, & Powell (2017)	Yes	Yes	No	Yes	Yes	Yes	Unknown	Yes	Yes	Yes	Yes	Yes	Unknown	No	Yes	Yes	Yes	Yes	NO	Yes	Yes
Azlan, Overton, Simpson, & Powell (2017)	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	No	Unknown	Yes
Bachtelle and Pepper (2015)	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Badour, Bown, Adams, Bunaciu, & Feldner (2012)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Unknown	Yes	Yes	Yes	No	No	Yes
Badour, Feldner, Blumenthal, & Bujarski (2013)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Badour, Ojserkis, McKay, & Feldner (2014)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Mostly	Yes	Yes	Yes	No	No	Yes
Bell, Coulthard, & Wildbur (2017)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Unknown	Yes	Yes	Yes	No	No	Yes
Bornholt, Brake, Thomas, Russell, Madden, Anderson, Cohn, & Clarke (2005)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Partial	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	Yes
Bowyer, Wallace, & Lee (2014)	Yes	Yes	No	Yes	Yes	Yes		Yes	Yes	No	Yes	Yes	No	No		Yes	Yes	No	No	No	Yes
Brake, Rojas, Badour, Dutton, & Feldner (2017)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Burden, Simpson, Murray, Overton, & Powell (2018)	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Chu, Bodell, Ribeiro, & Joiner (2015)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Dudas, Mole, Morris, Denman, Hill, Szalma, Evans, Dunn, Fletcher, & Voon, (2017)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	Yes
Dyer, Feldmann, & Borgmann (2015)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Espeset, Gulliksen, Nordba, Skaarderud, & Holte (2012)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No		Yes	Yes	Yes	No	No	Yes
Hirao and Kobayashi (2013)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Unknown	Yes	Yes	Yes	No	No	Yes
Hom, Stanley, Chu, Sanabria, Christensen, Albury, Rogers, & Joiner (2019)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes

Ille, Schoggl, Kapfhammer, Hans, Arendasy, Sommer, & Schienle (2014)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	Yes
Ille, Wolf, Tomazic, & Schienle (2016)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Ille, Wolf, Tomazic, & Schienle (2017)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Jin, Ma Master and Jiménez-Herrera (2020)	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Jones, Robinson, Barr, & Carlisle (2008)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Unknown	Yes	Yes	No	No	No	Yes
Jung and Steil (2012)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes		Yes	Yes	No	No			Yes	Yes	No	No	Yes
Jung and Steil (2013)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Laffan, Miller, Salkovskis, & Whitby (2017)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Partial	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Lazuras, Ypsilanti, Powell, & Overton (2019)	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Lenk, Ritschel, Abele, Roever, Schellong, Joraschky, Weidner, & Croy (2019)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Marques, Simão, Guiomar and Castilho (2021)	Yes	Yes	No	Yes	Yes	Yes	Unknown	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Neziroglu, Hickley, & McKay (2010)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Oglen and Clementi (2010)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes				No	No		Yes	Yes	No	No	No	Yes
Olatunji (2015)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Olatunji, Cox, & Kim (2015)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Unknown	Yes	Yes	Yes	No	No	Yes
Olatunji, David, & Ciesielski (2012)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Partial	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Overton, Markland, Taggart, Bagshaw, & Simpson (2008)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	Yes
Palmeira, Pinto-Gouveia, & Cunha (2019)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Unknown	Yes	Yes	Yes	No	No	Yes
Powell, Azlan, Simpson, & Overton (2016)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes

Powell, Overton, & Simpson (2014)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No		Yes	Yes	Yes	No	No	Yes
Powell, Simpson, & Overton (2013)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Unknown	Yes	Yes	Yes	No	No	Yes
Powell, Simpson, & Overton (2015)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Rhodes, O'Neill, & Nel (2018)	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	-	-	Yes	Yes	No	No	Yes
Rusch, Schulz, Valerius, Steil, Bohus, & Schmahl (2011)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Unknown	Yes	Yes	Yes	No	No	Yes
Schienle (2018)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	Yes
Schienle and Wabnegger (2019)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Unknown	Yes	Yes	Yes	No	No	Yes
Schienle, Haas-Krammer, Schoggl, Kapfhammer, Hans, & Ille (2013)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	No	No	Yes
Schienle, Leutgeb, & Wabnegger (2015)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Schienle, Schwab, Hofler, & Freudenthaler (2019)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Simpson, Helliwell, Varese, & Powell (2020)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Simpson, Hillman, Crawford, & Overton (2010)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Smith, Steele, Ashton, Weitzman, Trueba, & Meuret (2015)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Sonnier, Alex Brake, Flores, & Badour (2019)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Stasik-O'Brien and Schmidt (2018)	Yes	Yes	No	Yes	Yes	Yes	Unknown	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Steil, Jung, & Stangier (2011)	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Unknown	Yes	Yes	Yes	No	No	Yes
Tsatali, Overton, & Vivas (2019)	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Yes	Yes	No	Yes	Unknown	Yes	Yes	Yes	No	No	Yes
Vivas, Hussain- Showaiter and Overton (2021)	Yes	Yes	No	Yes	Yes	Yes	Unknown	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes

Von Spreckelsen, Glashouwer, Bennik, Wessel, & De Jong (2018)	Yes	Yes	No	Yes	Partial	Partial	No	Yes	Yes	Yes	Yes	Yes	No	No	Unknown	Yes	Yes	No	No	No	Yes
Ypsilanti, Gettings, Lazuras, Robson, Powell and Overton (2020)	Yes	Yes	Yes	Yes	Yes	Yes	Unknown	Yes	Partial	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Ypsilanti, Lazuras, Powell, & Overton (2019)	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Ypsilanti, Lazuras, Robson, & Akram (2018)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Ypsilanti, Robson, Lazuras, Powell, & Overton (2020)	Yes	Yes	No	Yes	Yes	Yes	Unknown	Yes	Partial	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes
Zerach and Levi-Belz (2018)	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Unknown	Yes	Yes	Yes	No	No	Yes

Appendix 2 - Study Characteristics table

Authors	Research question/ aims	Design	Sample	Key Measures	Analytic strategy	Key findings	Clinical/ non-clinical
Abdul-Hamid, Denman, & Dudas (2014)	Studied self-relevant disgust and self-harm urges in patients with Borderline Personality Disorder, depression and healthy controls. Predicted higher disgust scores in the BPD group and higher self-disgust scores correlating with increased self-harm urges.	Quasiexperiemntal between groups. Measured self-harm urges across groups after task to induce self-disgust.	17 BPD patients, 27 major depression patients, 25 healthy volunteers. All women.	Self-Relevant Task- 3 minute narrative writing to reflect on negatives of self and then the body. VAS to measure disgust and hange in levels of self-harm	Kruskal Wallis and Mann Whitney U Tests	The BPD group had higher levels of posttask disgust in the PERSON task (writing a piece focused on their own personality) than healthy volunteers. The BPD group had higher levels of posttask disgust in the BODY task (writing a piece on their emotions towards their body) than both the MDD group and the healthy controls. Changes in self-harm levels were associated with disgust narrative labels on a whole sample level. Changes in disgust levels in people with MDD in the PERSON task was associated with increased urges to self-harm	Clinical
Akram and Stevenson (2020)	Examine whether specific dark triad personality traits were independently related to increased reports of self-disgust and whether any emerging relationships were mediated by emotion regulation deficits	Cross-sectional	620 participants online from a data pool and public.	Dirty Dozen (DD; Jonason and Webster, 2010) Self-Disgust Scale (SDS; Overton et al., 2008) Emotion regulation questionnaire (ERQ; Gross and John, 2003)	Correlations, mediation, parrallel multiple mediation analyses using the process model 4	Psychopathy and machiavellianism were each related to increased reports of self-disgust. The relationship between self-disgust and psychopathy was mediated by expressive suppression but not cognitive reappraisal. Emotion regulation did not mediate the relationship between self-disgust and machiavellianism.	Non-Clinical
Azlan, Overton, Simpson, & Powell (2017)	Expression of disgust, anxiety in depression in cancer patients and cancer-free control group. Predicted higher self-disgust in cacner patients and higher correlations between SD and dpression and anxiety in cancer group than in the control group.	Cross-sectional correlational	107 participants with cancer diagnosis matched (gender and age) to 107 cancer free controls (72% women)	Self-disgust scale (SDS; Overton et al., 2008) Disgust propensity and sensitivity scale (DPSS-R; Van Overveld et al., 2006) Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1993)	Logistic regression categorising into cancer vs noncancer categories based on disgust scores Multiple regression to examine relationships between self-disgust and depression/ anxiety	Cancer patients were 1.13 times as likely to exhibit higher physical self-disgust than control patients. Both physical and behaviour self- disgust significantly correlated with anxiety and depression. Multiple regression analysis indicated that physical and behavioural self-disgust significantly predicted anxiety in cancer patients, but only behavioural self-disgust significantly predicted anxiety in controls. Physical (but not behavioural) self- disgust significantly predicted depression in both cancer patients and controls Behavioural self-disgust had only weak relationships to depression in both groups.	Clinical
Azlan, Overton, Simpson, & Powell (2017)	Exploration of effects of disgust traits in partners on self-disgust and anxious and depressive symptoms in cancer patients. Predicted higher self-disgust in cancer patients and positively associated with disgust propensity and sensitivity in partners.	Cross-sectional correlational	50 participants with current cancer diagnosis and their partners	Self-Disgust Scale (SDS; Overton et al., 2008) Disgust Propensity and Sensitivity (DPSS-R; Olatunji et al., 2007) Anxiety and Depression (HADS; Zigmund and Snaith,. 1983)	Path Analysis	Positive relationship between partners disgust sensitivity and patients self-disgust as well as patients anxiety and depression with patients self-disgust etc.	Clinical

Bachtelle and Pepper (2015)	Assess whether individuals found significant meaning in NSSI scars, emotions felt while thinking about their NSSI scars and differences between individuals reporting shame/ stigma from their NSSI scars compared to those who don't	Cross-sectional correlational	49 undergraduate college students with scars from prior self-injury	Deliberate self-harm inventory (DSHI; Gratz, 2001) Beck depression inventory II (BDI-II; Beck, Steer and Brown, 1996) McLean screening instrument for borderline personality disorder (MSI-BPD; Zanarini et al., 2003) Self-report scar questionnaire (S-RSQ; Scar regret subscale, modified from the decision regret scale (Brehaut et al., 2003) Self-disgust scale (SDS; Overton et al., 2008) Interpersonal needs questionnaire (INQ; Joiner et al., 2009)	MANOVAs, t tests and correlations	Individuals in the shame group reported higher frequencies of attending to NSSI scars, negative emotions including self-disgust and higher future likelihood of engaging in NSSI than individuals in the no shame group	Clinical
Badour, Bown, Adams, Bunaciu, & Feldner (2012)	Examine the unique role of peritraumatic fear, self-focussed disgust and other-focussed disgust in predicting posttrauatic stress symptoms and contamination based obsessive compulsive symptoms	Cross-sectional correlational	49 women who have DSM defined suffered traumatic sexual or physical assault	Clinical administered PTSD scale (CAPS; Blake et al., 1995) Peritraumatic fear, self-focussed disgust and perpertrator-focussed disgust during trauma VAS Obsessive compulsive invetory revised (OCI-R; Foa et al., 2002) Disgust propensity and sensitivity scale- revised (DPSS-R; van Overveld et al., 2006) Anxiety sensitivity index-3 (ASI-3; Taylor et al., 2007) Positive and negative affect schedule (PANAS; Watson, Clark and Tellegen, 1988)	Hierarchical multiple regression	Intensity of peritraumatic self-focussed disgust was significantly related to contamination based obsessive compulsive symptoms Peritraumatic fear and other-focussed disgust were related to posttraumatic stress symptoms	Clinical
Badour, Feldner, Blumenthal, & Bujarski (2013)	Examine relationships between disgust sensitivity, feelings of mental contamination and posttraumatic stress symptom severity among female sexual assault victims	Cross-sectional correlational	38 adult women with history of atleast 1 DSM defined traumatic sexual assault	Modified version of the assault information and history interview (AIHI; Foa and Rothbaum, 2001) Clinician administrated PTSD scale (CAPS; Blake et al., 1995) Disgust propensity and sensitivity scale- revised (DPSS-R; van Overveld et al., 2006) Sexual assault and rape appraisals (SARA; Fairbrother and Rachman, 2004)	Process modelling	Disgust sensitivity and sexual assault related mental contamination were significantly correlated with posttraumatic stress symptom severity Disgust sensitivity predicted post traumatic stress through its relation with feelings of being mental contamination	Clinical

Badour, Ojserkis, McKay, & Feldner (2014)	Evaluate the degree to which disgust propensity and self-focussed and perpertrator- focussed peritraumatic disgust were associated with mental contamination in women who have suffered sexual trauma	Cross-sectional correlational	72 adult women with a history of atleast one instance of sexual victimisation	Peritraumatic fear, self-focussed disgust and perpertrator-focussed disgust during trauma VAS Disgust propensity and sensitivity scale- revised, propensity subscale (DPSS-R; van Overveld et al., 2006) State trait anxiety inventory - trait version (STAI-T; Spielberger et al., 1983) Vancouver obsessional compulsive inventory- mental contamination and contamination scale (VOCI-MC; Rachman, 2005, VOCI-CTN; Thordarson et al., 2004) Posttraumatic cognitions inventory (PTCI, FOa et al., 1999) Clinician administered PTSD scale (CAPS; Blake et al., 1995) Obsessive compulsive invetory revised (OCI-R; Foa et al., 2002) Beck depression inventory (BDI-II; Beck et al., 1996)	Hierarchical regressions	Peritraumatic self-focussed disgust (not perpertrator-disgust, nor fear) was significantly associated with mental contamination following sexual trauma	Clinical
Bell, Coulthard, & Wildbur (2017)	Assess the relationship between self-disgust and sensory processing within eating psychopathology	Quasi experimental questionnaires design	591 women with either anorexia nervosa (270), bulimia nervosa (104) or no ED history (217)	Self-disgust scale (SDS; Overton et al., 2008) Disgust propensity and sensitivity scale revised (DPSS-R; Fergus and Valentiner, 2009) Beck anxiety inventory (BAI; Beck et al, 1988) Adolescent and adult sensory profile scale (Dunn, 2007) Eating disorder examination questionaire (EDE-Q; Beglin and Fairburn, 1992)	ANOVAs, correlations and hierarchical regressions	Individuals with an eating disorcer had significantly higher rates of self-disgust than individuals with no ED history For indviduals with bulimia, self-disgust was associated with sensation avoidance and sensation seeking Individuals with anorexia, self-disgust was associated with low registration and sensation seeking	Clinical
Bornholt, Brake, Thomas, Russell, Madden, Anderson, Cohn, & Clarke (2005)	Understand relationships between cognitive and affective self-evaluations about the body in adolescent girls	Cross-sectional	141 adolescent girls, including 28 hospitalised with anorexia nervosa	Cognitive self-evaulations (ASK-Q inventory for adolescent; Bornholt, 2000) Measures of affective self evaluations: visualise body and circle emotions felt	Correlations, t-tests and MANOVA	Self-concepts and feelings were not correlated with body weight and were sensitive and specific to girls with anorexia nervosa in comparison with low weight school girls Self-concepts and feelings about the body were incongruent for girls with anorexia with acute experiences of making self-evaluations of their bodies	Clinical

Bowyer, Wallace, & Lee (2014)	Invesitgate whether applying compassion focussed therapy can enhance trauma focussed CBT in an adolescent with high levels of shame and guilt	Case study	17 year old female with PTSD who had suffered a sexual assault 5 years previously	Post traumatic diagnostic scale (Foa, 1995) Beck depression inventory (BDI-II; Beck et al., 1996) Other as shamer scale (OAS; Goss, Gilbert and Allan, 1994) Forms of self criticising/ attacking and self reassuring scale (FSCRS; Gilbert et al., 2004)	Description comparison of pre and post test measures	PTSD severity changed from severe to mild Depressive symptoms declined from moderate- severe to normal Clinically significant increases in ability to self- reassure and decreases in shame and disgust scores	Clinical
Brake, Rojas, Badour, Dutton, & Feldner (2017)	Examine self-disgust as a mechanism linking PTSD symptoms with suicide risk	Cross-sectional correlational	347 undergraduates with a history of atleast 1 DSM caterion A traumatic event	PTSD checklist for DSM-5 (PCL; Weathers, Litz et al., 2013) Extended life events checklist (LEC-5; Weathers, Blake et al., 2013) Suicide behaviours questionnaire-revised (SBQ-R; Osman, 2002) Self-disgust scale (SDS; Overton et al., 2008) Depression Patient health questionnaire- 9 (PHQ-9; SPitzer, Kroenke, and Willaims, 1999)	Process modelling	PTSD symptoms were positively linked to suicide risk via increased self-disgust self but not self-disgust ways All PTSD symptom clusters apart from arousal, reactivity and suicide risk demonstrated positive and indirect links via self-disgust self	Clinical
Burden, Simpson, Murray, Overton, & Powell (2018)	Explore the relationship between prothesis use, prothesis satisfaction, and body image disturbance in predicting self-disgust following limb loss	Cross-sectional	83 limb amputees	Self-disgust scale- revised (SDS-R; Powell, Overton and Simpson, 2015) Trinity amputation and prothesis experience scale- revised, psychosocial section (TAPES-R Psychosocial; Gallagher et al., 2010) Trinity amputation and prothesis experience scale- revised, satisfaction section (TAPES-R Satisfaction; Gallagher et al., 2010) Amputee body image scale- revised (ABIS-R; Gallagher et al., 2007) Depression, anxiety and stress scales (DASS-21; Lovibond and Lovibond, 1993)	Correlations and regressions	Frequency of prothesis use was significantly negatively associated with physical self-disgust Prothesis use significantly mediated the exogenous effect of time since amputation on physical self-disgust	Clinical

Chu, Bodell, Ribeiro, & Joiner (2015)	Investigate the role of subjective measures of disgust in the association between eating disorder symptoms and suicidal ideation	Cross-sectional	341 university students	Eating disorder inventory (EDI; Garner, Olmstead and Polivy, 1983) Disgust with life scale (DWLS; Ribeiro, Bodell and Joiner, 2012) Disgust propensity and sensitivity scale- revised (DPSS-R; Fergus and Valentiner, 2009) Beck scale for suicide ideation (BSS; Beck, Kovacs and Weissman, 1979) Beck anxiety inventory (BAI; Beck et al., 1988) Beck depression inventory-II (BDI-II; Beck et al., 1996)	Multivariate regression analyses	Eating disorder symptoms and body dissatisfaction were associated with increased suicide ideation at high levels of disgust with the self and the world. At lows levels of disgust this relationship was not seen.	Non-Clinical
Dudas, Mole, Morris, Denman, Hill, Szalma, Evans, Dunn, Fletcher, & Voon, (2017)	Explore regional responses, connectivity and habituation during emotion processing in individuals with BPD	Between groups	14 females with BPD, 14 healthy controls	Beck depression inventory (BDI; Beck et al., 1996) Hamilton depression rating scale (HDRS; Hamilton, 1960) State and trait anxiety inventory (STAI; Spielberger, 1983) Cambridge depersonalisation scale (CDS; Sierra and Berrios, 2000) Personality assessment inventory-borderline subscale (PAI-BOR, Morey, 1991) BMI Modified disgust scale revised (MDS-R; Olatunji et al., 2007) Self-disgust scale (SDS; Overton et al., 2008) fMRI emotion induction task	ANOVA and ANCOVA	BPD patients reported higher levels of disgust compared to controls and showed reduced left amygdala and increased dorsolateral prefrontal cortex activation to all emotions verses neutral Ventral striatum activity to repeated emotional stimuli was habituated in controls but not BPD patients In the context of disgust only (vs neutral), BPD patients displayed enhanced left amgdala coupling with the dorsolateral prefrontal cortex and ventral striatum	Clinical
Dyer, Feldmann, & Borgmann (2015)	Invesitgate the association between participants body and traumatic experiences Determine the emotions associated with body areas that are associated with traumatic experiences	Between groups	23 women diagnosed with PTSD after CSA, 25 women diagnosed with BPD, 22 women diagnosed with BPD and PTSD after CSA, 27 healthy women	Modified version of the survey of body areas (SBA; Kleindienst et al., 2014) Disgust sensitivity scale (DSS; Scheinle, Walter and Vaitl, 2002) Body image guilt and shame scale (BIGSS; Thompson, Dinnel and Dill, 2003) State trait anger expression inventory (STAXI; Hodapp, Schwenkmezger and Spielberger, 2004)	Kruskal wallis, Wilcoxon and Mann Whitney U	Patient groups had higher negative emotions regarding their body than controls Patients who have experienced CSA have higher negativity of body related emotions (specifically disgust), compared to BPD patients High negative feelings of disgust may be associated with traumatic experiences rather than an emotional disturbance as a result of BPD	Clinical

Espeset, Gulliksen, Nordba, Skaarderud, & Holte (2012)	Explore how patients with anorexia nervosa manage their negative emotions and their view of the relationship between their emotions and their eating disorder behaviours	Qualitative interviews	14 women diagnosed with anorexia nervosa	Semi structured interviews	Grounded theory	Expressions of sadness and anger in interpersonal experienced tended to be inhibited High levels of anger towards themselves, self-disgust and fear of becoming fat Different emotions were managed by specific eating disorder behaviours Disgust was managed by avoidance, of food and body focussed situations	Clinical
Hirao and Kobayashi (2013)	Determine the relationship between self-disgust, guilt and flow experience in university students	Cross-sectional	152 university students	Flow experience checklist (Ishimura and Kodama, 2006) Self-Disgust scale (Mizuma, 1996) Situational guilt inventory (SGI; Arimitsu, 2002; 2006)	Correlations	Significant negative correlation between frequency of flow experience and self-disgust scores Significant positive correlation between duration of activity and situation guilt scores Significant positive correlation between quality of flow experience and situational guilt scores	Non-Clinical
Hom, Stanley, Chu, Sanabria, Christensen, Albury, Rogers, & Joiner (2019)	Evaluate various psychological factors as mediators of the longitudinal relationship between insomnia symptoms and suicidal ideation	Longitudinal	226 undergraduates	Depressive symptom inventory - suicidality subscale (DSI-SS; Joiner, Pfaff & Acres, 2002) Disgust with life scale (DWLS; Ribeiro, Bodell & Joiner, 2012) Insomnia severity index (ISI; Bastien, Vallieres and Morin, 2001) Interpersonal needs questionnaires (INQ; van Orden, Cukrowicz, Witte and Joiner, 2012) UCLA loneliness scale- version 3 (UCLA-3; Russell, 1966)	Mediation analysis	Disgust with others and disgust with the world mediated the longitudinal relationship between insomnia symptoms and suicide ideation in young adults Disgust with the self was not a significant mediator in this relationship	Non-Clinical
Ille, Schoggl, Kapfhammer, Hans, Arendasy, Sommer, & Schienle (2014)	Analyse the meaning of self-disgust for selected mental disorders and symptoms (major depression, schizophrenia, borderline personality disorder, eating disorders and spider phobia)	Case control	112 patients with different mental disorders (major depression, schizophrenia, BPD, eating disorders and spider phobia) 112 mentally healthy subjects	Questionnaire for the assessment of self-disgust (QASD; Schienle et al.) Brief symptom inventory (BSI; Derogatis and Spencer, 1993)	ANOVAs and ANCOVAs Multiple regression	Individuals with mental disorders had elevated self-disgust scores in comparison to controls Patients had more pronounced personal disgust than behavioural disgust (no difference in controls) Psychoticism and hostility were the best predictors of personal-disgust in patients, anxiety and interpersonal sensitivity were the best predictors of behavioural- disgust in patients	Clinical

Ille, Wolf, Tomazic, & Schienle (2016)	Investigate disgust dispositions in individuals with persistant olfactory dysfunction	Between Groups	36 male patients with olfactory dysfunction (20 with hyposmia, 16 with anosia), 20 normosmic participants (control)	Questionnaire for the assessment of disgust proneness (QADP; Schienle et al., 2002) Scale for the assessment of disgust sensitivity (SADS; Schienle et al., 2010) Questionnaire for the assessment of self-disgust, personal disgust subscale (QASD; Scheinle et al., 2014) Extended sniffin' sticks test battery (Hummel et al., 2007)	ANOVAs	Dysosmic patients reported lower disgust proneness to spoilage, higher disgust proneness to poor hygiene and elevated self-disgust No group differences in regards to disgust sensitivity	Clinical
Ille, Wolf, Tomazic, & Schienle (2017)	Examine whether hyposmic women show similar changes in disgust responsiveness to those seen in men	Between Groups	48 patients with hyposmia (25 male, 23 female), 50 normosmic subjects (25 male and 25 female)	Questionnaire for the assessment of disgust proneness (QADP; Schienle et al., 2002) Scale for the assessment of disgust sensitivity (SADS; Schienle et al., 2010) Questionnaire for the assessment of self-disgust, personal disgust subscale (QASD; Scheinle et al., 2014) Extended sniffin' sticks test battery (Hummel et al., 2007)	Correlations and ANOVAS	Male patients reported elevated levels of self-disgust and disgust-proneness to poor hygiene Female patients did not differ significantly from female controls in disgust scores	Clinical
Jin, Ma Master and Jiménez-Herrera (2020)	Exploring the relationship between stoma acceptance and stoma care self-efficacy in patients with colostomy and whether self- disgust and stigma play mediating roles in this relationship	Cross-sectional	476 colostomy patients	Acceptance of illness scale (AIS; Felton, 1984) Questionnaire for the assesment of self-disgust (QASD; Schienle et al., 2014) Social Impact Scale (SIS; Stoma related negative symptoms checklist Stome self-efficacy scale (Bekkers, Van Knippenberg, Van Den Borne and Van Berge-Henegouwen, 1996)	Correlations and mediation analyses	The findings showed that the patients with colostomy with lower stoma acceptance exhibited lower levels of self-efficacy and the association could be explained entirely by increases in self-disgust and stigma but may also be a result of other physical health conditions.	Clinical
Jones, Robinson, Barr, & Carlisle (2008)	Phase 1: Invesitgate the prevalence of anxiety and depression in individuals with chronic venous ulceration Phase 2: Impact of exudate and odour from chronic venous leg ulceration on anxiety and depression	Phase 1: Questionnaires Phase 2: Interviews	Phase 1: 196 individuals with active chronic venous leg ulceration Phase 2: 20 individuals from phase 1	Hospital Depression and Anxiety scale (HADS; Zigmond and Snaith, 1983) Hermaneutic Interviews (unstructured)	Chi Square Analysis framework based on Colaizzi's significant statement framework (1978) and van Manen's structure (1990)	High scores in anxiety and depression associated to odour and exudate Odour and excessive exudate resulting in leakage had adverse psychological effects on patients including feelings of disgust, self-loathing and low self-esteem	Clinical

Jung and Steil (2012)	Illustrate different manifestations of feelings of contaminated in adult survivors of childhood sexual abuse and treatment	case study demonstrating effectiveness of treament for reducing FBC in CSA cases	2 women with chronic CSA related PTSD and FBC	4 daily VAS measures of intensity, vividness, uncontrollability and resulting distress of FBC Posttraumatic diagnostic scale (PDS; Griesel et al., 2006) Clinician administered PTSD scale (CAPS; Schnyder & Moergeli, 2002)	Pre and post intervention comparison of means	CRIM treatment results in a reduction of FBC and PTSD symptoms after CSA	Clinical
Jung and Steil (2013)	Examine the efficacy of Cognitive restructuring and imagery modification treatment to reduce feelings of being contaminated in adult survivors of childhood sexual abuse suffering from PTSD	Randomised control trial	34 women with CSA related PTSD randomised to CRIM treatment group or waitlist contorl group	4 daily VAS measures of intensity, vividness, uncontrollability and resulting distress of FBC Posttraumatic diagnostic scale (PDS; Griesel et al., 2006) Clinician administered PTSD scale (CAPS; Schnyder & Moergeli, 2002)	MANOVAs	All FBC scores had a greater reduction in the CRIM group than the contorl group PTSD symptoms showed a greater reduction in the CRIM group than controls	Clinical
Laffan, Miller, Salkovskis, & Whitby (2017)	Investigate the extent to which physically dependent older adults in residential homes experience feelings of self-disgust, and the relationship between self-disgust, preceived other disgust, disgust sensitivity, anxiety and depression	Mixed methods Cross sectional and between groups Semi structured interviews	54 older adults in residential homes, 21 physically able older adults living in the community 6 of the adults in the residential home with hgih self disgust took part in the interviews	Disgust scale revised (DS-R; Haidt et al., 1994) Generalised anxiety disorder assessment (GAD-7; Spitzer, Kroenke, Williams and Lowe, 2006) Patient health questionnaire (PHQ-9; Kroenke, Spitzer and Williams, 2001) 2 newly developed measures to assess feelings of self-disgust and perceptions of others' feelings of disgust Semi structured interviews	Mann Whitney U Thematic analysis	Self-disgust was related to perceptions of others feelings of disgust and general disgust sensitivity Older adults in community believed they would feel more disgusting if they were to start receiving assitance Underlying protective factors, use of strategies ad carer characteristics helpt ot reduce feelings of disgust	Non-Clinical
Lazuras, Ypsilanti, Powell, & Overton (2019)	Assess the direct and indirect effects of impulsivity, self-regulation and emotion regulation on self-disgust	Cross-sectional	294 participants	Abreviated Impulsiveness Scale (ABIS; Coutlee et al., 2014) Emotion Regulation questionnaire (ERQ; Gross and John, 2013) Short self-regulation questionnaire (SSRQ; Carey et al., 2004) Self-disgust scale (SDS; Overton et al., 2008)	Path Analysis	Non-planning impulsivity and expressive suppression (positively) and cognitive reappraisal and self-regulation (Negatively) predicted self-disgust Attentional and non-planning impulsivity had significant indirect effects on self-disgust via emotion regulation strategies and self regulation	Non-Clinical
Lenk, Ritschel, Abele, Roever, Schellong, Joraschky, Weidner, & Croy (2019)	Explore how disgust in the interpersonal context is affected by mental diseases and whether the source effect if preserved	Cross-sectional	460 inpatients with mental disorders and 463 healthy participants	Disgust in relationship questionnaire (DIRQ)	Regression	Healthy controls had a pronounced source effect; strangers evoking more disgust than intimates or oneself, patients had a reduced source effect especially for sexual disgust and an increase general disgust sensitivity High disgust in patients was best predicted by a history of sexual abuse and the presence of PTSD	Clinical

Marques, Simão , Guiomar and Castilho (2021)	explore the moderating effect of self-compassion in the relationship between self-disgust and drive for thinness, controlling for external shame, in a sample of patients with eating disorders, and in a community sample	Cross-sectional	62 female patients with eating disorders 119 female participants from the community	Multidimensional self-disgust scale (MSDS; Carreiras, 2014) Self compassion scale (SCS; Castilho et al., 2015) Eating disorder inventory (EDI-drive for thinness subscale only; Machado et al., 2001) Other as shamer scale- short version (OAS-2; Matos et a., 2015)	T-tests, correlations and moderation (PROCESS macro)	Individuals with eating disorders had significantly lower levels of self-compassion, and higher levels of self-disgust, drive for thinness, and external shame than the community sample A moderator effect was found of self-compassion on the association between self-disgust and drive for thinness in the clinical sample when adjusting for shame.	Clinical
Neziroglu, Hickley, & McKay (2010)	Examine the change in disgust reactivity, using psychopsyiological and self-report measures when individuals with body dysmorphic disorder were exposed to a mirror staring task		6 individuals with diagnosed BDD, 8 healthy individuals in the control group	Disgust scale revised (DS-R; Haidt et al., 1994) Procomp infinity encoder (SA7500; heart rate and skin temperature) Visual analogue scale for anxiety and disgust following 1 minute trails (x5) of looking at themselves in a mirror and focussing on a disliked feature	ANOVAs	BDD group had higher baseline disgust reactivity and showed decreases in disgust (assessed with heart rate and hand temperature) than controls Individuals with BDD reported higher levels of disgust and anxiety during mirror staring than controls	Clinical
Oglen and Clementi (2010)	Explore how people experience their obesity and explore the impact of this on their motivations to lose weight	Qualitative- in depth interviews	46 participants who were obese or had been obese	Structured interviews	Thematic analysis	3 main themes, (1) Impact of obesity; influences of self-identity, mood and negative emotional consequences, (2) the meaning of food; eating related to emotional regualtion, control issues and the social world, (3) the social context; weight loss made fitting into social world easier. Implications for motivations for change as a result of themes above	Clinical
Olatunji (2015)	Examine the extent to which engagement in health-related behaviours modulate disgust propensity	Between subjects phase change ABA design	60 undergraduates randomly assigned into a health behaviour group or a control group	Health behaviour checklist (HBC; Olatunji et al., 2011) Disgust scale revised (DS-R; Haidt et al., 1994) Whiteley index (WI; Pilowsky, 1967) Self-disgust scale (SDS; Overton et al., 2008) Anxiety sensitivty index- 3 (ASI-3; Taylor et al., 2007) Manipulation: experimental group asked to spend a week engage in as many health behaviours as possible at every chance	ANCOVA	Participants who actively engaged in health-related behaviours demonstrated a significant increase in disgust propensity compared to the contorl group Self-disgust and anxiety sensitivity did not differ between the two groups	Non-Clinical

Olatunji, Cox, & Kim (2015)	Examine whether self-disgust mediates the relationship between shame and symptoms of bulimia and OCD	Cross-sectional correlational	403 undergraduates	Other as shamer scale (OAS; Goss, Gilbert and Allan, 1994) Self-disgust scale (SDS; Overton et al., 2008) Disgust scale- revised (DS-R; Olatunji et al., 2007) Eating attitudes Test- 26 (EAT-26; Garner et al., 1982) Obsessive compulsive inventory-revised (OCI-R; Foa et al., 2002) Depression, Anxiety and stress scales- 21 (DASS-21; Lovibond & Lovibond, 1995)	Mediation analysis	Relationship between shame proneness and symptoms of bulimia and OCD were partially mediated by self-disgust	Non-Clinical
Olatunji, David, & Ciesielski (2012)	Examine whether self-disgust is uniquely associated with less punishment of moral violations	Cross-sectional	109 undergraduates	Self-disgust scale (SDS; Overton et al., 2008) Centre for epidemiological studies depression scale (CES-D; Radloff, 1977) Disgust scale revised (DS-R; Haidt et al., 1994) Rating moral narratives in disgust and punishments deserved	ANOVA and regressions	Self-disgust predicted more disgust and punishment ratings of non-offenses when contorlling for individual differences in depressive symptoms and disgust sensitivity Self-disgust predicted less disgust and punishment ratings of severe offences when controlling for individual differences in depressive symptomology and disgust sensitivity	Non-Clinical
Overton, Markland, Taggart, Bagshaw, & Simpson (2008)	Develop a scale to measure self-disgust Determine if self-disgust can explain the relationship between dysfunctional cognitions and depressive symptomology	Cross-sectional correlational	111 participants	Self-disgust scale (SDS; Overton et al., 2008) Dysfunctional attitude scale-A (DAS; Weissman, 1980) Beck Depression inventory II (BDI; Beck et al., 1961) Depression, anxiety and stress scale (DASS; Lovibond & Lovibond, 1993)	Mediator analysis (Baron and Kenny, 1986)	The SDS demonstrated good psychometric properties and encompasses two factors; behavioural and physical self-disgust Self-disgust was found to mediate the relationship between dysfunction cognitions and depressive symptomology	Non-Clinical
Palmeira, Pinto-Gouveia, & Cunha (2019)	Explore the associations between self-disgust, self-compassion and eating psychopathological symptoms in overweight and obese individuals	Cross-sectional	203 adults with overweight and obesity	Multidimensional self-disgust scale (MSDS; Carreiras, 2014) Self compassion scale (SCS; Castilho et al., 2015) Eating disorder examination questionnaire (EDE-Q; Machado et al., 2014)	Path analysis	Effect of self-disgust on eating psychopathology occurred partially through an inability to be self-compassionate	Clinical

Powell, Azlan, Simpson, & Overton (2016)	Explore whether experiencing 2 types of disgust related side effects where positively related to symptoms of anxiety and depression Explore the degree that phyical and/ behavioural self-disgust mediates the link between the presence of a disgust related side effect and depressive and anxious symptoms Investigate whether participants underlying disgust propensity moderated the impact of experiencing a disgust related side effect of self-disgust and any indirect effects on depression and anxiety	Cross-sectional	132 participants who had been treated for cancer	Disgust propensity and sensitivity revised (DPSS-R; van Overveld et al., 2006) Self-disgust scale (Overton et al., 2008) Hospital anxiety and depression scale (HADS; Zigmond and Snaith, 1983)	Path analysis	Individuals who had experienced a core disgust side effect (vs different disgust side effect or none) exhibited higher levels of depression and anxiety Effects of core disgust side effects on depression and anxiety were mediated by self-disgust Disgust propensity moderated the effect of core disgust side effects on self-disgust	Clinical
Powell, Overton, & Simpson (2014)	Investigate the concept and subjective nature of self-disgust in female participants with depressive symptoms	Semi-structured interviews	9 female partiicpants with high scores of depression and self-disgust	Semi-structured interviews with participants informed of aim to explore disgust directed towards the self	Interpretive Phenemonological Analysis; IPA	4 main themes, (1) subjective experience of self-disgust; consuming, visceral experience with state and trait components, (2) origins of self-disgust; roots of self-disgust seen in late childhood from bullying or criticism from others, (3) consequences of self-disgust; desire to cleanse self, dissociation and social withdrawal, (4) associated emotional states; self-hatred, anger and sadness	Clinical
Powell, Simpson, & Overton (2013)	Self disgust should predict depressive symptoms over time but only in this direction 6 month levels of self-disgust were predicted to partially mediate the effect of baseline dysfunctional cognitions on 12 month depressive symptoms Self-disgust self was predicted to have a stronger effect in the temporal prediction of depressive symptoms than self-disgust ways	Longitudinal	464 participants at time 1, 152 at part 2 and 110 in part 3	Self-disgust scale (Overton et al., 2008) Dysfunctions Attitudes scale form A (DAS-A; Weissman, 1980) Depression, anxiety and stress scale (DASS; Lovibond & Lovibond, 1993)	Path analysis and regression analysis	Self-disgust is best considered as an antecedent to depressive symptoms Mediation model suggested is partially supported but too simplistic Self-disgust self is more important as a temporalpredictor of depressive symptoms than self-disgust ways	Non-Clinical
Powell, Simpson, & Overton (2015)	Examine the affects of affirming trait kindness on state disgust towards participants appearance		Study 1: 56 participants Study 2: 116 partiicpants (online)	Manipulation: Personal attributes inventory (Reed and Aspinal, 1998) Control: Personal opinion survey (Reed and Aspinal, 1998) Self-disgust scale (SDS; Overton et al., 2008) or Self disgust scale revised (SDS-R; Powell, Overton and Simpson, in press) Perceived threat (Armitage, 2012) 8 Visual analogue scales for state emotion (disgust, anger, happiness and sadness)	ANCOVA	When controlling for trait self-disgust the self-affirmed reported significnalty less disgust toward their appearance (Study 1) Study 2 replicated the results but driven by lower state disgust in those with higher trait self-disgust	Non-Clinical

Rhodes, O'Neill, & Nel (2018)	Investigate the first person perspective of psychosis sufferers who survived childhood sexual abuse		7 women with a history of childhood sexual abuse and psychosis	Semi structured interview using an IPA framework focussing on (1) problems the person saw themselves as having over their lives, (2) what problems might relate to the abuse they suffered and whether they thought the abuse and psychosis were linked and (3)what affect the abuse had on their lives as children and when the abuse started and ended	IPA	6 main themes, (1)degradation of self, (2) body-self entrapment, (3) a sense of being different to others, (4) unending struggle and depression, (5) psychotic condemnations and abuse, (6) perceptions of links to the past Participants did not generally relate their psychosis to past abusive experiences	Clinical
Rusch, Schulz, Valerius, Steil, Bohus, & Schmahl (2011)	Is disgust sensitivity higher in women with BPD/PTSD than healthy controls Women with BPD/PTSD have a more disgust prone implicit self-concept than healthy women Greater severity of childhood sexual abuse would be associated with higher levels of disgust sensitivity and more disgust-prone implicit self-concept	Case control	20 women with BPD and not PTSD 20 women with PTSD and not BPD 15 women with BPD and PTSD 37 healthy women	Questionnaire for the assessment of disgust sensitivity (QADS; Schienle et al., 2002) State trait anxiety inventory (STAI-X2; Laux et al., 1981) Beck depression inventory (BDI; Beck et al., 1987) IAT measuring latencies from categorising disgust and anxiety words with self and other	ANOVA	Women with BPD/PTSD displayed more disgust sensitivity than controls Implicit self-concept among patients was more disgust prone than anxiety prone in comparison to controls	Clinical
Schienle (2018)	Compare indicators of trait disgust between patients with skin picking disorder and healthy controls	Cross-sectional	46 skin picking disorder patients 36 healthy controls	The skin-picking scale- revised (SPS_R; Gallinat et al., 2016) Questionnarie for the asessment of disgust proneness (QADP; Schinele et al., 2002) Scale for the assessment of disguts sensitivity (SADS; Schienle et al., 2010) Questionnaire for the assessment for self-disgust (QASD; Schinele et al., 2014) Three domain disgust scale, Moral disgust subscale (Tybur et al., 2009)	Multiple regression analyses	Patients displayed higher scores on all disgust measures than controls Degree of patients skin picking could be predicted based on moral disgust and difficulties in disgust regulation	Clinical
Schienle and Wabnegger (2019)	Voxel-based morphometry study aimed at identifying associations between grey matter volume in specific regions of the disgust network and reported self-disgust		59 healthy participants	Questionnaire for the assesment of self-disgust (QASD; Schienle et al., 2014) Depression subscale of the brief symptom inventory (BSI-18; Spitzer et al., 2011) Voxel based morphometry	T-tests, correlations and ANCOVAS	Women with high personal self-disgust displayed reduced bilateral insula volume in comparison to women with low personal self-disgust independent of depressed mood	Non-Clinical

Schienle, Haas-Krammer, Schoggl, Kapfhammer, Hans, & Ille (2013)	Assessed different disgust related personality traits as well as visually elicited disgust feelings and the ability to decode facial disgust in BPD	Cross-sectional	30 female inpatients of the psychiatric hospital Graz with BPD 30 healthy women	Borderline symptom list - short (BSL-23; Bohus et al., 2009) Questionnaire for the assessment of disgust proneness (QADP; Schienle et al., 2002) Scale for the assessment of disgust sensitivity (SADS; Schienle et al., 2010) Questionnaire for the assessment of self-disgust (QASD; Schienle et al., 2014) Beck Depression Inventory (BDI; Hautzinger et al., 1994)	Correlations and ANOVAs	Patients experiences higher levels of disgust than the control group especially with regard to body secretions and poor hygiene Disgust sensitivity was decreased in BPD patients in comparison to controls Self-disgust heightened in BPD patients and correlated with severity of borderline-typical symptoms BPD patients displayed a disgust bias to males when decoding facial expressions depicting disgust	Clinical
Schienle, Leutgeb, & Wabnegger (2015)	Investigate volumes of specific amygdala regions in BPD patients Analyse whether the volume of specific amygdala regions in BPD patients are correlated with disgust based personaity traits	Experimental	25 women with a BPD diagnosis 25 healthy women (matched on age)	Borderline symptom list - short (BSL-23; Bohus et al., 2009) Questionnaire for the assessment of disgust proneness (QADP; Schienle et al., 2002) Questionnaire for the assessment of self-disgust (QASD; Schienle et al., 2014)	Voxel based morphometry	Symptom severity, disgust proneness and self-disgust were correlated with gray matter volume Women with BPD diagnosis showed an enhanced volume of the laterobasal amygdala Volume of of the laterobasal amygdala was positively correlated with symptom severity Gray matter volume in the centromedial amygdala showed a negative correlation with symptom severity self-disgust and self-injury negatively correlated with the volume of the seconadary somatosensory cortex	Clinical
Schienle, Schwab, Hofler, & Freudenthaler (2019)	Self-disgust will be positively associated with suicide risk Examine the mediating role of specific coping strategies for the association between self-disgust and suicide ideation	Cross-sectional	1167 individuals from Germany, Austria and Switzerland	Suicide behaviour questionnaire revised (SBQ-R; Glaesmer et al., 2018) Questionnaire for the assesment of self-disgust (QASD; Schienle, Ille & Arendasy, 2014) Subscale animal-remainder disgust of the questionnaire for the assessment of disgust proneness (QADP; Schienle, Walter, Stark & Vaitl, 2002) Brief-COPE (Knoll, Rieckmann, & Schwarzer, 2005)	Correlation and mediation	Self-disgust was the most rleevant predictor of suicide risk among assessed variables Self-disgust was negatively associated with the use of support by others and positively assocated with evasive coping (self-blame, venting, denial) which in turn was positively associated with suicidality	Non-Clinical
Simpson, Helliwell, Varese, & Powell (2020)	Investigate whether self-disgust mediates the relationship between childhood trauma and psychosis	Cross-sectional	78 participants reporting clinical levels of psychosis	Childhood abuse and trauma scale (CATS; Sanders & Becker-Lausen, 1995) Community assessment of Psychic experience (CAPE; Stefanis et al., 2002) Self-disgust scale revised (SDS-R; Powell, Overton & Simpson, 2015) Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) Other as shamer scale (OS;Goss, Gilbert & Allan, 1994)	Correlation and mediation	Self-disgust mediates the relationship between childhood trauma and later psychosis	Clinical

Simpson, Hillman, Crawford, & Overton (2010)	Examine whether self-disgust and self-esteem both mediate the relationship between dysfunctional cognitions and depression	Cross-sectional	120 participants	Self-disgust scale (SDS; Overton et al., 2008) Rosenberg self-esteem scale (RSES; Rosenberg, 1965) Beck Depression inventory II (BDI-II; Beck et al., 1996) Depression, anxiety and stress scale (DASS; Lovibond and Lovibond, 1993) Dysfunctional attitude scale- A (DAS-A; Weissman, 1980)	Correlations and regressions	Self-disgust and self-esteem found to be conceptually distinct contructs Self-disgust and self-esteem are both partial mediators for the relationship between dysfunctional cognitions and depression	Non-Clinical
Smith, Steele, Ashton, Weitzman, Trueba, & Meuret (2015)	Examine the role of self-disgust in non-suicidal self injury as a mediator and maintaining factor Explore the differences in clinical characteristics in self-injurers and non-injurers to examine factors that may differentiate these groups such as self-disgust Recent self-injurers would exhibit greater levels of self-disgust, depressive symptoms and anxiety sensitivity compared ot non-injurers and past self-injurers Both groups of self-injurers will report higher rates of sexual and physical abuse than non-injuring groups	Cross-sectional	549 undergraduate students	Inventory of statements about self-injury (ISAS; Klonsky and Glenn, 2009) Self-Disgust scale (SDS; Overton et al.,. 2008) Depression subscale of the depression anxiety stress scale (DASS; Lovibond & Lovibond, 1995) Painful and provocative events scale (Pender, GOrdon, Bresin et al., 2011) Anxiety sensitivty index (ASI; Reiss, Peterson, Gursky et al., 1986)	Mediation analyses (Baron & Kenny, 1986)	Self-disgust mediates the relationship between depression and NSSI status as well as sexual abuse and NSSI status Individuals with recent NSSI behaviour had the highest self-disgust levels, depressive and anxiety symptoms and were most likely to endorse a history of physical or sexual abuse compared to non-injurers or past-injurers	Clinical
Sonnier, Alex Brake, Flores, & Badour (2019)	Examined whether PTSD symptoms evidenced an indirect effect on hazardous drinking through self-disgust in truama exposed young adults PTSD symptoms would positively relate to hazardous drinking behaviour Indirect effects of PTSD symptoms in predciting hazardous drinking would emerge through positive associations with self-disgust	Cross-sectional correlational	376 undergraduate students who reported expereincing at least 1 DSM-5 defined traumatic event	Life Events checklist (LEC-5; Weathers, Blake et al., 2013) PTSD Checklist for DSM-5 (PCL-5; Weathers, Litz et al., 2013) Self-disgust scale (SDS; Overton et al., 2008) Alchol use disorders identification test (AUDIT; Bohn, Babor, & Kranzler, 1995)	Process analysis	Probable PTSD was indrectly associated with an increased likelihood in engaging with hazardous drinking through the pathway of self-disgust ways Probable PTSD was positively associated with self-disgust self, however, self-disgust self was associated witha decreased likelihood of engaging in hazardous drinking	Non-Clinical

Stasik-O'Brien and Schmidt (2018)	Examine the role of self-disgust and its ability to predict BIS Examine the assocation of BIS and self-disgust over and above general distress and anxiety sensitivity	Cross-sectional correlational	Sample 1: 314 mechanical Turks Sample 2: 203 students	Body image distortion questionnaire (BIDQ; Cash et al., 2004) Disgust propensity and sensitivity scale-revised (DPSS-R; Fergus and Valentiner, 2009) Self-disgust scale (SDS; Overton et al., 2008) Positive and Negative Affect Scale (PANAS; Watson et al., 1988) Anxiety Sensitivity Index- 3 (ASI-3; Taylor et al., 2007)	Correlations and hierarcical multiple regression	Disgust sensitivity, disgust propensity and self disgust were all significantly correlated with BID BID was more strongly correlated with anxiety sensitivity and negative affect in both samples than the correlations between disgust propentisty and sensitivity with BID Self-disgust was a significant predictor BID when disgust propensity, disgust sensitivty, anxiety sensitivty and negative affect were accounted for	Non-Clinical
Steil, Jung, & Stangier (2011)	Pilot study testing the efficacy of a brief CRIM intervention to reduce intensity, vivdness and uncontrolability of contaminated feelings and resultant distress in PTSD patients	Single group repeated measures design	9 women with a diagnosis of PTSD related to childhood sexual abuse and suffering from feelings of contamination	Visual analogue scales for intensity, vividness, uncontrollability of contamination feelings and resulting distress Posttraumatic Diagnostic Scale (PDS; Griesel et al., 2006)	Friedmans tests and Wilcoxon tests	Large reductions in contamination feelings (vividenss, uncontrollability and related dsitress between treatment times Intervention reduced PDS scores over time of treatment	Clinical
Tsatali, Overton, & Vivas (2019)	Assess levels of self-disgust in a group of Parkinsons Disease patients (relative to matched controls) Examine a range of potential predictors of self-disgust in Parkinsons Disease patients Evaluate the possibility of inducting self-disgust in parkinsons disease patients		45 patients diagnosed with Parkinsons disease and 45 healthy participants (matched on age, gender and education) in Greece	Hospital Depression and Anxiety scale (HADS; Zigmond and Snaith, 1983) Questionnaire for impulsive-compulsive disorders in Parkinsons-Disease Rating scale (QUIP-RS; Weintraub et al., 2012) Barratt Impulsiveness Scale (BIS-11; Patton et al., 1995) Self-Conscious Affect Questionnaire (TOSCA; Tangney et al., 2000) Self-Disgust Scale (SDS-Greek, Overton et al., 2008) Narration induction experiment - partiicpants asked to narrate an experience that made them feel self-disgust and a neuatral experience Self-disgust photo induction-presented with a full body picture of self or neutral picture	Correlations and regressions	Parkinsons patients exhibited higher levels of self reported self-disgust and experimentally induced self-disgust compared to matched control participants Trait self-disgust levels were significantly and sleectively predicted by disrders of impulse control in Parkinsons disease patients	Clinical

Vivas, Hussain-Showaiter and Overton (2021)	Investigate whether the experience of negative self-conscious emotion schemas (shame, guilt and SD) is altered in schizophrenia and the relationship between changes in SCEs and executive (dys)function	Cross-sectional	Twenty-nine Greek patients and thirty Arabic patients with diagnosed schizophrenia	Trail making test part A and part B (TMT-A and TMT-B; Greek validated version, Vlachou & Kosmidou, 2002; Arabic validated version, Stanczak et al., 2001) Verbal fluency test (Greek validated version, Kosmidis et al., 2004; Arabic validated version, Khalil, 2010) Validated versions of the Hospital Anxiety and Depression Scale (HADS; Michopoulos et al., 2008; Terkawi et al., 2017) Test of self-conscious affect- 3 (TOSCA-3; Gouva et al., 2012; Tangney et al., 2000) (Greek sample only) Self-disgust Scale (SDS; Overton et al., 2008) translated to Arabic using Hambletons guidelines (Hambleton, 2001), (SDS-G; Tsatali et al., 2019)	Correlations, ANCOVAs and MANOVAs	Trait levels of self-disgust and guilt were found to be higher and lower, respectively, in patients with schizophrenia relative to control participants; and poorer EF was related with higher trait levels of SD, but lower trait levels of guilt. The pattern of findings was largely unaffected when controlling for anxiety and depression.	Clinical
Von Spreckelsen, Glashouwer, Bennik, Wessel, & De Jong (2018)	Trait disgust propensity would increase the risk of developing a negative body image by increasing the likelihood of feelings of self-disgust Trait disgust senstivity would heighten the impact of self-disgust on the development of persistant negative body appraisals	Correlational	Study 1: 577 female psychology students at the university of Groningen Study 2:346 students at the unversity of Groningen	Study 1: Shape and weight concern subscales of the eating disorder examintaion questionnaire (EQE-Q 6.0; Fairburn and Beglin, 2008) Disgust propensity and sensitivity scale- revised (DPSS-R; van Overveld et al., 2006) Self-Disgust scale (SDS; Overton et al., 2008) Study 2: (in addition to questionnaires from study 1) Self-disgust eating disorder scale (SDES; Moncrieff-Boyd et al., 2014) Three domains of disgust scale (TDSS; Tyber et al., 2009)	Correlations and simple and moderated mediation	Negative body image was consistently associated with higher self disgust and heightened disgust propensity and sensitivity The relationship between disgust propensity and body image was partly mediated by self-disgust The relationship between self-disgust and negative image was not moderated by disgust sensitivity	Non-clinical

Ypsilanti, Gettings, Lazuras, Robson, Powell and Overton (2020)	Examine the association between self- disgust, loneliness, and mental health difficulties in war veterans diagnosed with PTSD	Mixed methods. Cross sectional and eye tracking	19 PTSD diagnosed male veterans, 22 participants with no history of PTSD from the general population	PTSD checklist for DSM-5 (PCL-5; Blevins et al., 2015) University of California Loneliness scale (UCLA-3; Russell, 1996) Beck's Depression Inventory (BDI; Becket al., 1961) Self-disgust scale (SDS; Overton et al., 2008) State/Trait anxiety inventory (STAI; Spielberger, 1983) Eye tracking: presentation of 12 neutral faces and 1 self face, pictures presented in 48 pairs for 5 seconds in a randomised order, half the trials included the self face.	Multivariate analysis of variance, hierarchical linear regression, multiple mediation analyses and ANOVAS.	PTSD veteran group reported almost three times higher scores in self-disgust, and significantly higher scores in loneliness and mental health difficulties (anxiety and depression), compared to the general population. Self-disgust mediated the association between loneliness and anxiety symptoms in both groups. Veterans with PTSD displayed a self-avoidance gaze pattern, by looking significantly more toward pictures of faces of unknown others and away from their own face—a pattern that was not replicated in the general population group. Higher self-disgust scores were significantly associated with longer total gaze to the pictures of others (vs. the self).	Clinical
Ypsilanti, Lazuras, Powell, & Overton (2019)	Individuals with higher loneliness will haver higher scores of self-disgust. Self disgust will be positively associated with depression and loneliness and predict depressive symptoms over and above loneliness Self disgust will significantly mediate the association between loneliness and depressive symptoms Expressive suppression and cognitive reappraisal will be associated with self-disgust Emotion regulaiton strategies will moderate the assication between self-disgust and depression	Cross-sectional correlational	317 individuals	Loneliness scale (UCLA; Russell, 1978) Beck's Depression Inventory (BDI; Beck et al., 1961) Emotion regulation questionnaire (ERQ; Gross and John, 2013) Self-disgust scale (SDS; Overton et al., 2008)	Correlations, regression and Preacher, Hayes (2008) multiple mediation and one way MANOVA	Participants in the high loneliness group reported sgnificantly higher self-disgust (self and ways) compared to other loneliness groups Self-disgust predcited depression over and above loneliness and other variables Self-disgust significantly mediates the association between loneliness and depression Expressive suppression and cognitive reappraisal are correlated with self-disgust Expressive suppression moderated the association between self-disgust and depression	Non-clinical
Ypsilanti, Lazuras, Robson, & Akram (2018)	Assess if individuals with insomnia have higher levels of self-disgust than normal sleepers Explore whether the association between insomnia and self-disgust is mediated by depression and anxiety	Cross-sectional	27 individuals with insomnia disorder (DSM-5), 30 normal sleepers	Self disgust scale (SDS; Overton et al.. 2008) Hospital anxiety and depression scale (HADS; Zigmond and Snaith, 1983)	T-tests, correlations and Preacher and Hayes (2008) multiple mediation	Individuals with insomnia presented greater self-disgust, anxiety and depression than normal sleepers Association between insomnia and self-disgust was fully mediated by anxiety and depression	Clinical

Ypsilanti, Robson, Lazuras, Powell, & Overton (2020)	Study 1: Explore the assocation between loneliness, self-disgust, anxiety and depression Study 2: Investigate attentional vigilance, maintanence and avoidance in individuals with high and low self-disgust	Study 1: Cross-sectional correlational Study 2: Eye tracking	Study 1: 102 older adults (aged 55+) Study 2: 80 older adults (aged 55+)	Study 1: Self-Disgust Scale (SDS; Overton et al., 2008) UCLA Loneliness Scale (UCLA-3; Russell, 1996) Anxiety Index for adults (STAI-AD short; Spielberger, 1983) Geriatric Depression Scale (GDS-short; Sheikh and Yesavage, 1986) Study 2: UCLA loneliness scale (UCLA-3; Russell, 1996) Self-disgust scale (SDS; Overton et al, 2008) Eye tracking: presentation of 8 neutral faces and 1 self face, each picture presented 6 times each for 5 seconds in a randomised order	Study 1: correlations and botstrapped path analysis Study 2: ANOVAs	Study 1: self-disgust is positively associated with loneliness, anxiety and depression symptoms in older adults Self-disgust significantly mediated the loneliness-anxiety relationship Study 2: Individuals with high self-disgust displayed avoidance to their own faces at 4000 and 5000 ms No differences between high and low self-disgust groups in vigilance and maintenance	Non-clinical
Zerach and Levi-Belz (2018)	Examine the link between exposure to potentially morally injurious events and post traumatic stress disorder symptoms and the mediating roles of depression, trauma related shame and guilt and self-disgust	Cross-sectional correlational	191 Isreali Combat Veterans in the IDF	Combat experiences scale (CES; Hoge et al., 2004) Moral Injury Event scale (MIES; Nash et al., 2013) Moral Injury Questionnaire-Military version (MIQ-M; Currier et al., 2013) Post Traumatic Stress Disorder checklist (PCL-5; Weathers et al., 2013) Trauma-related shame inventory (TRSI; Oktedalen et al., 2014) Trauma-related guilt inventory (TRGI; Kubany et al., 1996) Depressive attributes questionnaire (DAQ; Kleim, Gonzalo, &Ehlers, 2011) Self-DIsgust Scale (SDS; Overton et al., 2008)	Correlation matrix Multiple mediation analysis Serial mediation analyses: Hayes, Preacher and Myers (2011) Multiple step mediation	Out of transgressive acts, only betrayal based experience was related to PTSS. Betrayal based experienced related to negative psychological consequences (depressive attributions, trauma-related guilt, shame and self-disgust) Relationship between betrayal based experiences and PTSS is fully mediated by depressive attributions, trauma related shame, guilt and self-disgust over and above combat exposure	Non-clinical

Appendix 3 - Full list of 74 words

Abhorrent	Inspiring
Abominable	Joyful
Advantageous	Kind
Amazing	Loathsome
Ambitious	Loved
Amiable	Merry
Appalling	Monstrous
Atrocious	Nasty
Beautiful	Nauseating
Bright	Nice
Brilliant	Obnoxious
Contaminated	Obscene
Courageous	Odious
Cuddly	Optimistic
Delightful	Overjoyed
Desirable	Passionate
Dirty	Proactive
Disgusting	Proud
Efficient	Putrid
Elated	Rancid
Empowered	Reeking
Excited	Repellent
Festering	Repugnant
Filthy	Repulsive
Foul	Resilient
Fulfilled	Revolting
Gallant	Rotten
Ghastly	Sickening
Grim	Sincere
Gross	Strong
Gruesome	Successful
Happy	Terrific
Heinous	Vile
Heroic	Vulgar
Hideous	Wise
Horrid	Worthy
Incredible	Yucky

Appendix 4 - Information and debrief sheet for Study 1

Sheffield Hallam University

Information Sheet

Thank you for volunteering to complete this online questionnaire. The questionnaire involves rating words on the emotions they relate to in order to valid these words for further studies. The study only requires answers via selecting tick boxes and will take approximately 10 minutes to complete.
Completing this questionnaire is recognised as consent for the data you provide to be used in analysis. No personal data will be required from you, to ensure all responses are kept anonymous. This therefore means, once you have submitted your responses you will be unable to withdraw your data.
Thank you.
Anna Robson
If you have any further questions please contact:

Debrief Sheet

Thank you for completing this questionnaire. The questionnaire will hopefully allow us to produce a group of words that demonstrate disgust and a group of words displaying positive emotion, which can be used to develop methodology to assess the concept of self-disgust.

As you have now submitted your responses you are unable to withdraw your data. If you have any questions, please don't hesitate to contact me on ar2901@exchange.shu.ac.uk

Thank you.

Anna Robson

Appendix 5 - Example of rating scales in Study 1

Sheffield Hallam University

To what extent do you think the word 'Abhorrent' relates to the emotions below

	Not at all	Not much	Neutral	Somewhat	Extremely
Happy					
Sad					
Fear					
Anger					
Disgust					

To what extent do you think the word 'Abominable' relates to the emotions below

	Not at all	Not much	Neutral	Somewhat	Extremely
Happy					
Sad					
Fear					
Anger					
Disgust					

To what extent do you think the word 'Advantageous' relates to the emotions below

	Not at all	Not much	Neutral	Somewhat	Extremely
Happy					
Sad					
Fear					
Anger					
Disgust					

Sheffield Hallam University

To what extent do each of the words relate to something positive?

	Very Negative	Fairly Negative	Somewhat Negative	Neutral	Somewhat positive	Fairly Positive	Very Positive
Abhorrent							
Abominable							
Advantageous							
Amazing							
Ambitious							
Amiable							
Appalling							
Atrocious							
Beautiful							
Bright							
Brilliant							
Contaminated							
Courageous							
Cuddly							
Delightful							
Desirable							
Dirty							
Disgusting							
Efficient							
Elated							
Empowered							
Excited							
Festering							
Filthy							

Sheffield Hallam University

To what extent do the words make you feel aroused?

	Very Calm	Fairly Calm	Somewhat Calm	Neutral	Somewhat Active	Fairly Active	Very Active
Abhorrent	○	○	○	○	○	○	○
Abominable	○	○	○	○	○	○	○
Advantageous	○	○	○	○	○	○	○
Amazing	○	○	○	○	○	○	○
Ambitious	○	○	○	○	○	○	○
Amiable	○	○	○	○	○	○	○
Appalling	○	○	○	○	○	○	○
Atrocious	○	○	○	○	○	○	○
Beautiful	○	○	○	○	○	○	○
Bright	○	○	○	○	○	○	○
Brilliant	○	○	○	○	○	○	○
Contaminated	○	○	○	○	○	○	○
Courageous	○	○	○	○	○	○	○
Cuddly	○	○	○	○	○	○	○
Delightful	○	○	○	○	○	○	○
Desirable	○	○	○	○	○	○	○
Dirty	○	○	○	○	○	○	○
Disgusting	○	○	○	○	○	○	○
Efficient	○	○	○	○	○	○	○
Elated	○	○	○	○	○	○	○
Empowered	○	○	○	○	○	○	○
Excited	○	○	○	○	○	○	○
Festering	○	○	○	○	○	○	○
Filthy	○	○	○	○	○	○	○
Foul	○	○	○	○	○	○	○

Appendix 6 - Study 1 ANOVA output

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Abhorrent' relates to the emotions below - Happy	1.37	.771	107
To what extent do you think the word 'Abhorrent' relates to the emotions below - Sad	2.84	1.159	107
To what extent do you think the word 'Abhorrent' relates to the emotions below - Fear	2.91	1.103	107
To what extent do you think the word 'Abhorrent' relates to the emotions below - Anger	3.71	.962	107
To what extent do you think the word 'Abhorrent' relates to the emotions below - Disgust	4.28	1.088	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.786	94.560[b]	4.000	103.000	.000	.786
	Wilks' Lambda	.214	94.560[b]	4.000	103.000	.000	.786
	Hotelling's Trace	3.672	94.560[b]	4.000	103.000	.000	.786
	Roy's Largest Root	3.672	94.560[b]	4.000	103.000	.000	.786

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.713	35.368	9	.000	.866	.899	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	515.712	4	128.928	139.493	.000	.568
	Greenhouse-Geisser	515.712	3.465	148.848	139.493	.000	.568
	Huynh-Feldt	515.712	3.596	143.411	139.493	.000	.568
	Lower-bound	515.712	1.000	515.712	139.493	.000	.568
Error(Emotion)	Sphericity Assumed	391.888	424	.924			
	Greenhouse-Geisser	391.888	367.257	1.067			
	Huynh-Feldt	391.888	381.180	1.028			
	Lower-bound	391.888	106.000	3.697			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.467*	.135	.000	-1.854	-1.080
	3	-1.533*	.134	.000	-1.916	-1.149
	4	-2.336*	.132	.000	-2.715	-1.958
	5	-2.907*	.154	.000	-3.348	-2.465
2	1	1.467*	.135	.000	1.080	1.854
	3	-.065	.119	1.000	-.407	.276
	4	-.869*	.114	.000	-1.197	-.541
	5	-1.439*	.145	.000	-1.855	-1.024
3	1	1.533*	.134	.000	1.149	1.916
	2	.065	.119	1.000	-.276	.407
	4	-.804*	.117	.000	-1.139	-.469
	5	-1.374*	.150	.000	-1.804	-.944
4	1	2.336*	.132	.000	1.958	2.715
	2	.869*	.114	.000	.541	1.197
	3	.804*	.117	.000	.469	1.139
	5	-.570*	.105	.000	-.873	-.268
5	1	2.907*	.154	.000	2.465	3.348
	2	1.439*	.145	.000	1.024	1.855
	3	1.374*	.150	.000	.944	1.804
	4	.570*	.105	.000	.268	.873

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Abominable' relates to the emotions below - Happy	1.47	.921	105
To what extent do you think the word 'Abominable' relates to the emotions below - Sad	2.59	1.207	105
To what extent do you think the word 'Abominable' relates to the emotions below - Fear	3.22	1.135	105
To what extent do you think the word 'Abominable' relates to the emotions below - Anger	3.87	1.075	105
To what extent do you think the word 'Abominable' relates to the emotions below - Disgust	4.05	1.060	105

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.728	67.535[b]	4.000	101.000	.000	.728
	Wilks' Lambda	.272	67.535[b]	4.000	101.000	.000	.728
	Hotelling's Trace	2.675	67.535[b]	4.000	101.000	.000	.728
	Roy's Largest Root	2.675	67.535[b]	4.000	101.000	.000	.728

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

					Epsilon[b]		
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.714	34.502	9	.000	.861	.894	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	462.857	4	115.714	107.367	.000	.508
	Greenhouse-Geisser	462.857	3.444	134.391	107.367	.000	.508
	Huynh-Feldt	462.857	3.576	129.418	107.367	.000	.508
	Lower-bound	462.857	1.000	462.857	107.367	.000	.508
Error(Emotion)	Sphericity Assumed	448.343	416	1.078			
	Greenhouse-Geisser	448.343	358.188	1.252			
	Huynh-Feldt	448.343	371.950	1.205			
	Lower-bound	448.343	104.000	4.311			

Pairwise Comparisons

Measure: MEASURE_1

					95% Confidence Interval for Difference[b]	
(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	Lower Bound	Upper Bound
1	2	-1.124*	.145	.000	-1.540	-.708
	3	-1.752*	.149	.000	-2.181	-1.324
	4	-2.400*	.159	.000	-2.857	-1.943
	5	-2.581*	.166	.000	-3.058	-2.104
2	1	1.124*	.145	.000	.708	1.540
	3	-.629*	.127	.000	-.993	-.264
	4	-1.276*	.133	.000	-1.657	-.895
	5	-1.457*	.156	.000	-1.905	-1.009
3	1	1.752*	.149	.000	1.324	2.181
	2	.629*	.127	.000	.264	.993
	4	-.648*	.130	.000	-1.020	-.275
	5	-.829*	.148	.000	-1.253	-.404
4	1	2.400*	.159	.000	1.943	2.857
	2	1.276*	.133	.000	.895	1.657
	3	.648*	.130	.000	.275	1.020
	5	-.181	.110	1.000	-.496	.134
5	1	2.581*	.166	.000	2.104	3.058
	2	1.457*	.156	.000	1.009	1.905
	3	.829*	.148	.000	.404	1.253
	4	.181	.110	1.000	-.134	.496

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Advantageous' relates to the emotions below - Happy	4.10	.796	108
To what extent do you think the word 'Advantageous' relates to the emotions below - Sad	1.84	.997	108
To what extent do you think the word 'Advantageous' relates to the emotions below - Fear	2.00	1.152	108
To what extent do you think the word 'Advantageous' relates to the emotions below - Anger	1.74	1.036	108
To what extent do you think the word 'Advantageous' relates to the emotions below - Disgust	1.72	1.066	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.722	67.437[b]	4.000	104.000	.000	.722
	Wilks' Lambda	.278	67.437[b]	4.000	104.000	.000	.722
	Hotelling's Trace	2.594	67.437[b]	4.000	104.000	.000	.722
	Roy's Largest Root	2.594	67.437[b]	4.000	104.000	.000	.722

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Epsilon[b] Huynh-Feldt	Epsilon[b] Lower-bound
Emotion	.303	125.716	9	.000	.611	.626	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	452.604	4	113.151	158.576	.000	.597
	Greenhouse-Geisser	452.604	2.443	185.285	158.576	.000	.597
	Huynh-Feldt	452.604	2.504	180.749	158.576	.000	.597
	Lower-bound	452.604	1.000	452.604	158.576	.000	.597
Error(Emotion)	Sphericity Assumed	305.396	428	.714			
	Greenhouse-Geisser	305.396	261.374	1.168			
	Huynh-Feldt	305.396	267.934	1.140			
	Lower-bound	305.396	107.000	2.854			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	95% Confidence Interval for Difference[b] Upper Bound
1	2	2.259*	.139	.000	1.860	2.659
	3	2.102*	.149	.000	1.674	2.530
	4	2.361*	.151	.000	1.929	2.793
	5	2.380*	.152	.000	1.945	2.814
2	1	-2.259*	.139	.000	-2.659	-1.860
	3	-.157	.094	.973	-.427	.112
	4	.102	.081	1.000	-.130	.334
	5	.120	.075	1.000	-.095	.336
3	1	-2.102*	.149	.000	-2.530	-1.674
	2	.157	.094	.973	-.112	.427
	4	.259	.095	.076	-.014	.532
	5	.278	.101	.069	-.011	.567
4	1	-2.361*	.151	.000	-2.793	-1.929
	2	-.102	.081	1.000	-.334	.130
	3	-.259	.095	.076	-.532	.014
	5	.019	.066	1.000	-.170	.207
5	1	-2.380*	.152	.000	-2.814	-1.945
	2	-.120	.075	1.000	-.336	.095
	3	-.278	.101	.069	-.567	.011
	4	-.019	.066	1.000	-.207	.170

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Amazing' relates to the emotions below - Happy	4.91	.316	103
To what extent do you think the word 'Amazing' relates to the emotions below - Sad	1.32	.703	103
To what extent do you think the word 'Amazing' relates to the emotions below - Fear	1.36	.739	103
To what extent do you think the word 'Amazing' relates to the emotions below - Anger	1.39	.877	103
To what extent do you think the word 'Amazing' relates to the emotions below - Disgust	1.28	.720	103

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.953	499.970[b]	4.000	99.000	.000	.953
	Wilks' Lambda	.047	499.970[b]	4.000	99.000	.000	.953
	Hotelling's Trace	20.201	499.970[b]	4.000	99.000	.000	.953
	Roy's Largest Root	20.201	499.970[b]	4.000	99.000	.000	.953

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Epsilon[b] Huynh-Feldt	Epsilon[b] Lower-bound
Emotion	.527	64.258	9	.000	.742	.766	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	1053.934	4	263.483	850.041	.000	.893
	Greenhouse-Geisser	1053.934	2.966	355.327	850.041	.000	.893
	Huynh-Feldt	1053.934	3.065	343.896	850.041	.000	.893
	Lower-bound	1053.934	1.000	1053.934	850.041	.000	.893
Error(Emotion)	Sphericity Assumed	126.466	408	.310			
	Greenhouse-Geisser	126.466	302.542	.418			
	Huynh-Feldt	126.466	312.598	.405			
	Lower-bound	126.466	102.000	1.240			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	3.592*	.091	.000	3.331	3.853
	3	3.553*	.089	.000	3.298	3.809
	4	3.524*	.103	.000	3.228	3.820
	5	3.631*	.088	.000	3.378	3.885
2	1	-3.592*	.091	.000	-3.853	-3.331
	3	-.039	.067	1.000	-.232	.155
	4	-.068	.072	1.000	-.275	.139
	5	.039	.065	1.000	-.147	.224
3	1	-3.553*	.089	.000	-3.809	-3.298
	2	.039	.067	1.000	-.155	.232
	4	-.029	.054	1.000	-.185	.127
	5	.078	.066	1.000	-.111	.266
4	1	-3.524*	.103	.000	-3.820	-3.228
	2	.068	.072	1.000	-.139	.275
	3	.029	.054	1.000	-.127	.185
	5	.107	.066	1.000	-.083	.296
5	1	-3.631*	.088	.000	-3.885	-3.378
	2	-.039	.065	1.000	-.224	.147
	3	-.078	.066	1.000	-.266	.111
	4	-.107	.066	1.000	-.296	.083

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Ambitious' relates to the emotions below - Happy	4.28	.720	103
To what extent do you think the word 'Ambitious' relates to the emotions below - Sad	1.90	1.034	103
To what extent do you think the word 'Ambitious' relates to the emotions below - Fear	2.53	1.274	103
To what extent do you think the word 'Ambitious' relates to the emotions below - Anger	1.62	.919	103
To what extent do you think the word 'Ambitious' relates to the emotions below - Disgust	1.40	.662	103

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.887	194.008[b]	4.000	99.000	.000	.887
	Wilks' Lambda	.113	194.008[b]	4.000	99.000	.000	.887
	Hotelling's Trace	7.839	194.008[b]	4.000	99.000	.000	.887
	Roy's Largest Root	7.839	194.008[b]	4.000	99.000	.000	.887

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.431	84.606	9	.000	.722	.745	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	556.377	4	139.094	185.931	.000	.646
	Greenhouse-Geisser	556.377	2.888	192.651	185.931	.000	.646
	Huynh-Feldt	556.377	2.981	186.634	185.931	.000	.646
	Lower-bound	556.377	1.000	556.377	185.931	.000	.646
Error(Emotion)	Sphericity Assumed	305.223	408	.748			
	Greenhouse-Geisser	305.223	294.576	1.036			
	Huynh-Feldt	305.223	304.074	1.004			
	Lower-bound	305.223	102.000	2.992			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.379*	.137	.000	1.986	2.771
	3	1.748*	.163	.000	1.280	2.216
	4	2.660*	.125	.000	2.300	3.020
	5	2.883*	.106	.000	2.579	3.188
2	1	-2.379*	.137	.000	-2.771	-1.986
	3	-.631*	.121	.000	-.978	-.284
	4	.282*	.091	.025	.021	.542
	5	.505*	.088	.000	.252	.758
3	1	-1.748*	.163	.000	-2.216	-1.280
	2	.631*	.121	.000	.284	.978
	4	.913*	.139	.000	.513	1.313
	5	1.136*	.129	.000	.764	1.507
4	1	-2.660*	.125	.000	-3.020	-2.300
	2	-.282*	.091	.025	-.542	-.021
	3	-.913*	.139	.000	-1.313	-.513
	5	.223	.078	.051	.000	.447
5	1	-2.883*	.106	.000	-3.188	-2.579
	2	-.505*	.088	.000	-.758	-.252
	3	-1.136*	.129	.000	-1.507	-.764
	4	-.223	.078	.051	-.447	.000

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Amiable' relates to the emotions below - Happy	3.67	1.184	101
To what extent do you think the word 'Amiable' relates to the emotions below - Sad	1.97	.830	101
To what extent do you think the word 'Amiable' relates to the emotions below - Fear	1.90	.900	101
To what extent do you think the word 'Amiable' relates to the emotions below - Anger	1.72	.918	101
To what extent do you think the word 'Amiable' relates to the emotions below - Disgust	1.78	1.035	101

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.567	31.721[b]	4.000	97.000	.000	.567
	Wilks' Lambda	.433	31.721[b]	4.000	97.000	.000	.567
	Hotelling's Trace	1.308	31.721[b]	4.000	97.000	.000	.567
	Roy's Largest Root	1.308	31.721[b]	4.000	97.000	.000	.567

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.104	222.390	9	.000	.435	.442	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	274.166	4	68.542	89.179	.000	.471
	Greenhouse-Geisser	274.166	1.741	157.442	89.179	.000	.471
	Huynh-Feldt	274.166	1.770	154.931	89.179	.000	.471
	Lower-bound	274.166	1.000	274.166	89.179	.000	.471
Error(Emotion)	Sphericity Assumed	307.434	400	.769			
	Greenhouse-Geisser	307.434	174.138	1.765			
	Huynh-Feldt	307.434	176.961	1.737			
	Lower-bound	307.434	100.000	3.074			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	1.703*	.166	.000	1.226	2.180
	3	1.772*	.165	.000	1.298	2.247
	4	1.950*	.174	.000	1.452	2.449
	5	1.891*	.185	.000	1.360	2.422
2	1	-1.703*	.166	.000	-2.180	-1.226
	3	.069	.069	1.000	-.130	.268
	4	.248*	.071	.007	.044	.451
	5	.188	.069	.072	-.009	.385
3	1	-1.772*	.165	.000	-2.247	-1.298
	2	-.069	.069	1.000	-.268	.130
	4	.178	.080	.283	-.052	.408
	5	.119	.087	1.000	-.131	.369
4	1	-1.950*	.174	.000	-2.449	-1.452
	2	-.248*	.071	.007	-.451	-.044
	3	-.178	.080	.283	-.408	.052
	5	-.059	.066	1.000	-.248	.129
5	1	-1.891*	.185	.000	-2.422	-1.360
	2	-.188	.069	.072	-.385	.009
	3	-.119	.087	1.000	-.369	.131
	4	.059	.066	1.000	-.129	.248

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Appalling' relates to the emotions below - Happy	1.35	.877	105
To what extent do you think the word 'Appalling' relates to the emotions below - Sad	3.49	1.153	105
To what extent do you think the word 'Appalling' relates to the emotions below - Fear	3.08	1.238	105
To what extent do you think the word 'Appalling' relates to the emotions below - Anger	4.11	.902	105
To what extent do you think the word 'Appalling' relates to the emotions below - Disgust	4.58	.875	105

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.805	104.171[b]	4.000	101.000	.000	.805
	Wilks' Lambda	.195	104.171[b]	4.000	101.000	.000	.805
	Hotelling's Trace	4.126	104.171[b]	4.000	101.000	.000	.805
	Roy's Largest Root	4.126	104.171[b]	4.000	101.000	.000	.805

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Epsilon[b] Huynh-Feldt	Epsilon[b] Lower-bound
Emotion	.548	61.661	9	.000	.817	.846	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	648.827	4	162.207	164.431	.000	.613
	Greenhouse-Geisser	648.827	3.267	198.630	164.431	.000	.613
	Huynh-Feldt	648.827	3.385	191.677	164.431	.000	.613
	Lower-bound	648.827	1.000	648.827	164.431	.000	.613
Error(Emotion)	Sphericity Assumed	410.373	416	.986			
	Greenhouse-Geisser	410.373	339.716	1.208			
	Huynh-Feldt	410.373	352.040	1.166			
	Lower-bound	410.373	104.000	3.946			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	95% Confidence Interval for Difference[b] Upper Bound
1	2	-2.133*	.158	.000	-2.586	-1.681
	3	-1.724*	.159	.000	-2.179	-1.269
	4	-2.762*	.153	.000	-3.200	-2.324
	5	-3.229*	.157	.000	-3.678	-2.779
2	1	2.133*	.158	.000	1.681	2.586
	3	.410*	.130	.021	.038	.781
	4	-.629*	.113	.000	-.952	-.306
	5	-1.095*	.130	.000	-1.469	-.722
3	1	1.724*	.159	.000	1.269	2.179
	2	-.410*	.130	.021	-.781	-.038
	4	-1.038*	.126	.000	-1.400	-.676
	5	-1.505*	.143	.000	-1.916	-1.094
4	1	2.762*	.153	.000	2.324	3.200
	2	.629*	.113	.000	.306	.952
	3	1.038*	.126	.000	.676	1.400
	5	-.467*	.083	.000	-.706	-.227
5	1	3.229*	.157	.000	2.779	3.678
	2	1.095*	.130	.000	.722	1.469
	3	1.505*	.143	.000	1.094	1.916
	4	.467*	.083	.000	.227	.706

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Atrocious' relates to the emotions below - Happy	1.21	.597	106
To what extent do you think the word 'Atrocious' relates to the emotions below - Sad	3.16	1.303	106
To what extent do you think the word 'Atrocious' relates to the emotions below - Fear	3.25	1.248	106
To what extent do you think the word 'Atrocious' relates to the emotions below - Anger	4.25	.944	106
To what extent do you think the word 'Atrocious' relates to the emotions below - Disgust	4.61	.763	106

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.911	260.220[b]	4.000	102.000	.000	.911
	Wilks' Lambda	.089	260.220[b]	4.000	102.000	.000	.911
	Hotelling's Trace	10.205	260.220[b]	4.000	102.000	.000	.911
	Roy's Largest Root	10.205	260.220[b]	4.000	102.000	.000	.911

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Epsilon[b] Huynh-Feldt	Epsilon[b] Lower-bound
Emotion	.744	30.545	9	.000	.886	.920	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	743.989	4	185.997	232.489	.000	.689
	Greenhouse-Geisser	743.989	3.542	210.031	232.489	.000	.689
	Huynh-Feldt	743.989	3.681	202.107	232.489	.000	.689
	Lower-bound	743.989	1.000	743.989	232.489	.000	.689
Error(Emotion)	Sphericity Assumed	336.011	420	.800			
	Greenhouse-Geisser	336.011	371.940	.903			
	Huynh-Feldt	336.011	386.522	.869			
	Lower-bound	336.011	105.000	3.200			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.953*	.135	.000	-2.340	-1.566
	3	-2.038*	.131	.000	-2.414	-1.661
	4	-3.038*	.116	.000	-3.370	-2.705
	5	-3.406*	.108	.000	-3.715	-3.096
2	1	1.953*	.135	.000	1.566	2.340
	3	-.085	.129	1.000	-.454	.284
	4	-1.085*	.115	.000	-1.416	-.754
	5	-1.453*	.135	.000	-1.841	-1.064
3	1	2.038*	.131	.000	1.661	2.414
	2	.085	.129	1.000	-.284	.454
	4	-1.000*	.116	.000	-1.333	-.667
	5	-1.368*	.139	.000	-1.766	-.970
4	1	3.038*	.116	.000	2.705	3.370
	2	1.085*	.115	.000	.754	1.416
	3	1.000*	.116	.000	.667	1.333
	5	-.368*	.097	.002	-.646	-.090
5	1	3.406*	.108	.000	3.096	3.715
	2	1.453*	.135	.000	1.064	1.841
	3	1.368*	.139	.000	.970	1.766
	4	.368*	.097	.002	.090	.646

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Beautiful' relates to the emotions below - Happy	4.68	.614	103
To what extent do you think the word 'Beautiful' relates to the emotions below - Sad	2.17	1.279	103
To what extent do you think the word 'Beautiful' relates to the emotions below - Fear	1.57	.892	103
To what extent do you think the word 'Beautiful' relates to the emotions below - Anger	1.44	.836	103
To what extent do you think the word 'Beautiful' relates to the emotions below - Disgust	1.35	.776	103

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.891	202.087[b]	4.000	99.000	.000	.891
	Wilks' Lambda	.109	202.087[b]	4.000	99.000	.000	.891
	Hotelling's Trace	8.165	202.087[b]	4.000	99.000	.000	.891
	Roy's Largest Root	8.165	202.087[b]	4.000	99.000	.000	.891

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.294	122.825	9	.000	.694	.716	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	807.417	4	201.854	308.935	.000	.752
	Greenhouse-Geisser	807.417	2.777	290.720	308.935	.000	.752
	Huynh-Feldt	807.417	2.863	282.031	308.935	.000	.752
	Lower-bound	807.417	1.000	807.417	308.935	.000	.752
Error(Emotion)	Sphericity Assumed	266.583	408	.653			
	Greenhouse-Geisser	266.583	283.285	.941			
	Huynh-Feldt	266.583	292.013	.913			
	Lower-bound	266.583	102.000	2.614			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.505*	.150	.000	2.073	2.936
	3	3.107*	.122	.000	2.757	3.456
	4	3.243*	.121	.000	2.897	3.589
	5	3.330*	.118	.000	2.991	3.669
2	1	-2.505*	.150	.000	-2.936	-2.073
	3	.602*	.118	.000	.263	.941
	4	.738*	.126	.000	.375	1.101
	5	.825*	.130	.000	.451	1.200
3	1	-3.107*	.122	.000	-3.456	-2.757
	2	-.602*	.118	.000	-.941	-.263
	4	.136	.057	.189	-.028	.299
	5	.223	.078	.051	.000	.447
4	1	-3.243*	.121	.000	-3.589	-2.897
	2	-.738*	.126	.000	-1.101	-.375
	3	-.136	.057	.189	-.299	.028
	5	.087	.068	1.000	-.107	.282
5	1	-3.330*	.118	.000	-3.669	-2.991
	2	-.825*	.130	.000	-1.200	-.451
	3	-.223	.078	.051	-.447	.000
	4	-.087	.068	1.000	-.282	.107

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Bright' relates to the emotions below - Happy	4.58	.673	107
To what extent do you think the word 'Bright' relates to the emotions below - Sad	1.54	.780	107
To what extent do you think the word 'Bright' relates to the emotions below - Fear	1.50	.817	107
To what extent do you think the word 'Bright' relates to the emotions below - Anger	1.43	.837	107
To what extent do you think the word 'Bright' relates to the emotions below - Disgust	1.29	.673	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.897	224.343[b]	4.000	103.000	.000	.897
	Wilks' Lambda	.103	224.343[b]	4.000	103.000	.000	.897
	Hotelling's Trace	8.712	224.343[b]	4.000	103.000	.000	.897
	Roy's Largest Root	8.712	224.343[b]	4.000	103.000	.000	.897

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

					Epsilon[b]		
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.448	83.913	9	.000	.688	.708	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	847.951	4	211.988	448.408	.000	.809
	Greenhouse-Geisser	847.951	2.753	308.063	448.408	.000	.809
	Huynh-Feldt	847.951	2.833	299.292	448.408	.000	.809
	Lower-bound	847.951	1.000	847.951	448.408	.000	.809
Error(Emotion)	Sphericity Assumed	200.449	424	.473			
	Greenhouse-Geisser	200.449	291.768	.687			
	Huynh-Feldt	200.449	300.319	.667			
	Lower-bound	200.449	106.000	1.891			

Pairwise Comparisons

Measure: MEASURE_1

					95% Confidence Interval for Difference[b]	
(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	Lower Bound	Upper Bound
1	2	3.037*	.118	.000	2.699	3.376
	3	3.084*	.123	.000	2.733	3.435
	4	3.150*	.116	.000	2.816	3.483
	5	3.290*	.110	.000	2.973	3.606
2	1	-3.037*	.118	.000	-3.376	-2.699
	3	.047	.061	1.000	-.129	.223
	4	.112	.082	1.000	-.124	.348
	5	.252*	.073	.008	.043	.461
3	1	-3.084*	.123	.000	-3.435	-2.733
	2	-.047	.061	1.000	-.223	.129
	4	.065	.083	1.000	-.173	.304
	5	.206	.075	.070	-.009	.420
4	1	-3.150*	.116	.000	-3.483	-2.816
	2	-.112	.082	1.000	-.348	.124
	3	-.065	.083	1.000	-.304	.173
	5	.140	.073	.584	-.070	.350
5	1	-3.290*	.110	.000	-3.606	-2.973
	2	-.252*	.073	.008	-.461	-.043
	3	-.206	.075	.070	-.420	.009
	4	-.140	.073	.584	-.350	.070

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Brilliant' relates to the emotions below - Happy	4.78	.460	108
To what extent do you think the word 'Brilliant' relates to the emotions below - Sad	1.42	.750	108
To what extent do you think the word 'Brilliant' relates to the emotions below - Fear	1.38	.720	108
To what extent do you think the word 'Brilliant' relates to the emotions below - Anger	1.48	.912	108
To what extent do you think the word 'Brilliant' relates to the emotions below - Disgust	1.33	.697	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.939	401.800[b]	4.000	104.000	.000	.939
	Wilks' Lambda	.061	401.800[b]	4.000	104.000	.000	.939
	Hotelling's Trace	15.454	401.800[b]	4.000	104.000	.000	.939
	Roy's Largest Root	15.454	401.800[b]	4.000	104.000	.000	.939

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.428	89.496	9	.000	.746	.770	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	985.419	4	246.355	664.893	.000	.861
	Greenhouse-Geisser	985.419	2.984	330.184	664.893	.000	.861
	Huynh-Feldt	985.419	3.080	319.988	664.893	.000	.861
	Lower-bound	985.419	1.000	985.419	664.893	.000	.861
Error(Emotion)	Sphericity Assumed	158.581	428	.371			
	Greenhouse-Geisser	158.581	319.337	.497			
	Huynh-Feldt	158.581	329.512	.481			
	Lower-bound	158.581	107.000	1.482			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	3.361*	.093	.000	3.096	3.626
	3	3.398*	.090	.000	3.140	3.657
	4	3.296*	.105	.000	2.996	3.596
	5	3.444*	.092	.000	3.180	3.709
2	1	-3.361*	.093	.000	-3.626	-3.096
	3	.037	.049	1.000	-.104	.178
	4	-.065	.089	1.000	-.321	.192
	5	.083	.071	1.000	-.120	.287
3	1	-3.398*	.090	.000	-3.657	-3.140
	2	-.037	.049	1.000	-.178	.104
	4	-.102	.090	1.000	-.360	.157
	5	.046	.066	1.000	-.144	.236
4	1	-3.296*	.105	.000	-3.596	-2.996
	2	.065	.089	1.000	-.192	.321
	3	.102	.090	1.000	-.157	.360
	5	.148	.067	.288	-.043	.340
5	1	-3.444*	.092	.000	-3.709	-3.180
	2	-.083	.071	1.000	-.287	.120
	3	-.046	.066	1.000	-.236	.144
	4	-.148	.067	.288	-.340	.043

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Contaminated' relates to the emotions below - Happy	1.38	.820	107
To what extent do you think the word 'Contaminated' relates to the emotions below - Sad	2.89	1.334	107
To what extent do you think the word 'Contaminated' relates to the emotions below - Fear	3.89	1.049	107
To what extent do you think the word 'Contaminated' relates to the emotions below - Anger	3.00	1.310	107
To what extent do you think the word 'Contaminated' relates to the emotions below - Disgust	4.31	.873	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.822	119.203[b]	4.000	103.000	.000	.822
	Wilks' Lambda	.178	119.203[b]	4.000	103.000	.000	.822
	Hotelling's Trace	4.629	119.203[b]	4.000	103.000	.000	.822
	Roy's Largest Root	4.629	119.203[b]	4.000	103.000	.000	.822

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.751	29.851	9	.000	.886	.921	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	543.907	4	135.977	143.958	.000	.576
	Greenhouse-Geisser	543.907	3.545	153.423	143.958	.000	.576
	Huynh-Feldt	543.907	3.683	147.685	143.958	.000	.576
	Lower-bound	543.907	1.000	543.907	143.958	.000	.576
Error(Emotion)	Sphericity Assumed	400.493	424	.945			
	Greenhouse-Geisser	400.493	375.785	1.066			
	Huynh-Feldt	400.493	390.387	1.026			
	Lower-bound	400.493	106.000	3.778			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.505*	.147	.000	-1.926	-1.084
	3	-2.505*	.144	.000	-2.917	-2.092
	4	-1.617*	.149	.000	-2.045	-1.188
	5	-2.925*	.135	.000	-3.313	-2.538
2	1	1.505*	.147	.000	1.084	1.926
	3	-1.000*	.127	.000	-1.363	-.637
	4	-.112	.119	1.000	-.453	.229
	5	-1.421*	.145	.000	-1.838	-1.003
3	1	2.505*	.144	.000	2.092	2.917
	2	1.000*	.127	.000	.637	1.363
	4	.888*	.121	.000	.540	1.235
	5	-.421*	.105	.001	-.720	-.121
4	1	1.617*	.149	.000	1.188	2.045
	2	.112	.119	1.000	-.229	.453
	3	-.888*	.121	.000	-1.235	-.540
	5	-1.308*	.129	.000	-1.678	-.938
5	1	2.925*	.135	.000	2.538	3.313
	2	1.421*	.145	.000	1.003	1.838
	3	.421*	.105	.001	.121	.720
	4	1.308*	.129	.000	.938	1.678

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Courageous' relates to the emotions below - Happy	4.13	.887	108
To what extent do you think the word 'Courageous' relates to the emotions below - Sad	1.99	1.028	108
To what extent do you think the word 'Courageous' relates to the emotions below - Fear	3.19	1.336	108
To what extent do you think the word 'Courageous' relates to the emotions below - Anger	2.00	1.111	108
To what extent do you think the word 'Courageous' relates to the emotions below - Disgust	1.55	.802	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.833	130.002[b]	4.000	104.000	.000	.833
	Wilks' Lambda	.167	130.002[b]	4.000	104.000	.000	.833
	Hotelling's Trace	5.000	130.002[b]	4.000	104.000	.000	.833
	Roy's Largest Root	5.000	130.002[b]	4.000	104.000	.000	.833

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.643	46.618	9	.000	.836	.866	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	489.322	4	122.331	131.328	.000	.551
	Greenhouse-Geisser	489.322	3.345	146.302	131.328	.000	.551
	Huynh-Feldt	489.322	3.465	141.199	131.328	.000	.551
	Lower-bound	489.322	1.000	489.322	131.328	.000	.551
Error(Emotion)	Sphericity Assumed	398.678	428	.931			
	Greenhouse-Geisser	398.678	357.872	1.114			
	Huynh-Feldt	398.678	370.807	1.075			
	Lower-bound	398.678	107.000	3.726			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.139*	.144	.000	1.725	2.553
	3	.935*	.163	.000	.468	1.402
	4	2.130*	.145	.000	1.713	2.546
	5	2.583*	.119	.000	2.242	2.925
2	1	-2.139*	.144	.000	-2.553	-1.725
	3	-1.204*	.132	.000	-1.582	-.825
	4	-.009	.113	1.000	-.333	.314
	5	.444*	.101	.000	.154	.735
3	1	-.935*	.163	.000	-1.402	-.468
	2	1.204*	.132	.000	.825	1.582
	4	1.194*	.144	.000	.782	1.607
	5	1.648*	.138	.000	1.254	2.042
4	1	-2.130*	.145	.000	-2.546	-1.713
	2	.009	.113	1.000	-.314	.333
	3	-1.194*	.144	.000	-1.607	-.782
	5	.454*	.099	.000	.171	.737
5	1	-2.583*	.119	.000	-2.925	-2.242
	2	-.444*	.101	.000	-.735	-.154
	3	-1.648*	.138	.000	-2.042	-1.254
	4	-.454*	.099	.000	-.737	-.171

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Cuddly' relates to the emotions below - Happy	4.64	.631	109
To what extent do you think the word 'Cuddly' relates to the emotions below - Sad	2.51	1.385	109
To what extent do you think the word 'Cuddly' relates to the emotions below - Fear	1.89	1.181	109
To what extent do you think the word 'Cuddly' relates to the emotions below - Anger	1.36	.752	109
To what extent do you think the word 'Cuddly' relates to the emotions below - Disgust	1.32	.665	109

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.909	261.147[b]	4.000	105.000	.000	.909
	Wilks' Lambda	.091	261.147[b]	4.000	105.000	.000	.909
	Hotelling's Trace	9.948	261.147[b]	4.000	105.000	.000	.909
	Roy's Largest Root	9.948	261.147[b]	4.000	105.000	.000	.909

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

					Epsilon[b]		
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.303	126.974	9	.000	.705	.726	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	821.387	4	205.347	269.952	.000	.714
	Greenhouse-Geisser	821.387	2.822	291.103	269.952	.000	.714
	Huynh-Feldt	821.387	2.905	282.736	269.952	.000	.714
	Lower-bound	821.387	1.000	821.387	269.952	.000	.714
Error(Emotion)	Sphericity Assumed	328.613	432	.761			
	Greenhouse-Geisser	328.613	304.737	1.078			
	Huynh-Feldt	328.613	313.755	1.047			
	Lower-bound	328.613	108.000	3.043			

Pairwise Comparisons

Measure: MEASURE_1

					95% Confidence Interval for Difference[b]	
(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	Lower Bound	Upper Bound
1	2	2.128*	.155	.000	1.685	2.572
	3	2.752*	.139	.000	2.355	3.150
	4	3.284*	.108	.000	2.974	3.595
	5	3.321*	.104	.000	3.023	3.620
2	1	-2.128*	.155	.000	-2.572	-1.685
	3	.624*	.116	.000	.292	.955
	4	1.156*	.129	.000	.786	1.526
	5	1.193*	.131	.000	.816	1.569
3	1	-2.752*	.139	.000	-3.150	-2.355
	2	-.624*	.116	.000	-.955	-.292
	4	.532*	.105	.000	.232	.832
	5	.569*	.113	.000	.245	.893
4	1	-3.284*	.108	.000	-3.595	-2.974
	2	-1.156*	.129	.000	-1.526	-.786
	3	-.532*	.105	.000	-.832	-.232
	5	.037	.052	1.000	-.112	.186
5	1	-3.321*	.104	.000	-3.620	-3.023
	2	-1.193*	.131	.000	-1.569	-.816
	3	-.569*	.113	.000	-.893	-.245
	4	-.037	.052	1.000	-.186	.112

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Delightful' relates to the emotions below - Happy	4.76	.609	108
To what extent do you think the word 'Delightful' relates to the emotions below - Sad	1.45	.778	108
To what extent do you think the word 'Delightful' relates to the emotions below - Fear	1.29	.627	108
To what extent do you think the word 'Delightful' relates to the emotions below - Anger	1.30	.615	108
To what extent do you think the word 'Delightful' relates to the emotions below - Disgust	1.31	.706	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.920	300.256[b]	4.000	104.000	.000	.920
	Wilks' Lambda	.080	300.256[b]	4.000	104.000	.000	.920
	Hotelling's Trace	11.548	300.256[b]	4.000	104.000	.000	.920
	Roy's Largest Root	11.548	300.256[b]	4.000	104.000	.000	.920

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.164	190.314	9	.000	.494	.503	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	1013.307	4	253.327	739.123	.000	.874
	Greenhouse-Geisser	1013.307	1.975	512.987	739.123	.000	.874
	Huynh-Feldt	1013.307	2.012	503.576	739.123	.000	.874
	Lower-bound	1013.307	1.000	1013.307	739.123	.000	.874
Error(Emotion)	Sphericity Assumed	146.693	428	.343			
	Greenhouse-Geisser	146.693	211.358	.694			
	Huynh-Feldt	146.693	215.308	.681			
	Lower-bound	146.693	107.000	1.371			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	3.306*	.115	.000	2.976	3.635
	3	3.472*	.106	.000	3.167	3.777
	4	3.463*	.101	.000	3.172	3.754
	5	3.444*	.110	.000	3.128	3.761
2	1	-3.306*	.115	.000	-3.635	-2.976
	3	.167*	.050	.012	.023	.310
	4	.157	.059	.089	-.012	.327
	5	.139	.058	.184	-.027	.305
3	1	-3.472*	.106	.000	-3.777	-3.167
	2	-.167*	.050	.012	-.310	-.023
	4	-.009	.052	1.000	-.158	.139
	5	-.028	.052	1.000	-.176	.120
4	1	-3.463*	.101	.000	-3.754	-3.172
	2	-.157	.059	.089	-.327	.012
	3	.009	.052	1.000	-.139	.158
	5	-.019	.042	1.000	-.138	.101
5	1	-3.444*	.110	.000	-3.761	-3.128
	2	-.139	.058	.184	-.305	.027
	3	.028	.052	1.000	-.120	.176
	4	.019	.042	1.000	-.101	.138

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Desirable' relates to the emotions below - Happy	4.25	.701	106
To what extent do you think the word 'Desirable' relates to the emotions below - Sad	1.92	.987	106
To what extent do you think the word 'Desirable' relates to the emotions below - Fear	2.04	1.137	106
To what extent do you think the word 'Desirable' relates to the emotions below - Anger	1.62	.889	106
To what extent do you think the word 'Desirable' relates to the emotions below - Disgust	1.57	.895	106

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.850	144.450[b]	4.000	102.000	.000	.850
	Wilks' Lambda	.150	144.450[b]	4.000	102.000	.000	.850
	Hotelling's Trace	5.665	144.450[b]	4.000	102.000	.000	.850
	Roy's Largest Root	5.665	144.450[b]	4.000	102.000	.000	.850

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.686	38.943	9	.000	.855	.888	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	529.577	4	132.394	204.115	.000	.660
	Greenhouse-Geisser	529.577	3.422	154.765	204.115	.000	.660
	Huynh-Feldt	529.577	3.551	149.131	204.115	.000	.660
	Lower-bound	529.577	1.000	529.577	204.115	.000	.660
Error(Emotion)	Sphericity Assumed	272.423	420	.649			
	Greenhouse-Geisser	272.423	359.291	.758			
	Huynh-Feldt	272.423	372.864	.731			
	Lower-bound	272.423	105.000	2.595			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.330*	.128	.000	1.964	2.696
	3	2.208*	.137	.000	1.816	2.599
	4	2.623*	.115	.000	2.293	2.952
	5	2.679*	.118	.000	2.341	3.018
2	1	-2.330*	.128	.000	-2.696	-1.964
	3	-.123	.116	1.000	-.455	.210
	4	.292*	.095	.026	.021	.564
	5	.349*	.107	.015	.041	.657
3	1	-2.208*	.137	.000	-2.599	-1.816
	2	.123	.116	1.000	-.210	.455
	4	.415*	.101	.001	.125	.705
	5	.472*	.100	.000	.184	.760
4	1	-2.623*	.115	.000	-2.952	-2.293
	2	-.292*	.095	.026	-.564	-.021
	3	-.415*	.101	.001	-.705	-.125
	5	.057	.078	1.000	-.167	.280
5	1	-2.679*	.118	.000	-3.018	-2.341
	2	-.349*	.107	.015	-.657	-.041
	3	-.472*	.100	.000	-.760	-.184
	4	-.057	.078	1.000	-.280	.167

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Dirty' relates to the emotions below - Happy	1.51	.840	107
To what extent do you think the word 'Dirty' relates to the emotions below - Sad	2.92	1.326	107
To what extent do you think the word 'Dirty' relates to the emotions below - Fear	3.09	1.263	107
To what extent do you think the word 'Dirty' relates to the emotions below - Anger	3.15	1.265	107
To what extent do you think the word 'Dirty' relates to the emotions below - Disgust	4.53	.756	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.858	155.492[b]	4.000	103.000	.000	.858
	Wilks' Lambda	.142	155.492[b]	4.000	103.000	.000	.858
	Hotelling's Trace	6.039	155.492[b]	4.000	103.000	.000	.858
	Roy's Largest Root	6.039	155.492[b]	4.000	103.000	.000	.858

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.742	31.094	9	.000	.877	.910	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	490.815	4	122.704	135.350	.000	.561
	Greenhouse-Geisser	490.815	3.506	139.988	135.350	.000	.561
	Huynh-Feldt	490.815	3.641	134.811	135.350	.000	.561
	Lower-bound	490.815	1.000	490.815	135.350	.000	.561
Error(Emotion)	Sphericity Assumed	384.385	424	.907			
	Greenhouse-Geisser	384.385	371.649	1.034			
	Huynh-Feldt	384.385	385.920	.996			
	Lower-bound	384.385	106.000	3.626			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.402*	.135	.000	-1.790	-1.014
	3	-1.579*	.138	.000	-1.975	-1.184
	4	-1.636*	.141	.000	-2.041	-1.230
	5	-3.019*	.119	.000	-3.361	-2.676
2	1	1.402*	.135	.000	1.014	1.790
	3	-.178	.133	1.000	-.560	.205
	4	-.234	.097	.180	-.512	.045
	5	-1.617*	.139	.000	-2.015	-1.218
3	1	1.579*	.138	.000	1.184	1.975
	2	.178	.133	1.000	-.205	.560
	4	-.056	.125	1.000	-.415	.303
	5	-1.439*	.130	.000	-1.813	-1.066
4	1	1.636*	.141	.000	1.230	2.041
	2	.234	.097	.180	-.045	.512
	3	.056	.125	1.000	-.303	.415
	5	-1.383*	.136	.000	-1.774	-.992
5	1	3.019*	.119	.000	2.676	3.361
	2	1.617*	.139	.000	1.218	2.015
	3	1.439*	.130	.000	1.066	1.813
	4	1.383*	.136	.000	.992	1.774

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Disgusting' relates to the emotions below - Happy	1.31	.779	108
To what extent do you think the word 'Disgusting' relates to the emotions below - Sad	2.92	1.333	108
To what extent do you think the word 'Disgusting' relates to the emotions below - Fear	3.00	1.297	108
To what extent do you think the word 'Disgusting' relates to the emotions below - Anger	3.42	1.239	108
To what extent do you think the word 'Disgusting' relates to the emotions below - Disgust	4.78	.702	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.885	200.946[b]	4.000	104.000	.000	.885
	Wilks' Lambda	.115	200.946[b]	4.000	104.000	.000	.885
	Hotelling's Trace	7.729	200.946[b]	4.000	104.000	.000	.885
	Roy's Largest Root	7.729	200.946[b]	4.000	104.000	.000	.885

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

					Epsilon[b]		
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.830	19.640	9	.020	.919	.956	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	667.167	4	166.792	173.592	.000	.619
	Greenhouse-Geisser	667.167	3.677	181.429	173.592	.000	.619
	Huynh-Feldt	667.167	3.824	174.451	173.592	.000	.619
	Lower-bound	667.167	1.000	667.167	173.592	.000	.619
Error(Emotion)	Sphericity Assumed	411.233	428	.961			
	Greenhouse-Geisser	411.233	393.469	1.045			
	Huynh-Feldt	411.233	409.209	1.005			
	Lower-bound	411.233	107.000	3.843			

Pairwise Comparisons

Measure: MEASURE_1

					95% Confidence Interval for Difference[b]	
(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	Lower Bound	Upper Bound
1	2	-1.611*	.136	.000	-2.001	-1.221
	3	-1.694*	.139	.000	-2.093	-1.296
	4	-2.111*	.146	.000	-2.530	-1.692
	5	-3.472*	.122	.000	-3.823	-3.122
2	1	1.611*	.136	.000	1.221	2.001
	3	-.083	.117	1.000	-.419	.252
	4	-.500*	.135	.003	-.887	-.113
	5	-1.861*	.146	.000	-2.278	-1.444
3	1	1.694*	.139	.000	1.296	2.093
	2	.083	.117	1.000	-.252	.419
	4	-.417*	.132	.020	-.794	-.039
	5	-1.778*	.135	.000	-2.165	-1.391
4	1	2.111*	.146	.000	1.692	2.530
	2	.500*	.135	.003	.113	.887
	3	.417*	.132	.020	.039	.794
	5	-1.361*	.123	.000	-1.714	-1.008
5	1	3.472*	.122	.000	3.122	3.823
	2	1.861*	.146	.000	1.444	2.278
	3	1.778*	.135	.000	1.391	2.165
	4	1.361*	.123	.000	1.008	1.714

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Efficient' relates to the emotions below - Happy	3.79	.948	108
To what extent do you think the word 'Efficient' relates to the emotions below - Sad	1.94	1.126	108
To what extent do you think the word 'Efficient' relates to the emotions below - Fear	1.95	1.122	108
To what extent do you think the word 'Efficient' relates to the emotions below - Anger	1.83	1.019	108
To what extent do you think the word 'Efficient' relates to the emotions below - Disgust	1.63	.933	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.735	71.960[b]	4.000	104.000	.000	.735
	Wilks' Lambda	.265	71.960[b]	4.000	104.000	.000	.735
	Hotelling's Trace	2.768	71.960[b]	4.000	104.000	.000	.735
	Roy's Largest Root	2.768	71.960[b]	4.000	104.000	.000	.735

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.505	72.064	9	.000	.735	.758	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	334.804	4	83.701	142.841	.000	.572
	Greenhouse-Geisser	334.804	2.940	113.868	142.841	.000	.572
	Huynh-Feldt	334.804	3.032	110.409	142.841	.000	.572
	Lower-bound	334.804	1.000	334.804	142.841	.000	.572
Error(Emotion)	Sphericity Assumed	250.796	428	.586			
	Greenhouse-Geisser	250.796	314.610	.797			
	Huynh-Feldt	250.796	324.466	.773			
	Lower-bound	250.796	107.000	2.344			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	1.843*	.130	.000	1.471	2.214
	3	1.833*	.129	.000	1.465	2.202
	4	1.954*	.124	.000	1.599	2.308
	5	2.157*	.128	.000	1.791	2.523
2	1	-1.843*	.130	.000	-2.214	-1.471
	3	-.009	.087	1.000	-.258	.239
	4	.111	.093	1.000	-.156	.379
	5	.315*	.088	.005	.063	.567
3	1	-1.833*	.129	.000	-2.202	-1.465
	2	.009	.087	1.000	-.239	.258
	4	.120	.080	1.000	-.108	.349
	5	.324*	.091	.006	.063	.585
4	1	-1.954*	.124	.000	-2.308	-1.599
	2	-.111	.093	1.000	-.379	.156
	3	-.120	.080	1.000	-.349	.108
	5	.204*	.071	.047	.001	.406
5	1	-2.157*	.128	.000	-2.523	-1.791
	2	-.315*	.088	.005	-.567	-.063
	3	-.324*	.091	.006	-.585	-.063
	4	-.204*	.071	.047	-.406	-.001

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Elated' relates to the emotions below - Happy	4.62	.773	107
To what extent do you think the word 'Elated' relates to the emotions below - Sad	1.51	.955	107
To what extent do you think the word 'Elated' relates to the emotions below - Fear	1.64	1.013	107
To what extent do you think the word 'Elated' relates to the emotions below - Anger	1.53	.955	107
To what extent do you think the word 'Elated' relates to the emotions below - Disgust	1.37	.734	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.883	193.726[b]	4.000	103.000	.000	.883
	Wilks' Lambda	.117	193.726[b]	4.000	103.000	.000	.883
	Hotelling's Trace	7.523	193.726[b]	4.000	103.000	.000	.883
	Roy's Largest Root	7.523	193.726[b]	4.000	103.000	.000	.883

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.197	169.492	9	.000	.540	.551	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	827.824	4	206.956	365.964	.000	.775
	Greenhouse-Geisser	827.824	2.159	383.501	365.964	.000	.775
	Huynh-Feldt	827.824	2.205	375.431	365.964	.000	.775
	Lower-bound	827.824	1.000	827.824	365.964	.000	.775
Error(Emotion)	Sphericity Assumed	239.776	424	.566			
	Greenhouse-Geisser	239.776	228.811	1.048			
	Huynh-Feldt	239.776	233.729	1.026			
	Lower-bound	239.776	106.000	2.262			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	3.103*	.137	.000	2.711	3.495
	3	2.981*	.141	.000	2.577	3.386
	4	3.084*	.145	.000	2.669	3.500
	5	3.243*	.122	.000	2.892	3.594
2	1	-3.103*	.137	.000	-3.495	-2.711
	3	-.121	.080	1.000	-.352	.109
	4	-.019	.081	1.000	-.250	.213
	5	.140	.068	.426	-.056	.336
3	1	-2.981*	.141	.000	-3.386	-2.577
	2	.121	.080	1.000	-.109	.352
	4	.103	.077	1.000	-.119	.325
	5	.262*	.067	.002	.070	.453
4	1	-3.084*	.145	.000	-3.500	-2.669
	2	.019	.081	1.000	-.213	.250
	3	-.103	.077	1.000	-.325	.119
	5	.159*	.055	.047	.001	.317
5	1	-3.243*	.122	.000	-3.594	-2.892
	2	-.140	.068	.426	-.336	.056
	3	-.262*	.067	.002	-.453	-.070
	4	-.159*	.055	.047	-.317	-.001

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Empowered' relates to the emotions below - Happy	4.44	.808	105
To what extent do you think the word 'Empowered' relates to the emotions below - Sad	1.72	.904	105
To what extent do you think the word 'Empowered' relates to the emotions below - Fear	2.16	1.210	105
To what extent do you think the word 'Empowered' relates to the emotions below - Anger	1.91	1.202	105
To what extent do you think the word 'Empowered' relates to the emotions below - Disgust	1.43	.770	105

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.857	151.430[b]	4.000	101.000	.000	.857
	Wilks' Lambda	.143	151.430[b]	4.000	101.000	.000	.857
	Hotelling's Trace	5.997	151.430[b]	4.000	101.000	.000	.857
	Roy's Largest Root	5.997	151.430[b]	4.000	101.000	.000	.857

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.503	70.457	9	.000	.764	.789	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	611.638	4	152.910	197.817	.000	.655
	Greenhouse-Geisser	611.638	3.054	200.242	197.817	.000	.655
	Huynh-Feldt	611.638	3.157	193.718	197.817	.000	.655
	Lower-bound	611.638	1.000	611.638	197.817	.000	.655
Error(Emotion)	Sphericity Assumed	321.562	416	.773			
	Greenhouse-Geisser	321.562	317.667	1.012			
	Huynh-Feldt	321.562	328.365	.979			
	Lower-bound	321.562	104.000	3.092			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.714*	.135	.000	2.327	3.102
	3	2.276*	.152	.000	1.840	2.713
	4	2.524*	.157	.000	2.074	2.973
	5	3.010*	.123	.000	2.657	3.362
2	1	-2.714*	.135	.000	-3.102	-2.327
	3	-.438*	.102	.000	-.731	-.145
	4	-.190	.120	1.000	-.536	.155
	5	.295*	.078	.002	.073	.518
3	1	-2.276*	.152	.000	-2.713	-1.840
	2	.438*	.102	.000	.145	.731
	4	.248	.116	.355	-.086	.581
	5	.733*	.106	.000	.430	1.037
4	1	-2.524*	.157	.000	-2.973	-2.074
	2	.190	.120	1.000	-.155	.536
	3	-.248	.116	.355	-.581	.086
	5	.486*	.102	.000	.192	.779
5	1	-3.010*	.123	.000	-3.362	-2.657
	2	-.295*	.078	.002	-.518	-.073
	3	-.733*	.106	.000	-1.037	-.430
	4	-.486*	.102	.000	-.779	-.192

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Excited' relates to the emotions below - Happy	4.78	.588	105
To what extent do you think the word 'Excited' relates to the emotions below - Sad	1.38	.712	105
To what extent do you think the word 'Excited' relates to the emotions below - Fear	2.34	1.343	105
To what extent do you think the word 'Excited' relates to the emotions below - Anger	1.52	.952	105
To what extent do you think the word 'Excited' relates to the emotions below - Disgust	1.32	.686	105

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.923	303.910[b]	4.000	101.000	.000	.923
	Wilks' Lambda	.077	303.910[b]	4.000	101.000	.000	.923
	Hotelling's Trace	12.036	303.910[b]	4.000	101.000	.000	.923
	Roy's Largest Root	12.036	303.910[b]	4.000	101.000	.000	.923

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.319	116.952	9	.000	.687	.707	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	898.030	4	224.508	344.925	.000	.768
	Greenhouse-Geisser	898.030	2.748	326.826	344.925	.000	.768
	Huynh-Feldt	898.030	2.830	317.360	344.925	.000	.768
	Lower-bound	898.030	1.000	898.030	344.925	.000	.768
Error(Emotion)	Sphericity Assumed	270.770	416	.651			
	Greenhouse-Geisser	270.770	285.765	.948			
	Huynh-Feldt	270.770	294.288	.920			
	Lower-bound	270.770	104.000	2.604			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	3.400*	.106	.000	3.095	3.705
	3	2.438*	.155	.000	1.994	2.882
	4	3.257*	.126	.000	2.895	3.619
	5	3.457*	.103	.000	3.161	3.753
2	1	-3.400*	.106	.000	-3.705	-3.095
	3	-.962*	.125	.000	-1.322	-.602
	4	-.143	.090	1.000	-.402	.116
	5	.057	.063	1.000	-.124	.238
3	1	-2.438*	.155	.000	-2.882	-1.994
	2	.962*	.125	.000	.602	1.322
	4	.819*	.119	.000	.477	1.161
	5	1.019*	.124	.000	.663	1.375
4	1	-3.257*	.126	.000	-3.619	-2.895
	2	.143	.090	1.000	-.116	.402
	3	-.819*	.119	.000	-1.161	-.477
	5	.200*	.068	.041	.004	.396
5	1	-3.457*	.103	.000	-3.753	-3.161
	2	-.057	.063	1.000	-.238	.124
	3	-1.019*	.124	.000	-1.375	-.663
	4	-.200*	.068	.041	-.396	-.004

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Festering' relates to the emotions below - Happy	1.45	.782	106
To what extent do you think the word 'Festering' relates to the emotions below - Sad	2.83	1.183	106
To what extent do you think the word 'Festering' relates to the emotions below - Fear	3.24	1.262	106
To what extent do you think the word 'Festering' relates to the emotions below - Anger	3.14	1.283	106
To what extent do you think the word 'Festering' relates to the emotions below - Disgust	3.98	1.211	106

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.700	59.637[b]	4.000	102.000	.000	.700
	Wilks' Lambda	.300	59.637[b]	4.000	102.000	.000	.700
	Hotelling's Trace	2.339	59.637[b]	4.000	102.000	.000	.700
	Roy's Largest Root	2.339	59.637[b]	4.000	102.000	.000	.700

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.721	33.832	9	.000	.870	.903	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	364.125	4	91.031	86.446	.000	.452
	Greenhouse-Geisser	364.125	3.479	104.661	86.446	.000	.452
	Huynh-Feldt	364.125	3.613	100.785	86.446	.000	.452
	Lower-bound	364.125	1.000	364.125	86.446	.000	.452
Error(Emotion)	Sphericity Assumed	442.275	420	1.053			
	Greenhouse-Geisser	442.275	365.303	1.211			
	Huynh-Feldt	442.275	379.352	1.166			
	Lower-bound	442.275	105.000	4.212			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.377*	.134	.000	-1.761	-.994
	3	-1.783*	.152	.000	-2.218	-1.348
	4	-1.689*	.152	.000	-2.124	-1.253
	5	-2.528*	.167	.000	-3.007	-2.049
2	1	1.377*	.134	.000	.994	1.761
	3	-.406*	.117	.008	-.742	-.069
	4	-.311	.122	.124	-.662	.040
	5	-1.151*	.154	.000	-1.592	-.710
3	1	1.783*	.152	.000	1.348	2.218
	2	.406*	.117	.008	.069	.742
	4	.094	.105	1.000	-.207	.396
	5	-.745*	.148	.000	-1.170	-.321
4	1	1.689*	.152	.000	1.253	2.124
	2	.311	.122	.124	-.040	.662
	3	-.094	.105	1.000	-.396	.207
	5	-.840*	.146	.000	-1.259	-.420
5	1	2.528*	.167	.000	2.049	3.007
	2	1.151*	.154	.000	.710	1.592
	3	.745*	.148	.000	.321	1.170
	4	.840*	.146	.000	.420	1.259

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Filthy' relates to the emotions below - Happy	1.36	.792	107
To what extent do you think the word 'Filthy' relates to the emotions below - Sad	2.50	1.284	107
To what extent do you think the word 'Filthy' relates to the emotions below - Fear	2.76	1.316	107
To what extent do you think the word 'Filthy' relates to the emotions below - Anger	3.04	1.317	107
To what extent do you think the word 'Filthy' relates to the emotions below - Disgust	4.69	.679	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.888	204.162[b]	4.000	103.000	.000	.888
	Wilks' Lambda	.112	204.162[b]	4.000	103.000	.000	.888
	Hotelling's Trace	7.929	204.162[b]	4.000	103.000	.000	.888
	Roy's Largest Root	7.929	204.162[b]	4.000	103.000	.000	.888

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.832	19.204	9	.024	.920	.957	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	619.234	4	154.808	160.578	.000	.602
	Greenhouse-Geisser	619.234	3.680	168.256	160.578	.000	.602
	Huynh-Feldt	619.234	3.829	161.718	160.578	.000	.602
	Lower-bound	619.234	1.000	619.234	160.578	.000	.602
Error(Emotion)	Sphericity Assumed	408.766	424	.964			
	Greenhouse-Geisser	408.766	390.112	1.048			
	Huynh-Feldt	408.766	405.885	1.007			
	Lower-bound	408.766	106.000	3.856			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.150*	.126	.000	-1.510	-.789
	3	-1.402*	.135	.000	-1.788	-1.016
	4	-1.682*	.146	.000	-2.100	-1.264
	5	-3.336*	.116	.000	-3.668	-3.005
2	1	1.150*	.126	.000	.789	1.510
	3	-.252	.127	.503	-.618	.113
	4	-.533*	.139	.002	-.933	-.133
	5	-2.187*	.146	.000	-2.604	-1.770
3	1	1.402*	.135	.000	1.016	1.788
	2	.252	.127	.503	-.113	.618
	4	-.280	.125	.271	-.639	.078
	5	-1.935*	.141	.000	-2.340	-1.529
4	1	1.682*	.146	.000	1.264	2.100
	2	.533*	.139	.002	.133	.933
	3	.280	.125	.271	-.078	.639
	5	-1.654*	.138	.000	-2.050	-1.258
5	1	3.336*	.116	.000	3.005	3.668
	2	2.187*	.146	.000	1.770	2.604
	3	1.935*	.141	.000	1.529	2.340
	4	1.654*	.138	.000	1.258	2.050

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Foul' relates to the emotions below - Happy	1.19	.549	108
To what extent do you think the word 'Foul' relates to the emotions below - Sad	2.69	1.323	108
To what extent do you think the word 'Foul' relates to the emotions below - Fear	2.97	1.300	108
To what extent do you think the word 'Foul' relates to the emotions below - Anger	3.69	1.265	108
To what extent do you think the word 'Foul' relates to the emotions below - Disgust	4.66	.614	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.926	326.200[b]	4.000	104.000	.000	.926
	Wilks' Lambda	.074	326.200[b]	4.000	104.000	.000	.926
	Hotelling's Trace	12.546	326.200[b]	4.000	104.000	.000	.926
	Roy's Largest Root	12.546	326.200[b]	4.000	104.000	.000	.926

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.500*	.132	.000	-1.878	-1.122
	3	-1.787*	.129	.000	-2.157	-1.417
	4	-2.500*	.140	.000	-2.900	-2.100
	5	-3.472*	.095	.000	-3.745	-3.199
2	1	1.500*	.132	.000	1.122	1.878
	3	-.287	.123	.212	-.639	.065
	4	-1.000*	.144	.000	-1.411	-.589
	5	-1.972*	.142	.000	-2.379	-1.565
3	1	1.787*	.129	.000	1.417	2.157
	2	.287	.123	.212	-.065	.639
	4	-.713*	.129	.000	-1.083	-.343
	5	-1.685*	.137	.000	-2.078	-1.292
4	1	2.500*	.140	.000	2.100	2.900
	2	1.000*	.144	.000	.589	1.411
	3	.713*	.129	.000	.343	1.083
	5	-.972*	.130	.000	-1.344	-.600
5	1	3.472*	.095	.000	3.199	3.745
	2	1.972*	.142	.000	1.565	2.379
	3	1.685*	.137	.000	1.292	2.078
	4	.972*	.130	.000	.600	1.344

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Fulfilled' relates to the emotions below - Happy	4.55	.818	106
To what extent do you think the word 'Fulfilled' relates to the emotions below - Sad	1.69	.989	106
To what extent do you think the word 'Fulfilled' relates to the emotions below - Fear	1.62	1.018	106
To what extent do you think the word 'Fulfilled' relates to the emotions below - Anger	1.57	.966	106
To what extent do you think the word 'Fulfilled' relates to the emotions below - Disgust	1.40	.752	106

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.848	142.351[b]	4.000	102.000	.000	.848
	Wilks' Lambda	.152	142.351[b]	4.000	102.000	.000	.848
	Hotelling's Trace	5.582	142.351[b]	4.000	102.000	.000	.848
	Roy's Largest Root	5.582	142.351[b]	4.000	102.000	.000	.848

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.122	217.395	9	.000	.461	.469	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	757.426	4	189.357	316.381	.000	.751
	Greenhouse-Geisser	757.426	1.843	410.952	316.381	.000	.751
	Huynh-Feldt	757.426	1.875	404.066	316.381	.000	.751
	Lower-bound	757.426	1.000	757.426	316.381	.000	.751
Error(Emotion)	Sphericity Assumed	251.374	420	.599			
	Greenhouse-Geisser	251.374	193.526	1.299			
	Huynh-Feldt	251.374	196.824	1.277			
	Lower-bound	251.374	105.000	2.394			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.858*	.150	.000	2.430	3.287
	3	2.925*	.153	.000	2.487	3.362
	4	2.981*	.150	.000	2.551	3.411
	5	3.151*	.133	.000	2.769	3.533
2	1	-2.858*	.150	.000	-3.287	-2.430
	3	.066	.062	1.000	-.111	.243
	4	.123	.074	1.000	-.090	.336
	5	.292*	.077	.002	.072	.513
3	1	-2.925*	.153	.000	-3.362	-2.487
	2	-.066	.062	1.000	-.243	.111
	4	.057	.058	1.000	-.110	.223
	5	.226*	.071	.020	.022	.431
4	1	-2.981*	.150	.000	-3.411	-2.551
	2	-.123	.074	1.000	-.336	.090
	3	-.057	.058	1.000	-.223	.110
	5	.170*	.058	.039	.005	.335
5	1	-3.151*	.133	.000	-3.533	-2.769
	2	-.292*	.077	.002	-.513	-.072
	3	-.226*	.071	.020	-.431	-.022
	4	-.170*	.058	.039	-.335	-.005

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Gallant' relates to the emotions below - Happy	3.62	.961	106
To what extent do you think the word 'Gallant' relates to the emotions below - Sad	1.92	.977	106
To what extent do you think the word 'Gallant' relates to the emotions below - Fear	2.40	1.216	106
To what extent do you think the word 'Gallant' relates to the emotions below - Anger	1.94	1.094	106
To what extent do you think the word 'Gallant' relates to the emotions below - Disgust	1.72	.944	106

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.640	45.281[b]	4.000	102.000	.000	.640
	Wilks' Lambda	.360	45.281[b]	4.000	102.000	.000	.640
	Hotelling's Trace	1.776	45.281[b]	4.000	102.000	.000	.640
	Roy's Largest Root	1.776	45.281[b]	4.000	102.000	.000	.640

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.406	93.122	9	.000	.704	.725	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	251.442	4	62.860	86.687	.000	.452
	Greenhouse-Geisser	251.442	2.815	89.309	86.687	.000	.452
	Huynh-Feldt	251.442	2.901	86.675	86.687	.000	.452
	Lower-bound	251.442	1.000	251.442	86.687	.000	.452
Error(Emotion)	Sphericity Assumed	304.558	420	.725			
	Greenhouse-Geisser	304.558	295.618	1.030			
	Huynh-Feldt	304.558	304.601	1.000			
	Lower-bound	304.558	105.000	2.901			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	1.708*	.139	.000	1.310	2.105
	3	1.226*	.137	.000	.834	1.619
	4	1.679*	.144	.000	1.266	2.092
	5	1.906*	.140	.000	1.503	2.308
2	1	-1.708*	.139	.000	-2.105	-1.310
	3	-.481*	.113	.000	-.806	-.157
	4	-.028	.076	1.000	-.247	.191
	5	.198	.074	.086	-.014	.410
3	1	-1.226*	.137	.000	-1.619	-.834
	2	.481*	.113	.000	.157	.806
	4	.453*	.115	.002	.122	.784
	5	.679*	.122	.000	.330	1.028
4	1	-1.679*	.144	.000	-2.092	-1.266
	2	.028	.076	1.000	-.191	.247
	3	-.453*	.115	.002	-.784	-.122
	5	.226*	.078	.048	.001	.451
5	1	-1.906*	.140	.000	-2.308	-1.503
	2	-.198	.074	.086	-.410	.014
	3	-.679*	.122	.000	-1.028	-.330
	4	-.226*	.078	.048	-.451	-.001

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Ghastly' relates to the emotions below - Happy	1.41	.870	106
To what extent do you think the word 'Ghastly' relates to the emotions below - Sad	2.86	1.191	106
To what extent do you think the word 'Ghastly' relates to the emotions below - Fear	3.54	1.289	106
To what extent do you think the word 'Ghastly' relates to the emotions below - Anger	3.31	1.198	106
To what extent do you think the word 'Ghastly' relates to the emotions below - Disgust	4.08	1.105	106

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.762	81.771[b]	4.000	102.000	.000	.762
	Wilks' Lambda	.238	81.771[b]	4.000	102.000	.000	.762
	Hotelling's Trace	3.207	81.771[b]	4.000	102.000	.000	.762
	Roy's Largest Root	3.207	81.771[b]	4.000	102.000	.000	.762

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.817	20.846	9	.013	.910	.947	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	436.423	4	109.106	98.509	.000	.484
	Greenhouse-Geisser	436.423	3.641	119.867	98.509	.000	.484
	Huynh-Feldt	436.423	3.788	115.216	98.509	.000	.484
	Lower-bound	436.423	1.000	436.423	98.509	.000	.484
Error(Emotion)	Sphericity Assumed	465.177	420	1.108			
	Greenhouse-Geisser	465.177	382.292	1.217			
	Huynh-Feldt	465.177	397.724	1.170			
	Lower-bound	465.177	105.000	4.430			

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.453*	.136	.000	-1.843	-1.062
	3	-2.132*	.154	.000	-2.574	-1.690
	4	-1.906*	.150	.000	-2.336	-1.475
	5	-2.679*	.160	.000	-3.138	-2.220
2	1	1.453*	.136	.000	1.062	1.843
	3	-.679*	.128	.000	-1.045	-.313
	4	-.453*	.133	.010	-.836	-.070
	5	-1.226*	.144	.000	-1.639	-.814
3	1	2.132*	.154	.000	1.690	2.574
	2	.679*	.128	.000	.313	1.045
	4	.226	.141	1.000	-.177	.630
	5	-.547*	.166	.014	-1.024	-.070
4	1	1.906*	.150	.000	1.475	2.336
	2	.453*	.133	.010	.070	.836
	3	-.226	.141	1.000	-.630	.177
	5	-.774*	.127	.000	-1.139	-.408
5	1	2.679*	.160	.000	2.220	3.138
	2	1.226*	.144	.000	.814	1.639
	3	.547*	.166	.014	.070	1.024
	4	.774*	.127	.000	.408	1.139

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Grim' relates to the emotions below - Happy	1.23	.590	106
To what extent do you think the word 'Grim' relates to the emotions below - Sad	3.09	1.363	106
To what extent do you think the word 'Grim' relates to the emotions below - Fear	3.10	1.309	106
To what extent do you think the word 'Grim' relates to the emotions below - Anger	3.17	1.313	106
To what extent do you think the word 'Grim' relates to the emotions below - Disgust	4.58	.861	106

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.895	217.712[b]	4.000	102.000	.000	.895
	Wilks' Lambda	.105	217.712[b]	4.000	102.000	.000	.895
	Hotelling's Trace	8.538	217.712[b]	4.000	102.000	.000	.895
	Roy's Largest Root	8.538	217.712[b]	4.000	102.000	.000	.895

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

					Epsilon[b]		
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.745	30.396	9	.000	.872	.906	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	601.068	4	150.267	146.048	.000	.582
	Greenhouse-Geisser	601.068	3.488	172.321	146.048	.000	.582
	Huynh-Feldt	601.068	3.623	165.922	146.048	.000	.582
	Lower-bound	601.068	1.000	601.068	146.048	.000	.582
Error(Emotion)	Sphericity Assumed	432.132	420	1.029			
	Greenhouse-Geisser	432.132	366.248	1.180			
	Huynh-Feldt	432.132	380.372	1.136			
	Lower-bound	432.132	105.000	4.116			

Pairwise Comparisons

Measure: MEASURE_1

					95% Confidence Interval for Difference[b]	
(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	Lower Bound	Upper Bound
1	2	-1.868*	.139	.000	-2.268	-1.468
	3	-1.877*	.138	.000	-2.273	-1.482
	4	-1.943*	.140	.000	-2.346	-1.541
	5	-3.349*	.118	.000	-3.686	-3.012
2	1	1.868*	.139	.000	1.468	2.268
	3	-.009	.127	1.000	-.373	.354
	4	-.075	.150	1.000	-.506	.355
	5	-1.481*	.167	.000	-1.960	-1.002
3	1	1.877*	.138	.000	1.482	2.273
	2	.009	.127	1.000	-.354	.373
	4	-.066	.126	1.000	-.427	.295
	5	-1.472*	.145	.000	-1.888	-1.056
4	1	1.943*	.140	.000	1.541	2.346
	2	.075	.150	1.000	-.355	.506
	3	.066	.126	1.000	-.295	.427
	5	-1.406*	.137	.000	-1.797	-1.014
5	1	3.349*	.118	.000	3.012	3.686
	2	1.481*	.167	.000	1.002	1.960
	3	1.472*	.145	.000	1.056	1.888
	4	1.406*	.137	.000	1.014	1.797

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Gross' relates to the emotions below - Happy	1.21	.697	107
To what extent do you think the word 'Gross' relates to the emotions below - Sad	2.50	1.334	107
To what extent do you think the word 'Gross' relates to the emotions below - Fear	2.65	1.347	107
To what extent do you think the word 'Gross' relates to the emotions below - Anger	3.04	1.359	107
To what extent do you think the word 'Gross' relates to the emotions below - Disgust	4.73	.592	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.911	263.747[b]	4.000	103.000	.000	.911
	Wilks' Lambda	.089	263.747[b]	4.000	103.000	.000	.911
	Hotelling's Trace	10.243	263.747[b]	4.000	103.000	.000	.911
	Roy's Largest Root	10.243	263.747[b]	4.000	103.000	.000	.911

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Epsilon[b] Huynh-Feldt	Epsilon[b] Lower-bound
Emotion	.638	46.914	9	.000	.824	.853	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	688.064	4	172.016	187.813	.000	.639
	Greenhouse-Geisser	688.064	3.295	208.800	187.813	.000	.639
	Huynh-Feldt	688.064	3.414	201.562	187.813	.000	.639
	Lower-bound	688.064	1.000	688.064	187.813	.000	.639
Error(Emotion)	Sphericity Assumed	388.336	424	.916			
	Greenhouse-Geisser	388.336	349.304	1.112			
	Huynh-Feldt	388.336	361.848	1.073			
	Lower-bound	388.336	106.000	3.664			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	95% Confidence Interval for Difference[b] Upper Bound
1	2	-1.290*	.127	.000	-1.653	-.927
	3	-1.449*	.137	.000	-1.841	-1.056
	4	-1.832*	.145	.000	-2.248	-1.416
	5	-3.523*	.110	.000	-3.838	-3.209
2	1	1.290*	.127	.000	.927	1.653
	3	-.159	.102	1.000	-.452	.134
	4	-.542*	.130	.001	-.916	-.168
	5	-2.234*	.151	.000	-2.665	-1.802
3	1	1.449*	.137	.000	1.056	1.841
	2	.159	.102	1.000	-.134	.452
	4	-.383*	.119	.017	-.725	-.041
	5	-2.075*	.140	.000	-2.475	-1.674
4	1	1.832*	.145	.000	1.416	2.248
	2	.542*	.130	.001	.168	.916
	3	.383*	.119	.017	.041	.725
	5	-1.692*	.140	.000	-2.092	-1.292
5	1	3.523*	.110	.000	3.209	3.838
	2	2.234*	.151	.000	1.802	2.665
	3	2.075*	.140	.000	1.674	2.475
	4	1.692*	.140	.000	1.292	2.092

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Gruesome' relates to the emotions below - Happy	1.17	.506	109
To what extent do you think the word 'Gruesome' relates to the emotions below - Sad	2.59	1.355	109
To what extent do you think the word 'Gruesome' relates to the emotions below - Fear	3.32	1.380	109
To what extent do you think the word 'Gruesome' relates to the emotions below - Anger	2.96	1.387	109
To what extent do you think the word 'Gruesome' relates to the emotions below - Disgust	4.63	.824	109

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.925	322.701[b]	4.000	105.000	.000	.925
	Wilks' Lambda	.075	322.701[b]	4.000	105.000	.000	.925
	Hotelling's Trace	12.293	322.701[b]	4.000	105.000	.000	.925
	Roy's Largest Root	12.293	322.701[b]	4.000	105.000	.000	.925

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Epsilon[b] Huynh-Feldt	Epsilon[b] Lower-bound
Emotion	.597	54.875	9	.000	.795	.822	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	681.706	4	170.427	162.636	.000	.601
	Greenhouse-Geisser	681.706	3.179	214.455	162.636	.000	.601
	Huynh-Feldt	681.706	3.286	207.431	162.636	.000	.601
	Lower-bound	681.706	1.000	681.706	162.636	.000	.601
Error(Emotion)	Sphericity Assumed	452.694	432	1.048			
	Greenhouse-Geisser	452.694	343.309	1.319			
	Huynh-Feldt	452.694	354.935	1.275			
	Lower-bound	452.694	108.000	4.192			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	-1.413*	.132	.000	-1.790	-1.035
	3	-2.147*	.141	.000	-2.552	-1.741
	4	-1.789*	.135	.000	-2.176	-1.402
	5	-3.459*	.101	.000	-3.747	-3.170
2	1	1.413*	.132	.000	1.035	1.790
	3	-.734*	.127	.000	-1.097	-.371
	4	-.376*	.127	.037	-.740	-.012
	5	-2.046*	.165	.000	-2.517	-1.574
3	1	2.147*	.141	.000	1.741	2.552
	2	.734*	.127	.000	.371	1.097
	4	.358	.134	.087	-.026	.742
	5	-1.312*	.163	.000	-1.780	-.844
4	1	1.789*	.135	.000	1.402	2.176
	2	.376*	.127	.037	.012	.740
	3	-.358	.134	.087	-.742	.026
	5	-1.670*	.151	.000	-2.102	-1.237
5	1	3.459*	.101	.000	3.170	3.747
	2	2.046*	.165	.000	1.574	2.517
	3	1.312*	.163	.000	.844	1.780
	4	1.670*	.151	.000	1.237	2.102

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Happy' relates to the emotions below - Happy	4.94	.342	108
To what extent do you think the word 'Happy' relates to the emotions below - Sad	1.44	.930	108
To what extent do you think the word 'Happy' relates to the emotions below - Fear	1.31	.719	108
To what extent do you think the word 'Happy' relates to the emotions below - Anger	1.24	.682	108
To what extent do you think the word 'Happy' relates to the emotions below - Disgust	1.24	.682	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.948	476.497[b]	4.000	104.000	.000	.948
	Wilks' Lambda	.052	476.497[b]	4.000	104.000	.000	.948
	Hotelling's Trace	18.327	476.497[b]	4.000	104.000	.000	.948
	Roy's Largest Root	18.327	476.497[b]	4.000	104.000	.000	.948

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.445	85.426	9	.000	.750	.774	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	1139.530	4	284.882	765.551	.000	.877
	Greenhouse-Geisser	1139.530	3.000	379.864	765.551	.000	.877
	Huynh-Feldt	1139.530	3.096	368.067	765.551	.000	.877
	Lower-bound	1139.530	1.000	1139.530	765.551	.000	.877
Error(Emotion)	Sphericity Assumed	159.270	428	.372			
	Greenhouse-Geisser	159.270	320.983	.496			
	Huynh-Feldt	159.270	331.270	.481			
	Lower-bound	159.270	107.000	1.489			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	3.500*	.106	.000	3.195	3.805
	3	3.620*	.089	.000	3.365	3.875
	4	3.694*	.091	.000	3.435	3.954
	5	3.694*	.091	.000	3.435	3.954
2	1	-3.500*	.106	.000	-3.805	-3.195
	3	.120	.097	1.000	-.159	.399
	4	.194	.089	.305	-.060	.449
	5	.194	.078	.146	-.030	.419
3	1	-3.620*	.089	.000	-3.875	-3.365
	2	-.120	.097	1.000	-.399	.159
	4	.074	.060	1.000	-.098	.246
	5	.074	.058	1.000	-.093	.241
4	1	-3.694*	.091	.000	-3.954	-3.435
	2	-.194	.089	.305	-.449	.060
	3	-.074	.060	1.000	-.246	.098
	5	.000	.053	1.000	-.151	.151
5	1	-3.694*	.091	.000	-3.954	-3.435
	2	-.194	.078	.146	-.419	.030
	3	-.074	.058	1.000	-.241	.093
	4	.000	.053	1.000	-.151	.151

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Heinous' relates to the emotions below - Happy	1.61	.979	107
To what extent do you think the word 'Heinous' relates to the emotions below - Sad	2.81	1.206	107
To what extent do you think the word 'Heinous' relates to the emotions below - Fear	3.30	1.215	107
To what extent do you think the word 'Heinous' relates to the emotions below - Anger	3.63	1.248	107
To what extent do you think the word 'Heinous' relates to the emotions below - Disgust	3.78	1.231	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.627	43.356[b]	4.000	103.000	.000	.627
	Wilks' Lambda	.373	43.356[b]	4.000	103.000	.000	.627
	Hotelling's Trace	1.684	43.356[b]	4.000	103.000	.000	.627
	Roy's Largest Root	1.684	43.356[b]	4.000	103.000	.000	.627

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.561	60.380	9	.000	.754	.778	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	326.815	4	81.704	83.118	.000	.440
	Greenhouse-Geisser	326.815	3.016	108.372	83.118	.000	.440
	Huynh-Feldt	326.815	3.114	104.955	83.118	.000	.440
	Lower-bound	326.815	1.000	326.815	83.118	.000	.440
Error(Emotion)	Sphericity Assumed	416.785	424	.983			
	Greenhouse-Geisser	416.785	319.663	1.304			
	Huynh-Feldt	416.785	330.069	1.263			
	Lower-bound	416.785	106.000	3.932			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.206*	.153	.000	-1.644	-.767
	3	-1.692*	.162	.000	-2.155	-1.228
	4	-2.019*	.167	.000	-2.497	-1.540
	5	-2.168*	.168	.000	-2.651	-1.686
2	1	1.206*	.153	.000	.767	1.644
	3	-.486*	.115	.001	-.816	-.155
	4	-.813*	.120	.000	-1.156	-.470
	5	-.963*	.133	.000	-1.345	-.580
3	1	1.692*	.162	.000	1.228	2.155
	2	.486*	.115	.001	.155	.816
	4	-.327*	.106	.026	-.631	-.023
	5	-.477*	.105	.000	-.777	-.176
4	1	2.019*	.167	.000	1.540	2.497
	2	.813*	.120	.000	.470	1.156
	3	.327*	.106	.026	.023	.631
	5	-.150	.102	1.000	-.441	.142
5	1	2.168*	.168	.000	1.686	2.651
	2	.963*	.133	.000	.580	1.345
	3	.477*	.105	.000	.176	.777
	4	.150	.102	1.000	-.142	.441

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Heroic' relates to the emotions below - Happy	4.22	.904	107
To what extent do you think the word 'Heroic' relates to the emotions below - Sad	2.09	1.120	107
To what extent do you think the word 'Heroic' relates to the emotions below - Fear	2.71	1.367	107
To what extent do you think the word 'Heroic' relates to the emotions below - Anger	1.90	1.098	107
To what extent do you think the word 'Heroic' relates to the emotions below - Disgust	1.50	.782	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.815	113.796[b]	4.000	103.000	.000	.815
	Wilks' Lambda	.185	113.796[b]	4.000	103.000	.000	.815
	Hotelling's Trace	4.419	113.796[b]	4.000	103.000	.000	.815
	Roy's Largest Root	4.419	113.796[b]	4.000	103.000	.000	.815

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.554	61.578	9	.000	.802	.830	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	487.297	4	121.824	131.399	.000	.553
	Greenhouse-Geisser	487.297	3.209	151.857	131.399	.000	.553
	Huynh-Feldt	487.297	3.321	146.738	131.399	.000	.553
	Lower-bound	487.297	1.000	487.297	131.399	.000	.553
Error(Emotion)	Sphericity Assumed	393.103	424	.927			
	Greenhouse-Geisser	393.103	340.145	1.156			
	Huynh-Feldt	393.103	352.011	1.117			
	Lower-bound	393.103	106.000	3.709			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.131*	.148	.000	1.707	2.555
	3	1.514*	.161	.000	1.052	1.976
	4	2.327*	.140	.000	1.925	2.730
	5	2.729*	.127	.000	2.365	3.093
2	1	-2.131*	.148	.000	-2.555	-1.707
	3	-.617*	.117	.000	-.952	-.281
	4	.196	.124	1.000	-.160	.552
	5	.598*	.106	.000	.294	.902
3	1	-1.514*	.161	.000	-1.976	-1.052
	2	.617*	.117	.000	.281	.952
	4	.813*	.147	.000	.392	1.234
	5	1.215*	.141	.000	.810	1.620
4	1	-2.327*	.140	.000	-2.730	-1.925
	2	-.196	.124	1.000	-.552	.160
	3	-.813*	.147	.000	-1.234	-.392
	5	.402*	.088	.000	.150	.654
5	1	-2.729*	.127	.000	-3.093	-2.365
	2	-.598*	.106	.000	-.902	-.294
	3	-1.215*	.141	.000	-1.620	-.810
	4	-.402*	.088	.000	-.654	-.150

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Hideous' relates to the emotions below - Happy	1.26	.658	109
To what extent do you think the word 'Hideous' relates to the emotions below - Sad	3.00	1.361	109
To what extent do you think the word 'Hideous' relates to the emotions below - Fear	3.11	1.301	109
To what extent do you think the word 'Hideous' relates to the emotions below - Anger	3.07	1.338	109
To what extent do you think the word 'Hideous' relates to the emotions below - Disgust	4.55	.877	109

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.865	167.626[b]	4.000	105.000	.000	.865
	Wilks' Lambda	.135	167.626[b]	4.000	105.000	.000	.865
	Hotelling's Trace	6.386	167.626[b]	4.000	105.000	.000	.865
	Roy's Largest Root	6.386	167.626[b]	4.000	105.000	.000	.865

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.946	5.870	9	.753	.973	1.000	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	595.127	4	148.782	147.392	.000	.577
	Greenhouse-Geisser	595.127	3.893	152.878	147.392	.000	.577
	Huynh-Feldt	595.127	4.000	148.782	147.392	.000	.577
	Lower-bound	595.127	1.000	595.127	147.392	.000	.577
Error(Emotion)	Sphericity Assumed	436.073	432	1.009			
	Greenhouse-Geisser	436.073	420.424	1.037			
	Huynh-Feldt	436.073	432.000	1.009			
	Lower-bound	436.073	108.000	4.038			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.743*	.142	.000	-2.150	-1.337
	3	-1.853*	.135	.000	-2.241	-1.465
	4	-1.817*	.143	.000	-2.226	-1.407
	5	-3.294*	.126	.000	-3.654	-2.933
2	1	1.743*	.142	.000	1.337	2.150
	3	-.110	.129	1.000	-.481	.260
	4	-.073	.135	1.000	-.459	.312
	5	-1.550*	.142	.000	-1.957	-1.144
3	1	1.853*	.135	.000	1.465	2.241
	2	.110	.129	1.000	-.260	.481
	4	.037	.140	1.000	-.364	.437
	5	-1.440*	.135	.000	-1.828	-1.053
4	1	1.817*	.143	.000	1.407	2.226
	2	.073	.135	1.000	-.312	.459
	3	-.037	.140	1.000	-.437	.364
	5	-1.477*	.133	.000	-1.859	-1.095
5	1	3.294*	.126	.000	2.933	3.654
	2	1.550*	.142	.000	1.144	1.957
	3	1.440*	.135	.000	1.053	1.828
	4	1.477*	.133	.000	1.095	1.859

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Horrid' relates to the emotions below - Happy	1.24	.658	105
To what extent do you think the word 'Horrid' relates to the emotions below - Sad	3.08	1.284	105
To what extent do you think the word 'Horrid' relates to the emotions below - Fear	3.38	1.113	105
To what extent do you think the word 'Horrid' relates to the emotions below - Anger	3.88	1.141	105
To what extent do you think the word 'Horrid' relates to the emotions below - Disgust	4.58	.718	105

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.897	219.389[b]	4.000	101.000	.000	.897
	Wilks' Lambda	.103	219.389[b]	4.000	101.000	.000	.897
	Hotelling's Trace	8.689	219.389[b]	4.000	101.000	.000	.897
	Roy's Largest Root	8.689	219.389[b]	4.000	101.000	.000	.897

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.854	16.198	9	.063	.929	.968	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	656.960	4	164.240	189.873	.000	.646
	Greenhouse-Geisser	656.960	3.717	176.736	189.873	.000	.646
	Huynh-Feldt	656.960	3.872	169.666	189.873	.000	.646
	Lower-bound	656.960	1.000	656.960	189.873	.000	.646
Error(Emotion)	Sphericity Assumed	359.840	416	.865			
	Greenhouse-Geisser	359.840	386.587	.931			
	Huynh-Feldt	359.840	402.697	.894			
	Lower-bound	359.840	104.000	3.460			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.838*	.135	.000	-2.225	-1.452
	3	-2.143*	.127	.000	-2.508	-1.778
	4	-2.638*	.137	.000	-3.030	-2.246
	5	-3.343*	.112	.000	-3.665	-3.021
2	1	1.838*	.135	.000	1.452	2.225
	3	-.305	.119	.118	-.646	.036
	4	-.800*	.138	.000	-1.195	-.405
	5	-1.505*	.141	.000	-1.910	-1.099
3	1	2.143*	.127	.000	1.778	2.508
	2	.305	.119	.118	-.036	.646
	4	-.495*	.128	.002	-.864	-.127
	5	-1.200*	.124	.000	-1.557	-.843
4	1	2.638*	.137	.000	2.246	3.030
	2	.800*	.138	.000	.405	1.195
	3	.495*	.128	.002	.127	.864
	5	-.705*	.119	.000	-1.045	-.364
5	1	3.343*	.112	.000	3.021	3.665
	2	1.505*	.141	.000	1.099	1.910
	3	1.200*	.124	.000	.843	1.557
	4	.705*	.119	.000	.364	1.045

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Incredible' relates to the emotions below - Happy	4.54	.717	107
To what extent do you think the word 'Incredible' relates to the emotions below - Sad	1.78	1.119	107
To what extent do you think the word 'Incredible' relates to the emotions below - Fear	1.87	1.133	107
To what extent do you think the word 'Incredible' relates to the emotions below - Anger	1.64	1.012	107
To what extent do you think the word 'Incredible' relates to the emotions below - Disgust	1.52	.945	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.839	134.477[b]	4.000	103.000	.000	.839
	Wilks' Lambda	.161	134.477[b]	4.000	103.000	.000	.839
	Hotelling's Trace	5.222	134.477[b]	4.000	103.000	.000	.839
	Roy's Largest Root	5.222	134.477[b]	4.000	103.000	.000	.839

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.405	94.477	9	.000	.696	.716	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	697.159	4	174.290	266.936	.000	.716
	Greenhouse-Geisser	697.159	2.783	250.477	266.936	.000	.716
	Huynh-Feldt	697.159	2.866	243.254	266.936	.000	.716
	Lower-bound	697.159	1.000	697.159	266.936	.000	.716
Error(Emotion)	Sphericity Assumed	276.841	424	.653			
	Greenhouse-Geisser	276.841	295.032	.938			
	Huynh-Feldt	276.841	303.792	.911			
	Lower-bound	276.841	106.000	2.612			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.766*	.140	.000	2.366	3.167
	3	2.673*	.142	.000	2.265	3.081
	4	2.897*	.136	.000	2.507	3.287
	5	3.019*	.129	.000	2.648	3.390
2	1	-2.766*	.140	.000	-3.167	-2.366
	3	-.093	.097	1.000	-.372	.185
	4	.131	.091	1.000	-.130	.392
	5	.252	.092	.072	-.012	.516
3	1	-2.673*	.142	.000	-3.081	-2.265
	2	.093	.097	1.000	-.185	.372
	4	.224	.085	.099	-.020	.469
	5	.346*	.098	.006	.066	.626
4	1	-2.897*	.136	.000	-3.287	-2.507
	2	-.131	.091	1.000	-.392	.130
	3	-.224	.085	.099	-.469	.020
	5	.121	.063	.576	-.060	.303
5	1	-3.019*	.129	.000	-3.390	-2.648
	2	-.252	.092	.072	-.516	.012
	3	-.346*	.098	.006	-.626	-.066
	4	-.121	.063	.576	-.303	.060

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Inspiring' relates to the emotions below - Happy	4.60	.579	108
To what extent do you think the word 'Inspiring' relates to the emotions below - Sad	1.80	1.092	108
To what extent do you think the word 'Inspiring' relates to the emotions below - Fear	1.98	1.215	108
To what extent do you think the word 'Inspiring' relates to the emotions below - Anger	1.48	.848	108
To what extent do you think the word 'Inspiring' relates to the emotions below - Disgust	1.39	.807	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.903	241.997[b]	4.000	104.000	.000	.903
	Wilks' Lambda	.097	241.997[b]	4.000	104.000	.000	.903
	Hotelling's Trace	9.308	241.997[b]	4.000	104.000	.000	.903
	Roy's Largest Root	9.308	241.997[b]	4.000	104.000	.000	.903

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.473	78.939	9	.000	.809	.837	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	771.259	4	192.815	313.614	.000	.746
	Greenhouse-Geisser	771.259	3.235	238.396	313.614	.000	.746
	Huynh-Feldt	771.259	3.348	230.366	313.614	.000	.746
	Lower-bound	771.259	1.000	771.259	313.614	.000	.746
Error(Emotion)	Sphericity Assumed	263.141	428	.615			
	Greenhouse-Geisser	263.141	346.167	.760			
	Huynh-Feldt	263.141	358.233	.735			
	Lower-bound	263.141	107.000	2.459			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.806*	.122	.000	2.457	3.154
	3	2.620*	.132	.000	2.242	2.999
	4	3.120*	.107	.000	2.815	3.426
	5	3.213*	.104	.000	2.914	3.512
2	1	-2.806*	.122	.000	-3.154	-2.457
	3	-.185	.108	.887	-.494	.124
	4	.315*	.103	.029	.019	.611
	5	.407*	.100	.001	.120	.695
3	1	-2.620*	.132	.000	-2.999	-2.242
	2	.185	.108	.887	-.124	.494
	4	.500*	.113	.000	.177	.823
	5	.593*	.106	.000	.288	.897
4	1	-3.120*	.107	.000	-3.426	-2.815
	2	-.315*	.103	.029	-.611	-.019
	3	-.500*	.113	.000	-.823	-.177
	5	.093	.055	.957	-.065	.251
5	1	-3.213*	.104	.000	-3.512	-2.914
	2	-.407*	.100	.001	-.695	-.120
	3	-.593*	.106	.000	-.897	-.288
	4	-.093	.055	.957	-.251	.065

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Joyful' relates to the emotions below - Happy	4.87	.418	105
To what extent do you think the word 'Joyful' relates to the emotions below - Sad	1.50	.921	105
To what extent do you think the word 'Joyful' relates to the emotions below - Fear	1.36	.735	105
To what extent do you think the word 'Joyful' relates to the emotions below - Anger	1.26	.636	105
To what extent do you think the word 'Joyful' relates to the emotions below - Disgust	1.30	.759	105

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.937	378.017[b]	4.000	101.000	.000	.937
	Wilks' Lambda	.063	378.017[b]	4.000	101.000	.000	.937
	Hotelling's Trace	14.971	378.017[b]	4.000	101.000	.000	.937
	Roy's Largest Root	14.971	378.017[b]	4.000	101.000	.000	.937

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.177	177.597	9	.000	.577	.591	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	1039.752	4	259.938	803.091	.000	.885
	Greenhouse-Geisser	1039.752	2.309	450.303	803.091	.000	.885
	Huynh-Feldt	1039.752	2.364	439.740	803.091	.000	.885
	Lower-bound	1039.752	1.000	1039.752	803.091	.000	.885
Error(Emotion)	Sphericity Assumed	134.648	416	.324			
	Greenhouse-Geisser	134.648	240.137	.561			
	Huynh-Feldt	134.648	245.905	.548			
	Lower-bound	134.648	104.000	1.295			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	3.362*	.112	.000	3.042	3.682
	3	3.505*	.100	.000	3.217	3.793
	4	3.610*	.092	.000	3.345	3.874
	5	3.571*	.100	.000	3.284	3.859
2	1	-3.362*	.112	.000	-3.682	-3.042
	3	.143	.070	.425	-.057	.342
	4	.248*	.070	.006	.047	.448
	5	.210	.074	.054	-.002	.421
3	1	-3.505*	.100	.000	-3.793	-3.217
	2	-.143	.070	.425	-.342	.057
	4	.105*	.036	.040	.003	.207
	5	.067	.047	1.000	-.069	.203
4	1	-3.610*	.092	.000	-3.874	-3.345
	2	-.248*	.070	.006	-.448	-.047
	3	-.105*	.036	.040	-.207	-.003
	5	-.038	.043	1.000	-.160	.084
5	1	-3.571*	.100	.000	-3.859	-3.284
	2	-.210	.074	.054	-.421	.002
	3	-.067	.047	1.000	-.203	.069
	4	.038	.043	1.000	-.084	.160

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Kind' relates to the emotions below - Happy	4.55	.675	108
To what extent do you think the word 'Kind' relates to the emotions below - Sad	1.81	1.139	108
To what extent do you think the word 'Kind' relates to the emotions below - Fear	1.48	.881	108
To what extent do you think the word 'Kind' relates to the emotions below - Anger	1.30	.645	108
To what extent do you think the word 'Kind' relates to the emotions below - Disgust	1.27	.664	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.904	245.315[b]	4.000	104.000	.000	.904
	Wilks' Lambda	.096	245.315[b]	4.000	104.000	.000	.904
	Hotelling's Trace	9.435	245.315[b]	4.000	104.000	.000	.904
	Roy's Largest Root	9.435	245.315[b]	4.000	104.000	.000	.904

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.223	158.333	9	.000	.650	.668	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	841.196	4	210.299	389.302	.000	.784
	Greenhouse-Geisser	841.196	2.601	323.467	389.302	.000	.784
	Huynh-Feldt	841.196	2.671	314.925	389.302	.000	.784
	Lower-bound	841.196	1.000	841.196	389.302	.000	.784
Error(Emotion)	Sphericity Assumed	231.204	428	.540			
	Greenhouse-Geisser	231.204	278.260	.831			
	Huynh-Feldt	231.204	285.807	.809			
	Lower-bound	231.204	107.000	2.161			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.741*	.143	.000	2.330	3.151
	3	3.065*	.119	.000	2.725	3.405
	4	3.250*	.104	.000	2.953	3.547
	5	3.278*	.108	.000	2.967	3.588
2	1	-2.741*	.143	.000	-3.151	-2.330
	3	.324*	.097	.011	.047	.601
	4	.509*	.106	.000	.204	.814
	5	.537*	.102	.000	.244	.830
3	1	-3.065*	.119	.000	-3.405	-2.725
	2	-.324*	.097	.011	-.601	-.047
	4	.185	.072	.117	-.022	.392
	5	.213*	.071	.033	.010	.416
4	1	-3.250*	.104	.000	-3.547	-2.953
	2	-.509*	.106	.000	-.814	-.204
	3	-.185	.072	.117	-.392	.022
	5	.028	.040	1.000	-.088	.144
5	1	-3.278*	.108	.000	-3.588	-2.967
	2	-.537*	.102	.000	-.830	-.244
	3	-.213*	.071	.033	-.416	-.010
	4	-.028	.040	1.000	-.144	.088

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Loathsome' relates to the emotions below - Happy	1.37	.772	106
To what extent do you think the word 'Loathsome' relates to the emotions below - Sad	3.05	1.297	106
To what extent do you think the word 'Loathsome' relates to the emotions below - Fear	2.99	1.276	106
To what extent do you think the word 'Loathsome' relates to the emotions below - Anger	4.05	1.283	106
To what extent do you think the word 'Loathsome' relates to the emotions below - Disgust	3.94	1.186	106

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.750	76.372[b]	4.000	102.000	.000	.750
	Wilks' Lambda	.250	76.372[b]	4.000	102.000	.000	.750
	Hotelling's Trace	2.995	76.372[b]	4.000	102.000	.000	.750
	Roy's Largest Root	2.995	76.372[b]	4.000	102.000	.000	.750

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.807	22.113	9	.009	.907	.943	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	489.842	4	122.460	103.831	.000	.497
	Greenhouse-Geisser	489.842	3.627	135.041	103.831	.000	.497
	Huynh-Feldt	489.842	3.773	129.821	103.831	.000	.497
	Lower-bound	489.842	1.000	489.842	103.831	.000	.497
Error(Emotion)	Sphericity Assumed	495.358	420	1.179			
	Greenhouse-Geisser	495.358	380.872	1.301			
	Huynh-Feldt	495.358	396.186	1.250			
	Lower-bound	495.358	105.000	4.718			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.679*	.153	.000	-2.117	-1.242
	3	-1.623*	.150	.000	-2.051	-1.194
	4	-2.679*	.168	.000	-3.162	-2.197
	5	-2.575*	.158	.000	-3.029	-2.122
2	1	1.679*	.153	.000	1.242	2.117
	3	.057	.121	1.000	-.289	.402
	4	-1.000*	.161	.000	-1.463	-.537
	5	-.896*	.151	.000	-1.329	-.463
3	1	1.623*	.150	.000	1.194	2.051
	2	-.057	.121	1.000	-.402	.289
	4	-1.057*	.154	.000	-1.500	-.614
	5	-.953*	.136	.000	-1.344	-.562
4	1	2.679*	.168	.000	2.197	3.162
	2	1.000*	.161	.000	.537	1.463
	3	1.057*	.154	.000	.614	1.500
	5	.104	.133	1.000	-.279	.486
5	1	2.575*	.158	.000	2.122	3.029
	2	.896*	.151	.000	.463	1.329
	3	.953*	.136	.000	.562	1.344
	4	-.104	.133	1.000	-.486	.279

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Loved' relates to the emotions below - Happy	4.78	.553	108
To what extent do you think the word 'Loved' relates to the emotions below - Sad	2.31	1.397	108
To what extent do you think the word 'Loved' relates to the emotions below - Fear	2.01	1.264	108
To what extent do you think the word 'Loved' relates to the emotions below - Anger	1.63	1.073	108
To what extent do you think the word 'Loved' relates to the emotions below - Disgust	1.39	.807	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.892	213.709[b]	4.000	104.000	.000	.892
	Wilks' Lambda	.108	213.709[b]	4.000	104.000	.000	.892
	Hotelling's Trace	8.220	213.709[b]	4.000	104.000	.000	.892
	Roy's Largest Root	8.220	213.709[b]	4.000	104.000	.000	.892

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

					Epsilon[b]		
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.418	92.029	9	.000	.743	.766	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	802.307	4	200.577	259.440	.000	.708
	Greenhouse-Geisser	802.307	2.970	270.115	259.440	.000	.708
	Huynh-Feldt	802.307	3.064	261.818	259.440	.000	.708
	Lower-bound	802.307	1.000	802.307	259.440	.000	.708
Error(Emotion)	Sphericity Assumed	330.893	428	.773			
	Greenhouse-Geisser	330.893	317.816	1.041			
	Huynh-Feldt	330.893	327.888	1.009			
	Lower-bound	330.893	107.000	3.092			

Pairwise Comparisons

Measure: MEASURE_1

					95% Confidence Interval for Difference[b]	
(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	Lower Bound	Upper Bound
1	2	2.472*	.154	.000	2.030	2.914
	3	2.769*	.147	.000	2.346	3.191
	4	3.148*	.134	.000	2.764	3.532
	5	3.389*	.115	.000	3.058	3.719
2	1	-2.472*	.154	.000	-2.914	-2.030
	3	.296	.116	.118	-.035	.628
	4	.676*	.116	.000	.343	1.009
	5	.917*	.125	.000	.559	1.275
3	1	-2.769*	.147	.000	-3.191	-2.346
	2	-.296	.116	.118	-.628	.035
	4	.380*	.093	.001	.114	.646
	5	.620*	.103	.000	.324	.917
4	1	-3.148*	.134	.000	-3.532	-2.764
	2	-.676*	.116	.000	-1.009	-.343
	3	-.380*	.093	.001	-.646	-.114
	5	.241*	.068	.006	.045	.436
5	1	-3.389*	.115	.000	-3.719	-3.058
	2	-.917*	.125	.000	-1.275	-.559
	3	-.620*	.103	.000	-.917	-.324
	4	-.241*	.068	.006	-.436	-.045

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Merry' relates to the emotions below - Happy	4.77	.542	107
To what extent do you think the word 'Merry' relates to the emotions below - Sad	1.37	.759	107
To what extent do you think the word 'Merry' relates to the emotions below - Fear	1.29	.659	107
To what extent do you think the word 'Merry' relates to the emotions below - Anger	1.27	.623	107
To what extent do you think the word 'Merry' relates to the emotions below - Disgust	1.27	.681	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.926	320.786[b]	4.000	103.000	.000	.926
	Wilks' Lambda	.074	320.786[b]	4.000	103.000	.000	.926
	Hotelling's Trace	12.458	320.786[b]	4.000	103.000	.000	.926
	Roy's Largest Root	12.458	320.786[b]	4.000	103.000	.000	.926

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

					Epsilon[b]		
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.157	193.481	9	.000	.534	.545	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	1028.479	4	257.120	818.942	.000	.885
	Greenhouse-Geisser	1028.479	2.136	481.469	818.942	.000	.885
	Huynh-Feldt	1028.479	2.181	471.483	818.942	.000	.885
	Lower-bound	1028.479	1.000	1028.479	818.942	.000	.885
Error(Emotion)	Sphericity Assumed	133.121	424	.314			
	Greenhouse-Geisser	133.121	226.430	.588			
	Huynh-Feldt	133.121	231.225	.576			
	Lower-bound	133.121	106.000	1.256			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	3.393*	.103	.000	3.098	3.687
	3	3.477*	.101	.000	3.188	3.765
	4	3.495*	.099	.000	3.212	3.779
	5	3.495*	.105	.000	3.195	3.796
2	1	-3.393*	.103	.000	-3.687	-3.098
	3	.084	.053	1.000	-.069	.237
	4	.103	.065	1.000	-.083	.289
	5	.103	.070	1.000	-.098	.304
3	1	-3.477*	.101	.000	-3.765	-3.188
	2	-.084	.053	1.000	-.237	.069
	4	.019	.042	1.000	-.102	.139
	5	.019	.044	1.000	-.107	.145
4	1	-3.495*	.099	.000	-3.779	-3.212
	2	-.103	.065	1.000	-.289	.083
	3	-.019	.042	1.000	-.139	.102
	5	.000	.040	1.000	-.114	.114
5	1	-3.495*	.105	.000	-3.796	-3.195
	2	-.103	.070	1.000	-.304	.098
	3	-.019	.044	1.000	-.145	.107
	4	.000	.040	1.000	-.114	.114

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Monstrous' relates to the emotions below - Happy	1.29	.801	107
To what extent do you think the word 'Monstrous' relates to the emotions below - Sad	2.84	1.361	107
To what extent do you think the word 'Monstrous' relates to the emotions below - Fear	4.08	1.100	107
To what extent do you think the word 'Monstrous' relates to the emotions below - Anger	4.05	1.102	107
To what extent do you think the word 'Monstrous' relates to the emotions below - Disgust	4.02	1.157	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.821	118.191[b]	4.000	103.000	.000	.821
	Wilks' Lambda	.179	118.191[b]	4.000	103.000	.000	.821
	Hotelling's Trace	4.590	118.191[b]	4.000	103.000	.000	.821
	Roy's Largest Root	4.590	118.191[b]	4.000	103.000	.000	.821

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.858	15.990	9	.067	.933	.971	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	634.628	4	158.657	159.647	.000	.601
	Greenhouse-Geisser	634.628	3.732	170.049	159.647	.000	.601
	Huynh-Feldt	634.628	3.885	163.346	159.647	.000	.601
	Lower-bound	634.628	1.000	634.628	159.647	.000	.601
Error(Emotion)	Sphericity Assumed	421.372	424	.994			
	Greenhouse-Geisser	421.372	395.596	1.065			
	Huynh-Feldt	421.372	411.828	1.023			
	Lower-bound	421.372	106.000	3.975			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.551*	.142	.000	-1.958	-1.144
	3	-2.794*	.146	.000	-3.213	-2.376
	4	-2.757*	.145	.000	-3.172	-2.342
	5	-2.729*	.147	.000	-3.150	-2.307
2	1	1.551*	.142	.000	1.144	1.958
	3	-1.243*	.131	.000	-1.618	-.868
	4	-1.206*	.136	.000	-1.595	-.816
	5	-1.178*	.144	.000	-1.589	-.766
3	1	2.794*	.146	.000	2.376	3.213
	2	1.243*	.131	.000	.868	1.618
	4	.037	.128	1.000	-.330	.404
	5	.065	.131	1.000	-.310	.441
4	1	2.757*	.145	.000	2.342	3.172
	2	1.206*	.136	.000	.816	1.595
	3	-.037	.128	1.000	-.404	.330
	5	.028	.110	1.000	-.287	.343
5	1	2.729*	.147	.000	2.307	3.150
	2	1.178*	.144	.000	.766	1.589
	3	-.065	.131	1.000	-.441	.310
	4	-.028	.110	1.000	-.343	.287

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Nasty' relates to the emotions below - Happy	1.27	.744	108
To what extent do you think the word 'Nasty' relates to the emotions below - Sad	3.38	1.221	108
To what extent do you think the word 'Nasty' relates to the emotions below - Fear	3.53	1.164	108
To what extent do you think the word 'Nasty' relates to the emotions below - Anger	4.12	1.030	108
To what extent do you think the word 'Nasty' relates to the emotions below - Disgust	4.23	.953	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.859	158.317[b]	4.000	104.000	.000	.859
	Wilks' Lambda	.141	158.317[b]	4.000	104.000	.000	.859
	Hotelling's Trace	6.089	158.317[b]	4.000	104.000	.000	.859
	Roy's Largest Root	6.089	158.317[b]	4.000	104.000	.000	.859

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

					Epsilon[b]		
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.819	20.993	9	.013	.910	.946	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	618.370	4	154.593	175.213	.000	.621
	Greenhouse-Geisser	618.370	3.640	169.898	175.213	.000	.621
	Huynh-Feldt	618.370	3.784	163.431	175.213	.000	.621
	Lower-bound	618.370	1.000	618.370	175.213	.000	.621
Error(Emotion)	Sphericity Assumed	377.630	428	.882			
	Greenhouse-Geisser	377.630	389.443	.970			
	Huynh-Feldt	377.630	404.854	.933			
	Lower-bound	377.630	107.000	3.529			

Pairwise Comparisons

Measure: MEASURE_1

					95% Confidence Interval for Difference[b]	
(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	Lower Bound	Upper Bound
1	2	-2.111*	.139	.000	-2.511	-1.711
	3	-2.259*	.133	.000	-2.641	-1.878
	4	-2.852*	.133	.000	-3.234	-2.469
	5	-2.963*	.126	.000	-3.325	-2.601
2	1	2.111*	.139	.000	1.711	2.511
	3	-.148	.107	1.000	-.454	.158
	4	-.741*	.129	.000	-1.111	-.371
	5	-.852*	.145	.000	-1.266	-.437
3	1	2.259*	.133	.000	1.878	2.641
	2	.148	.107	1.000	-.158	.454
	4	-.593*	.113	.000	-.917	-.268
	5	-.704*	.127	.000	-1.068	-.340
4	1	2.852*	.133	.000	2.469	3.234
	2	.741*	.129	.000	.371	1.111
	3	.593*	.113	.000	.268	.917
	5	-.111	.121	1.000	-.457	.235
5	1	2.963*	.126	.000	2.601	3.325
	2	.852*	.145	.000	.437	1.266
	3	.704*	.127	.000	.340	1.068
	4	.111	.121	1.000	-.235	.457

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Nauseating' relates to the emotions below - Happy	1.39	.882	109
To what extent do you think the word 'Nauseating' relates to the emotions below - Sad	2.78	1.343	109
To what extent do you think the word 'Nauseating' relates to the emotions below - Fear	3.42	1.227	109
To what extent do you think the word 'Nauseating' relates to the emotions below - Anger	3.17	1.198	109
To what extent do you think the word 'Nauseating' relates to the emotions below - Disgust	4.41	.915	109

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.816	116.622[b]	4.000	105.000	.000	.816
	Wilks' Lambda	.184	116.622[b]	4.000	105.000	.000	.816
	Hotelling's Trace	4.443	116.622[b]	4.000	105.000	.000	.816
	Roy's Largest Root	4.443	116.622[b]	4.000	105.000	.000	.816

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.915	9.438	9	.398	.962	1.000	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	525.549	4	131.387	123.269	.000	.533
	Greenhouse-Geisser	525.549	3.846	136.638	123.269	.000	.533
	Huynh-Feldt	525.549	4.000	131.387	123.269	.000	.533
	Lower-bound	525.549	1.000	525.549	123.269	.000	.533
Error(Emotion)	Sphericity Assumed	460.451	432	1.066			
	Greenhouse-Geisser	460.451	415.397	1.108			
	Huynh-Feldt	460.451	432.000	1.066			
	Lower-bound	460.451	108.000	4.263			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.385*	.138	.000	-1.780	-.990
	3	-2.028*	.145	.000	-2.444	-1.611
	4	-1.771*	.147	.000	-2.191	-1.350
	5	-3.018*	.140	.000	-3.419	-2.618
2	1	1.385*	.138	.000	.990	1.780
	3	-.642*	.136	.000	-1.031	-.253
	4	-.385*	.127	.030	-.749	-.021
	5	-1.633*	.153	.000	-2.071	-1.195
3	1	2.028*	.145	.000	1.611	2.444
	2	.642*	.136	.000	.253	1.031
	4	.257	.135	.599	-.130	.644
	5	-.991*	.141	.000	-1.394	-.588
4	1	1.771*	.147	.000	1.350	2.191
	2	.385*	.127	.030	.021	.749
	3	-.257	.135	.599	-.644	.130
	5	-1.248*	.136	.000	-1.636	-.859
5	1	3.018*	.140	.000	2.618	3.419
	2	1.633*	.153	.000	1.195	2.071
	3	.991*	.141	.000	.588	1.394
	4	1.248*	.136	.000	.859	1.636

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Nice' relates to the emotions below - Happy	4.48	.690	108
To what extent do you think the word 'Nice' relates to the emotions below - Sad	1.62	.924	108
To what extent do you think the word 'Nice' relates to the emotions below - Fear	1.47	.826	108
To what extent do you think the word 'Nice' relates to the emotions below - Anger	1.36	.729	108
To what extent do you think the word 'Nice' relates to the emotions below - Disgust	1.27	.650	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.896	223.609[b]	4.000	104.000	.000	.896
	Wilks' Lambda	.104	223.609[b]	4.000	104.000	.000	.896
	Hotelling's Trace	8.600	223.609[b]	4.000	104.000	.000	.896
	Roy's Largest Root	8.600	223.609[b]	4.000	104.000	.000	.896

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.145	203.525	9	.000	.513	.523	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	811.659	4	202.915	513.463	.000	.828
	Greenhouse-Geisser	811.659	2.050	395.846	513.463	.000	.828
	Huynh-Feldt	811.659	2.091	388.171	513.463	.000	.828
	Lower-bound	811.659	1.000	811.659	513.463	.000	.828
Error(Emotion)	Sphericity Assumed	169.141	428	.395			
	Greenhouse-Geisser	169.141	219.397	.771			
	Huynh-Feldt	169.141	223.735	.756			
	Lower-bound	169.141	107.000	1.581			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.861*	.122	.000	2.513	3.210
	3	3.009*	.118	.000	2.671	3.348
	4	3.120*	.112	.000	2.799	3.442
	5	3.213*	.107	.000	2.906	3.519
2	1	-2.861*	.122	.000	-3.210	-2.513
	3	.148	.059	.129	-.020	.316
	4	.259*	.072	.005	.051	.467
	5	.352*	.071	.000	.148	.556
3	1	-3.009*	.118	.000	-3.348	-2.671
	2	-.148	.059	.129	-.316	.020
	4	.111	.050	.278	-.032	.254
	5	.204*	.051	.001	.059	.349
4	1	-3.120*	.112	.000	-3.442	-2.799
	2	-.259*	.072	.005	-.467	-.051
	3	-.111	.050	.278	-.254	.032
	5	.093	.041	.246	-.024	.209
5	1	-3.213*	.107	.000	-3.519	-2.906
	2	-.352*	.071	.000	-.556	-.148
	3	-.204*	.051	.001	-.349	-.059
	4	-.093	.041	.246	-.209	.024

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Obnoxious' relates to the emotions below - Happy	1.45	.841	106
To what extent do you think the word 'Obnoxious' relates to the emotions below - Sad	2.43	1.258	106
To what extent do you think the word 'Obnoxious' relates to the emotions below - Fear	2.45	1.318	106
To what extent do you think the word 'Obnoxious' relates to the emotions below - Anger	3.66	1.178	106
To what extent do you think the word 'Obnoxious' relates to the emotions below - Disgust	3.54	1.243	106

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.707	61.591[b]	4.000	102.000	.000	.707
	Wilks' Lambda	.293	61.591[b]	4.000	102.000	.000	.707
	Hotelling's Trace	2.415	61.591[b]	4.000	102.000	.000	.707
	Roy's Largest Root	2.415	61.591[b]	4.000	102.000	.000	.707

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.598	53.108	9	.000	.804	.832	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	350.981	4	87.745	88.288	.000	.457
	Greenhouse-Geisser	350.981	3.215	109.186	88.288	.000	.457
	Huynh-Feldt	350.981	3.328	105.464	88.288	.000	.457
	Lower-bound	350.981	1.000	350.981	88.288	.000	.457
Error(Emotion)	Sphericity Assumed	417.419	420	.994			
	Greenhouse-Geisser	417.419	337.525	1.237			
	Huynh-Feldt	417.419	349.438	1.195			
	Lower-bound	417.419	105.000	3.975			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-.981*	.134	.000	-1.365	-.597
	3	-1.000*	.137	.000	-1.394	-.606
	4	-2.208*	.147	.000	-2.628	-1.787
	5	-2.085*	.148	.000	-2.508	-1.662
2	1	.981*	.134	.000	.597	1.365
	3	-.019	.093	1.000	-.285	.247
	4	-1.226*	.150	.000	-1.657	-.796
	5	-1.104*	.138	.000	-1.499	-.708
3	1	1.000*	.137	.000	.606	1.394
	2	.019	.093	1.000	-.247	.285
	4	-1.208*	.157	.000	-1.657	-.758
	5	-1.085*	.139	.000	-1.485	-.685
4	1	2.208*	.147	.000	1.787	2.628
	2	1.226*	.150	.000	.796	1.657
	3	1.208*	.157	.000	.758	1.657
	5	.123	.115	1.000	-.207	.453
5	1	2.085*	.148	.000	1.662	2.508
	2	1.104*	.138	.000	.708	1.499
	3	1.085*	.139	.000	.685	1.485
	4	-.123	.115	1.000	-.453	.207

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Obscene' relates to the emotions below - Happy	1.48	.836	104
To what extent do you think the word 'Obscene' relates to the emotions below - Sad	2.58	1.282	104
To what extent do you think the word 'Obscene' relates to the emotions below - Fear	2.88	1.267	104
To what extent do you think the word 'Obscene' relates to the emotions below - Anger	3.43	1.237	104
To what extent do you think the word 'Obscene' relates to the emotions below - Disgust	3.85	1.172	104

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.696	57.230[b]	4.000	100.000	.000	.696
	Wilks' Lambda	.304	57.230[b]	4.000	100.000	.000	.696
	Hotelling's Trace	2.289	57.230[b]	4.000	100.000	.000	.696
	Roy's Largest Root	2.289	57.230[b]	4.000	100.000	.000	.696

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.617	48.976	9	.000	.820	.850	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	341.281	4	85.320	87.898	.000	.460
	Greenhouse-Geisser	341.281	3.281	104.026	87.898	.000	.460
	Huynh-Feldt	341.281	3.401	100.333	87.898	.000	.460
	Lower-bound	341.281	1.000	341.281	87.898	.000	.460
Error(Emotion)	Sphericity Assumed	399.919	412	.971			
	Greenhouse-Geisser	399.919	337.914	1.183			
	Huynh-Feldt	399.919	350.354	1.141			
	Lower-bound	399.919	103.000	3.883			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.096*	.135	.000	-1.483	-.709
	3	-1.394*	.138	.000	-1.789	-.999
	4	-1.952*	.154	.000	-2.393	-1.511
	5	-2.365*	.156	.000	-2.812	-1.918
2	1	1.096*	.135	.000	.709	1.483
	3	-.298	.121	.151	-.644	.048
	4	-.856*	.129	.000	-1.226	-.485
	5	-1.269*	.157	.000	-1.718	-.820
3	1	1.394*	.138	.000	.999	1.789
	2	.298	.121	.151	-.048	.644
	4	-.558*	.128	.000	-.925	-.190
	5	-.971*	.140	.000	-1.374	-.569
4	1	1.952*	.154	.000	1.511	2.393
	2	.856*	.129	.000	.485	1.226
	3	.558*	.128	.000	.190	.925
	5	-.413*	.099	.001	-.698	-.129
5	1	2.365*	.156	.000	1.918	2.812
	2	1.269*	.157	.000	.820	1.718
	3	.971*	.140	.000	.569	1.374
	4	.413*	.099	.001	.129	.698

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Odious' relates to the emotions below - Happy	1.78	1.022	107
To what extent do you think the word 'Odious' relates to the emotions below - Sad	2.44	1.092	107
To what extent do you think the word 'Odious' relates to the emotions below - Fear	2.80	1.185	107
To what extent do you think the word 'Odious' relates to the emotions below - Anger	2.85	1.212	107
To what extent do you think the word 'Odious' relates to the emotions below - Disgust	3.80	1.255	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.528	28.831[b]	4.000	103.000	.000	.528
	Wilks' Lambda	.472	28.831[b]	4.000	103.000	.000	.528
	Hotelling's Trace	1.120	28.831[b]	4.000	103.000	.000	.528
	Roy's Largest Root	1.120	28.831[b]	4.000	103.000	.000	.528

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.505	71.276	9	.000	.740	.763	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	231.974	4	57.993	56.394	.000	.347
	Greenhouse-Geisser	231.974	2.959	78.405	56.394	.000	.347
	Huynh-Feldt	231.974	3.053	75.984	56.394	.000	.347
	Lower-bound	231.974	1.000	231.974	56.394	.000	.347
Error(Emotion)	Sphericity Assumed	436.026	424	1.028			
	Greenhouse-Geisser	436.026	313.618	1.390			
	Huynh-Feldt	436.026	323.610	1.347			
	Lower-bound	436.026	106.000	4.113			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-.664*	.123	.000	-1.016	-.311
	3	-1.028*	.144	.000	-1.441	-.615
	4	-1.075*	.151	.000	-1.507	-.643
	5	-2.028*	.189	.000	-2.570	-1.486
2	1	.664*	.123	.000	.311	1.016
	3	-.364*	.122	.035	-.714	-.015
	4	-.411*	.114	.005	-.739	-.084
	5	-1.364*	.153	.000	-1.803	-.926
3	1	1.028*	.144	.000	.615	1.441
	2	.364*	.122	.035	.015	.714
	4	-.047	.092	1.000	-.312	.218
	5	-1.000*	.146	.000	-1.419	-.581
4	1	1.075*	.151	.000	.643	1.507
	2	.411*	.114	.005	.084	.739
	3	.047	.092	1.000	-.218	.312
	5	-.953*	.130	.000	-1.325	-.581
5	1	2.028*	.189	.000	1.486	2.570
	2	1.364*	.153	.000	.926	1.803
	3	1.000*	.146	.000	.581	1.419
	4	.953*	.130	.000	.581	1.325

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Optimistic' relates to the emotions below - Happy	4.61	.624	108
To what extent do you think the word 'Optimistic' relates to the emotions below - Sad	1.69	.944	108
To what extent do you think the word 'Optimistic' relates to the emotions below - Fear	2.12	1.251	108
To what extent do you think the word 'Optimistic' relates to the emotions below - Anger	1.38	.680	108
To what extent do you think the word 'Optimistic' relates to the emotions below - Disgust	1.32	.681	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.901	235.493[b]	4.000	104.000	.000	.901
	Wilks' Lambda	.099	235.493[b]	4.000	104.000	.000	.901
	Hotelling's Trace	9.057	235.493[b]	4.000	104.000	.000	.901
	Roy's Largest Root	9.057	235.493[b]	4.000	104.000	.000	.901

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.124	219.788	9	.000	.666	.684	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	812.396	4	203.099	338.494	.000	.760
	Greenhouse-Geisser	812.396	2.664	305.011	338.494	.000	.760
	Huynh-Feldt	812.396	2.738	296.727	338.494	.000	.760
	Lower-bound	812.396	1.000	812.396	338.494	.000	.760
Error(Emotion)	Sphericity Assumed	256.804	428	.600			
	Greenhouse-Geisser	256.804	284.995	.901			
	Huynh-Feldt	256.804	292.950	.877			
	Lower-bound	256.804	107.000	2.400			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.926*	.123	.000	2.573	3.279
	3	2.491*	.146	.000	2.072	2.910
	4	3.231*	.106	.000	2.928	3.535
	5	3.287*	.107	.000	2.981	3.594
2	1	-2.926*	.123	.000	-3.279	-2.573
	3	-.435*	.108	.001	-.744	-.126
	4	.306*	.079	.002	.078	.533
	5	.361*	.082	.000	.127	.595
3	1	-2.491*	.146	.000	-2.910	-2.072
	2	.435*	.108	.001	.126	.744
	4	.741*	.113	.000	.418	1.064
	5	.796*	.117	.000	.460	1.133
4	1	-3.231*	.106	.000	-3.535	-2.928
	2	-.306*	.079	.002	-.533	-.078
	3	-.741*	.113	.000	-1.064	-.418
	5	.056	.029	.574	-.027	.138
5	1	-3.287*	.107	.000	-3.594	-2.981
	2	-.361*	.082	.000	-.595	-.127
	3	-.796*	.117	.000	-1.133	-.460
	4	-.056	.029	.574	-.138	.027

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Overjoyed' relates to the emotions below - Happy	4.74	.647	108
To what extent do you think the word 'Overjoyed' relates to the emotions below - Sad	1.53	.837	108
To what extent do you think the word 'Overjoyed' relates to the emotions below - Fear	1.56	.960	108
To what extent do you think the word 'Overjoyed' relates to the emotions below - Anger	1.37	.731	108
To what extent do you think the word 'Overjoyed' relates to the emotions below - Disgust	1.34	.751	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.894	220.205[b]	4.000	104.000	.000	.894
	Wilks' Lambda	.106	220.205[b]	4.000	104.000	.000	.894
	Hotelling's Trace	8.469	220.205[b]	4.000	104.000	.000	.894
	Roy's Largest Root	8.469	220.205[b]	4.000	104.000	.000	.894

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.100	242.246	9	.000	.566	.579	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	938.841	4	234.710	486.801	.000	.820
	Greenhouse-Geisser	938.841	2.265	414.540	486.801	.000	.820
	Huynh-Feldt	938.841	2.316	405.323	486.801	.000	.820
	Lower-bound	938.841	1.000	938.841	486.801	.000	.820
Error(Emotion)	Sphericity Assumed	206.359	428	.482			
	Greenhouse-Geisser	206.359	242.331	.852			
	Huynh-Feldt	206.359	247.842	.833			
	Lower-bound	206.359	107.000	1.929			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	3.213*	.124	.000	2.857	3.569
	3	3.176*	.133	.000	2.795	3.556
	4	3.370*	.112	.000	3.049	3.692
	5	3.398*	.118	.000	3.061	3.735
2	1	-3.213*	.124	.000	-3.569	-2.857
	3	-.037	.064	1.000	-.221	.147
	4	.157	.069	.236	-.039	.354
	5	.185	.078	.194	-.038	.409
3	1	-3.176*	.133	.000	-3.556	-2.795
	2	.037	.064	1.000	-.147	.221
	4	.194	.083	.205	-.042	.431
	5	.222	.085	.099	-.020	.465
4	1	-3.370*	.112	.000	-3.692	-3.049
	2	-.157	.069	.236	-.354	.039
	3	-.194	.083	.205	-.431	.042
	5	.028	.031	1.000	-.060	.116
5	1	-3.398*	.118	.000	-3.735	-3.061
	2	-.185	.078	.194	-.409	.038
	3	-.222	.085	.099	-.465	.020
	4	-.028	.031	1.000	-.116	.060

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Passionate' relates to the emotions below - Happy	4.57	.690	106
To what extent do you think the word 'Passionate' relates to the emotions below - Sad	1.84	1.114	106
To what extent do you think the word 'Passionate' relates to the emotions below - Fear	1.86	1.091	106
To what extent do you think the word 'Passionate' relates to the emotions below - Anger	2.12	1.399	106
To what extent do you think the word 'Passionate' relates to the emotions below - Disgust	1.62	1.028	106

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.835	129.191[b]	4.000	102.000	.000	.835
	Wilks' Lambda	.165	129.191[b]	4.000	102.000	.000	.835
	Hotelling's Trace	5.066	129.191[b]	4.000	102.000	.000	.835
	Roy's Largest Root	5.066	129.191[b]	4.000	102.000	.000	.835

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.645	45.370	9	.000	.831	.861	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	633.898	4	158.475	188.179	.000	.642
	Greenhouse-Geisser	633.898	3.322	190.793	188.179	.000	.642
	Huynh-Feldt	633.898	3.444	184.059	188.179	.000	.642
	Lower-bound	633.898	1.000	633.898	188.179	.000	.642
Error(Emotion)	Sphericity Assumed	353.702	420	.842			
	Greenhouse-Geisser	353.702	348.855	1.014			
	Huynh-Feldt	353.702	361.620	.978			
	Lower-bound	353.702	105.000	3.369			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.726*	.136	.000	2.335	3.118
	3	2.708*	.138	.000	2.312	3.103
	4	2.443*	.155	.000	1.998	2.889
	5	2.943*	.135	.000	2.555	3.331
2	1	-2.726*	.136	.000	-3.118	-2.335
	3	-.019	.098	1.000	-.299	.261
	4	-.283	.133	.351	-.663	.097
	5	.217	.106	.423	-.086	.520
3	1	-2.708*	.138	.000	-3.103	-2.312
	2	.019	.098	1.000	-.261	.299
	4	-.264	.137	.564	-.657	.128
	5	.236	.105	.270	-.066	.537
4	1	-2.443*	.155	.000	-2.889	-1.998
	2	.283	.133	.351	-.097	.663
	3	.264	.137	.564	-.128	.657
	5	.500*	.104	.000	.202	.798
5	1	-2.943*	.135	.000	-3.331	-2.555
	2	-.217	.106	.423	-.520	.086
	3	-.236	.105	.270	-.537	.066
	4	-.500*	.104	.000	-.798	-.202

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Proactive' relates to the emotions below - Happy	4.04	.971	107
To what extent do you think the word 'Proactive' relates to the emotions below - Sad	1.81	1.020	107
To what extent do you think the word 'Proactive' relates to the emotions below - Fear	2.02	1.165	107
To what extent do you think the word 'Proactive' relates to the emotions below - Anger	1.76	1.089	107
To what extent do you think the word 'Proactive' relates to the emotions below - Disgust	1.52	.904	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.763	82.994[b]	4.000	103.000	.000	.763
	Wilks' Lambda	.237	82.994[b]	4.000	103.000	.000	.763
	Hotelling's Trace	3.223	82.994[b]	4.000	103.000	.000	.763
	Roy's Largest Root	3.223	82.994[b]	4.000	103.000	.000	.763

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.433	87.464	9	.000	.690	.710	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	450.273	4	112.568	138.535	.000	.567
	Greenhouse-Geisser	450.273	2.758	163.260	138.535	.000	.567
	Huynh-Feldt	450.273	2.839	158.601	138.535	.000	.567
	Lower-bound	450.273	1.000	450.273	138.535	.000	.567
Error(Emotion)	Sphericity Assumed	344.527	424	.813			
	Greenhouse-Geisser	344.527	292.349	1.178			
	Huynh-Feldt	344.527	300.937	1.145			
	Lower-bound	344.527	106.000	3.250			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.224*	.150	.000	1.795	2.654
	3	2.019*	.163	.000	1.551	2.486
	4	2.280*	.158	.000	1.827	2.734
	5	2.514*	.138	.000	2.120	2.908
2	1	-2.224*	.150	.000	-2.654	-1.795
	3	-.206	.105	.532	-.507	.096
	4	.056	.101	1.000	-.233	.346
	5	.290*	.090	.017	.031	.548
3	1	-2.019*	.163	.000	-2.486	-1.551
	2	.206	.105	.532	-.096	.507
	4	.262	.102	.119	-.032	.555
	5	.495*	.111	.000	.176	.815
4	1	-2.280*	.158	.000	-2.734	-1.827
	2	-.056	.101	1.000	-.346	.233
	3	-.262	.102	.119	-.555	.032
	5	.234*	.081	.050	.000	.467
5	1	-2.514*	.138	.000	-2.908	-2.120
	2	-.290*	.090	.017	-.548	-.031
	3	-.495*	.111	.000	-.815	-.176
	4	-.234*	.081	.050	-.467	.000

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Proud' relates to the emotions below - Happy	4.66	.548	107
To what extent do you think the word 'Proud' relates to the emotions below - Sad	1.65	1.020	107
To what extent do you think the word 'Proud' relates to the emotions below - Fear	1.76	1.106	107
To what extent do you think the word 'Proud' relates to the emotions below - Anger	1.49	.915	107
To what extent do you think the word 'Proud' relates to the emotions below - Disgust	1.40	.856	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.906	248.410[b]	4.000	103.000	.000	.906
	Wilks' Lambda	.094	248.410[b]	4.000	103.000	.000	.906
	Hotelling's Trace	9.647	248.410[b]	4.000	103.000	.000	.906
	Roy's Largest Root	9.647	248.410[b]	4.000	103.000	.000	.906

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.647	45.492	9	.000	.822	.852	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	824.946	4	206.236	377.152	.000	.781
	Greenhouse-Geisser	824.946	3.290	250.750	377.152	.000	.781
	Huynh-Feldt	824.946	3.408	242.072	377.152	.000	.781
	Lower-bound	824.946	1.000	824.946	377.152	.000	.781
Error(Emotion)	Sphericity Assumed	231.854	424	.547			
	Greenhouse-Geisser	231.854	348.731	.665			
	Huynh-Feldt	231.854	361.232	.642			
	Lower-bound	231.854	106.000	2.187			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	3.009*	.118	.000	2.670	3.349
	3	2.907*	.122	.000	2.557	3.257
	4	3.178*	.111	.000	2.859	3.496
	5	3.262*	.107	.000	2.954	3.569
2	1	-3.009*	.118	.000	-3.349	-2.670
	3	-.103	.077	1.000	-.325	.119
	4	.168	.092	.717	-.097	.433
	5	.252	.095	.091	-.020	.524
3	1	-2.907*	.122	.000	-3.257	-2.557
	2	.103	.077	1.000	-.119	.325
	4	.271	.102	.089	-.020	.562
	5	.355*	.098	.004	.075	.636
4	1	-3.178*	.111	.000	-3.496	-2.859
	2	-.168	.092	.717	-.433	.097
	3	-.271	.102	.089	-.562	.020
	5	.084	.078	1.000	-.138	.306
5	1	-3.262*	.107	.000	-3.569	-2.954
	2	-.252	.095	.091	-.524	.020
	3	-.355*	.098	.004	-.636	-.075
	4	-.084	.078	1.000	-.306	.138

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Putrid' relates to the emotions below - Happy	1.30	.755	102
To what extent do you think the word 'Putrid' relates to the emotions below - Sad	2.40	1.269	102
To what extent do you think the word 'Putrid' relates to the emotions below - Fear	2.66	1.278	102
To what extent do you think the word 'Putrid' relates to the emotions below - Anger	2.90	1.286	102
To what extent do you think the word 'Putrid' relates to the emotions below - Disgust	4.39	.946	102

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.811	105.001[b]	4.000	98.000	.000	.811
	Wilks' Lambda	.189	105.001[b]	4.000	98.000	.000	.811
	Hotelling's Trace	4.286	105.001[b]	4.000	98.000	.000	.811
	Roy's Largest Root	4.286	105.001[b]	4.000	98.000	.000	.811

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.840	17.289	9	.044	.922	.962	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	503.776	4	125.944	127.006	.000	.557
	Greenhouse-Geisser	503.776	3.689	136.547	127.006	.000	.557
	Huynh-Feldt	503.776	3.847	130.965	127.006	.000	.557
	Lower-bound	503.776	1.000	503.776	127.006	.000	.557
Error(Emotion)	Sphericity Assumed	400.624	404	.992			
	Greenhouse-Geisser	400.624	372.630	1.075			
	Huynh-Feldt	400.624	388.511	1.031			
	Lower-bound	400.624	101.000	3.967			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.098*	.140	.000	-1.501	-.695
	3	-1.353*	.145	.000	-1.768	-.938
	4	-1.598*	.151	.000	-2.031	-1.165
	5	-3.088*	.149	.000	-3.515	-2.661
2	1	1.098*	.140	.000	.695	1.501
	3	-.255	.117	.319	-.591	.081
	4	-.500*	.126	.001	-.862	-.138
	5	-1.990*	.154	.000	-2.431	-1.549
3	1	1.353*	.145	.000	.938	1.768
	2	.255	.117	.319	-.081	.591
	4	-.245	.119	.427	-.588	.098
	5	-1.735*	.146	.000	-2.155	-1.316
4	1	1.598*	.151	.000	1.165	2.031
	2	.500*	.126	.001	.138	.862
	3	.245	.119	.427	-.098	.588
	5	-1.490*	.142	.000	-1.898	-1.083
5	1	3.088*	.149	.000	2.661	3.515
	2	1.990*	.154	.000	1.549	2.431
	3	1.735*	.146	.000	1.316	2.155
	4	1.490*	.142	.000	1.083	1.898

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Rancid' relates to the emotions below - Happy	1.26	.671	103
To what extent do you think the word 'Rancid' relates to the emotions below - Sad	2.34	1.272	103
To what extent do you think the word 'Rancid' relates to the emotions below - Fear	2.76	1.310	103
To what extent do you think the word 'Rancid' relates to the emotions below - Anger	3.02	1.313	103
To what extent do you think the word 'Rancid' relates to the emotions below - Disgust	4.56	.813	103

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.860	152.022[b]	4.000	99.000	.000	.860
	Wilks' Lambda	.140	152.022[b]	4.000	99.000	.000	.860
	Hotelling's Trace	6.142	152.022[b]	4.000	99.000	.000	.860
	Roy's Largest Root	6.142	152.022[b]	4.000	99.000	.000	.860

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.694	36.724	9	.000	.847	.880	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	590.668	4	147.667	158.326	.000	.608
	Greenhouse-Geisser	590.668	3.389	174.287	158.326	.000	.608
	Huynh-Feldt	590.668	3.520	167.821	158.326	.000	.608
	Lower-bound	590.668	1.000	590.668	158.326	.000	.608
Error(Emotion)	Sphericity Assumed	380.532	408	.933			
	Greenhouse-Geisser	380.532	345.684	1.101			
	Huynh-Feldt	380.532	359.001	1.060			
	Lower-bound	380.532	102.000	3.731			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.078*	.131	.000	-1.453	-.703
	3	-1.495*	.140	.000	-1.897	-1.094
	4	-1.757*	.141	.000	-2.162	-1.353
	5	-3.301*	.132	.000	-3.680	-2.922
2	1	1.078*	.131	.000	.703	1.453
	3	-.417*	.098	.000	-.699	-.136
	4	-.680*	.124	.000	-1.036	-.323
	5	-2.223*	.155	.000	-2.668	-1.779
3	1	1.495*	.140	.000	1.094	1.897
	2	.417*	.098	.000	.136	.699
	4	-.262	.119	.294	-.603	.078
	5	-1.806*	.152	.000	-2.241	-1.370
4	1	1.757*	.141	.000	1.353	2.162
	2	.680*	.124	.000	.323	1.036
	3	.262	.119	.294	-.078	.603
	5	-1.544*	.145	.000	-1.958	-1.129
5	1	3.301*	.132	.000	2.922	3.680
	2	2.223*	.155	.000	1.779	2.668
	3	1.806*	.152	.000	1.370	2.241
	4	1.544*	.145	.000	1.129	1.958

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Reeking' relates to the emotions below - Happy	1.30	.687	108
To what extent do you think the word 'Reeking' relates to the emotions below - Sad	2.41	1.326	108
To what extent do you think the word 'Reeking' relates to the emotions below - Fear	2.76	1.325	108
To what extent do you think the word 'Reeking' relates to the emotions below - Anger	2.81	1.361	108
To what extent do you think the word 'Reeking' relates to the emotions below - Disgust	4.65	.674	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.882	194.860[b]	4.000	104.000	.000	.882
	Wilks' Lambda	.118	194.860[b]	4.000	104.000	.000	.882
	Hotelling's Trace	7.495	194.860[b]	4.000	104.000	.000	.882
	Roy's Largest Root	7.495	194.860[b]	4.000	104.000	.000	.882

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.703	37.157	9	.000	.826	.855	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	629.822	4	157.456	172.013	.000	.617
	Greenhouse-Geisser	629.822	3.304	190.643	172.013	.000	.617
	Huynh-Feldt	629.822	3.422	184.078	172.013	.000	.617
	Lower-bound	629.822	1.000	629.822	172.013	.000	.617
Error(Emotion)	Sphericity Assumed	391.778	428	.915			
	Greenhouse-Geisser	391.778	353.493	1.108			
	Huynh-Feldt	391.778	366.101	1.070			
	Lower-bound	391.778	107.000	3.661			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.111*	.129	.000	-1.481	-.741
	3	-1.463*	.135	.000	-1.850	-1.076
	4	-1.519*	.137	.000	-1.911	-1.126
	5	-3.352*	.119	.000	-3.692	-3.012
2	1	1.111*	.129	.000	.741	1.481
	3	-.352*	.110	.017	-.666	-.038
	4	-.407*	.114	.005	-.734	-.081
	5	-2.241*	.149	.000	-2.667	-1.814
3	1	1.463*	.135	.000	1.076	1.850
	2	.352*	.110	.017	.038	.666
	4	-.056	.106	1.000	-.359	.248
	5	-1.889*	.146	.000	-2.308	-1.470
4	1	1.519*	.137	.000	1.126	1.911
	2	.407*	.114	.005	.081	.734
	3	.056	.106	1.000	-.248	.359
	5	-1.833*	.149	.000	-2.259	-1.408
5	1	3.352*	.119	.000	3.012	3.692
	2	2.241*	.149	.000	1.814	2.667
	3	1.889*	.146	.000	1.470	2.308
	4	1.833*	.149	.000	1.408	2.259

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Repellent' relates to the emotions below - Happy	1.42	.886	105
To what extent do you think the word 'Repellent' relates to the emotions below - Sad	2.32	1.244	105
To what extent do you think the word 'Repellent' relates to the emotions below - Fear	2.95	1.326	105
To what extent do you think the word 'Repellent' relates to the emotions below - Anger	3.11	1.389	105
To what extent do you think the word 'Repellent' relates to the emotions below - Disgust	4.46	.877	105

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.814	110.788[b]	4.000	101.000	.000	.814
	Wilks' Lambda	.186	110.788[b]	4.000	101.000	.000	.814
	Hotelling's Trace	4.388	110.788[b]	4.000	101.000	.000	.814
	Roy's Largest Root	4.388	110.788[b]	4.000	101.000	.000	.814

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.883	12.729	9	.175	.943	.983	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	523.707	4	130.927	117.511	.000	.530
	Greenhouse-Geisser	523.707	3.773	138.815	117.511	.000	.530
	Huynh-Feldt	523.707	3.932	133.177	117.511	.000	.530
	Lower-bound	523.707	1.000	523.707	117.511	.000	.530
Error(Emotion)	Sphericity Assumed	463.493	416	1.114			
	Greenhouse-Geisser	463.493	392.361	1.181			
	Huynh-Feldt	463.493	408.969	1.133			
	Lower-bound	463.493	104.000	4.457			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-.905*	.134	.000	-1.288	-.521
	3	-1.533*	.150	.000	-1.962	-1.104
	4	-1.695*	.165	.000	-2.169	-1.221
	5	-3.038*	.143	.000	-3.449	-2.627
2	1	.905*	.134	.000	.521	1.288
	3	-.629*	.131	.000	-1.003	-.254
	4	-.790*	.140	.000	-1.191	-.390
	5	-2.133*	.150	.000	-2.564	-1.703
3	1	1.533*	.150	.000	1.104	1.962
	2	.629*	.131	.000	.254	1.003
	4	-.162	.141	1.000	-.566	.242
	5	-1.505*	.148	.000	-1.930	-1.079
4	1	1.695*	.165	.000	1.221	2.169
	2	.790*	.140	.000	.390	1.191
	3	.162	.141	1.000	-.242	.566
	5	-1.343*	.152	.000	-1.780	-.906
5	1	3.038*	.143	.000	2.627	3.449
	2	2.133*	.150	.000	1.703	2.564
	3	1.505*	.148	.000	1.079	1.930
	4	1.343*	.152	.000	.906	1.780

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Repugnant' relates to the emotions below - Happy	1.35	.715	107
To what extent do you think the word 'Repugnant' relates to the emotions below - Sad	2.35	1.222	107
To what extent do you think the word 'Repugnant' relates to the emotions below - Fear	2.65	1.260	107
To what extent do you think the word 'Repugnant' relates to the emotions below - Anger	2.98	1.401	107
To what extent do you think the word 'Repugnant' relates to the emotions below - Disgust	4.30	1.039	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.810	109.549[b]	4.000	103.000	.000	.810
	Wilks' Lambda	.190	109.549[b]	4.000	103.000	.000	.810
	Hotelling's Trace	4.254	109.549[b]	4.000	103.000	.000	.810
	Roy's Largest Root	4.254	109.549[b]	4.000	103.000	.000	.810

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.793	24.184	9	.004	.899	.934	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	491.600	4	122.900	124.545	.000	.540
	Greenhouse-Geisser	491.600	3.595	136.761	124.545	.000	.540
	Huynh-Feldt	491.600	3.736	131.573	124.545	.000	.540
	Lower-bound	491.600	1.000	491.600	124.545	.000	.540
Error(Emotion)	Sphericity Assumed	418.400	424	.987			
	Greenhouse-Geisser	418.400	381.027	1.098			
	Huynh-Feldt	418.400	396.052	1.056			
	Lower-bound	418.400	106.000	3.947			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.000*	.125	.000	-1.357	-.643
	3	-1.308*	.130	.000	-1.680	-.937
	4	-1.636*	.147	.000	-2.057	-1.214
	5	-2.953*	.140	.000	-3.355	-2.551
2	1	1.000*	.125	.000	.643	1.357
	3	-.308	.109	.056	-.621	.004
	4	-.636*	.130	.000	-1.009	-.262
	5	-1.953*	.151	.000	-2.386	-1.520
3	1	1.308*	.130	.000	.937	1.680
	2	.308	.109	.056	-.004	.621
	4	-.327	.121	.079	-.673	.019
	5	-1.645*	.152	.000	-2.079	-1.210
4	1	1.636*	.147	.000	1.214	2.057
	2	.636*	.130	.000	.262	1.009
	3	.327	.121	.079	-.019	.673
	5	-1.318*	.147	.000	-1.739	-.896
5	1	2.953*	.140	.000	2.551	3.355
	2	1.953*	.151	.000	1.520	2.386
	3	1.645*	.152	.000	1.210	2.079
	4	1.318*	.147	.000	.896	1.739

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Repulsive' relates to the emotions below - Happy	1.25	.699	108
To what extent do you think the word 'Repulsive' relates to the emotions below - Sad	2.55	1.356	108
To what extent do you think the word 'Repulsive' relates to the emotions below - Fear	3.01	1.286	108
To what extent do you think the word 'Repulsive' relates to the emotions below - Anger	3.52	1.249	108
To what extent do you think the word 'Repulsive' relates to the emotions below - Disgust	4.64	.716	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.883	195.786[b]	4.000	104.000	.000	.883
	Wilks' Lambda	.117	195.786[b]	4.000	104.000	.000	.883
	Hotelling's Trace	7.530	195.786[b]	4.000	104.000	.000	.883
	Roy's Largest Root	7.530	195.786[b]	4.000	104.000	.000	.883

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Epsilon[b] Huynh-Feldt	Epsilon[b] Lower-bound
Emotion	.781	26.002	9	.002	.888	.922	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	672.081	4	168.020	168.841	.000	.612
	Greenhouse-Geisser	672.081	3.552	189.220	168.841	.000	.612
	Huynh-Feldt	672.081	3.689	182.195	168.841	.000	.612
	Lower-bound	672.081	1.000	672.081	168.841	.000	.612
Error(Emotion)	Sphericity Assumed	425.919	428	.995			
	Greenhouse-Geisser	425.919	380.048	1.121			
	Huynh-Feldt	425.919	394.702	1.079			
	Lower-bound	425.919	107.000	3.981			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	95% Confidence Interval for Difference[b] Upper Bound
1	2	-1.296*	.136	.000	-1.685	-.908
	3	-1.759*	.131	.000	-2.136	-1.382
	4	-2.269*	.138	.000	-2.665	-1.872
	5	-3.389*	.121	.000	-3.736	-3.042
2	1	1.296*	.136	.000	.908	1.685
	3	-.463*	.122	.002	-.811	-.114
	4	-.972*	.143	.000	-1.381	-.564
	5	-2.093*	.160	.000	-2.551	-1.635
3	1	1.759*	.131	.000	1.382	2.136
	2	.463*	.122	.002	.114	.811
	4	-.509*	.119	.000	-.852	-.167
	5	-1.630*	.147	.000	-2.051	-1.209
4	1	2.269*	.138	.000	1.872	2.665
	2	.972*	.143	.000	.564	1.381
	3	.509*	.119	.000	.167	.852
	5	-1.120*	.135	.000	-1.508	-.733
5	1	3.389*	.121	.000	3.042	3.736
	2	2.093*	.160	.000	1.635	2.551
	3	1.630*	.147	.000	1.209	2.051
	4	1.120*	.135	.000	.733	1.508

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Resilient' relates to the emotions below - Happy	3.60	1.277	106
To what extent do you think the word 'Resilient' relates to the emotions below - Sad	2.23	1.149	106
To what extent do you think the word 'Resilient' relates to the emotions below - Fear	2.71	1.265	106
To what extent do you think the word 'Resilient' relates to the emotions below - Anger	2.34	1.337	106
To what extent do you think the word 'Resilient' relates to the emotions below - Disgust	1.84	1.172	106

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.560	32.460[b]	4.000	102.000	.000	.560
	Wilks' Lambda	.440	32.460[b]	4.000	102.000	.000	.560
	Hotelling's Trace	1.273	32.460[b]	4.000	102.000	.000	.560
	Roy's Largest Root	1.273	32.460[b]	4.000	102.000	.000	.560

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Epsilon[b] Huynh-Feldt	Epsilon[b] Lower-bound
Emotion	.399	95.024	9	.000	.682	.702	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	189.596	4	47.399	39.034	.000	.271
	Greenhouse-Geisser	189.596	2.727	69.525	39.034	.000	.271
	Huynh-Feldt	189.596	2.807	67.548	39.034	.000	.271
	Lower-bound	189.596	1.000	189.596	39.034	.000	.271
Error(Emotion)	Sphericity Assumed	510.004	420	1.214			
	Greenhouse-Geisser	510.004	286.336	1.781			
	Huynh-Feldt	510.004	294.717	1.730			
	Lower-bound	510.004	105.000	4.857			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	95% Confidence Interval for Difference[b] Upper Bound
1	2	1.377*	.169	.000	.893	1.861
	3	.896*	.192	.000	.345	1.448
	4	1.264*	.192	.000	.715	1.814
	5	1.764*	.193	.000	1.212	2.317
2	1	-1.377*	.169	.000	-1.861	-.893
	3	-.481*	.106	.000	-.784	-.178
	4	-.113	.134	1.000	-.496	.270
	5	.387*	.123	.022	.033	.740
3	1	-.896*	.192	.000	-1.448	-.345
	2	.481*	.106	.000	.178	.784
	4	.368	.141	.106	-.038	.774
	5	.868*	.126	.000	.507	1.229
4	1	-1.264*	.192	.000	-1.814	-.715
	2	.113	.134	1.000	-.270	.496
	3	-.368	.141	.106	-.774	.038
	5	.500*	.099	.000	.217	.783
5	1	-1.764*	.193	.000	-2.317	-1.212
	2	-.387*	.123	.022	-.740	-.033
	3	-.868*	.126	.000	-1.229	-.507
	4	-.500*	.099	.000	-.783	-.217

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Revolting' relates to the emotions below - Happy	1.31	.847	109
To what extent do you think the word 'Revolting' relates to the emotions below - Sad	2.61	1.368	109
To what extent do you think the word 'Revolting' relates to the emotions below - Fear	2.71	1.307	109
To what extent do you think the word 'Revolting' relates to the emotions below - Anger	3.21	1.395	109
To what extent do you think the word 'Revolting' relates to the emotions below - Disgust	4.66	.808	109

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.861	162.398[b]	4.000	105.000	.000	.861
	Wilks' Lambda	.139	162.398[b]	4.000	105.000	.000	.861
	Hotelling's Trace	6.187	162.398[b]	4.000	105.000	.000	.861
	Roy's Largest Root	6.187	162.398[b]	4.000	105.000	.000	.861

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Epsilon[b] Huynh-Feldt	Epsilon[b] Lower-bound
Emotion	.684	40.452	9	.000	.856	.888	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	636.826	4	159.206	158.191	.000	.594
	Greenhouse-Geisser	636.826	3.425	185.950	158.191	.000	.594
	Huynh-Feldt	636.826	3.550	179.363	158.191	.000	.594
	Lower-bound	636.826	1.000	636.826	158.191	.000	.594
Error(Emotion)	Sphericity Assumed	434.774	432	1.006			
	Greenhouse-Geisser	434.774	369.869	1.175			
	Huynh-Feldt	434.774	383.453	1.134			
	Lower-bound	434.774	108.000	4.026			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.294*	.138	.000	-1.689	-.898
	3	-1.394*	.135	.000	-1.781	-1.008
	4	-1.899*	.153	.000	-2.336	-1.462
	5	-3.349*	.130	.000	-3.721	-2.976
2	1	1.294*	.138	.000	.898	1.689
	3	-.101	.093	1.000	-.368	.166
	4	-.606*	.129	.000	-.975	-.236
	5	-2.055*	.148	.000	-2.479	-1.631
3	1	1.394*	.135	.000	1.008	1.781
	2	.101	.093	1.000	-.166	.368
	4	-.505*	.130	.002	-.877	-.132
	5	-1.954*	.148	.000	-2.377	-1.531
4	1	1.899*	.153	.000	1.462	2.336
	2	.606*	.129	.000	.236	.975
	3	.505*	.130	.002	.132	.877
	5	-1.450*	.146	.000	-1.868	-1.031
5	1	3.349*	.130	.000	2.976	3.721
	2	2.055*	.148	.000	1.631	2.479
	3	1.954*	.148	.000	1.531	2.377
	4	1.450*	.146	.000	1.031	1.868

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Rotten' relates to the emotions below - Happy	1.18	.553	104
To what extent do you think the word 'Rotten' relates to the emotions below - Sad	2.47	1.358	104
To what extent do you think the word 'Rotten' relates to the emotions below - Fear	2.67	1.310	104
To what extent do you think the word 'Rotten' relates to the emotions below - Anger	2.97	1.417	104
To what extent do you think the word 'Rotten' relates to the emotions below - Disgust	4.71	.618	104

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.932	343.239[b]	4.000	100.000	.000	.932
	Wilks' Lambda	.068	343.239[b]	4.000	100.000	.000	.932
	Hotelling's Trace	13.730	343.239[b]	4.000	100.000	.000	.932
	Roy's Largest Root	13.730	343.239[b]	4.000	100.000	.000	.932

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.492	72.029	9	.000	.719	.742	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	668.012	4	167.003	184.966	.000	.642
	Greenhouse-Geisser	668.012	2.877	232.219	184.966	.000	.642
	Huynh-Feldt	668.012	2.968	225.067	184.966	.000	.642
	Lower-bound	668.012	1.000	668.012	184.966	.000	.642
Error(Emotion)	Sphericity Assumed	371.988	412	.903			
	Greenhouse-Geisser	371.988	296.295	1.255			
	Huynh-Feldt	371.988	305.709	1.217			
	Lower-bound	371.988	103.000	3.612			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.288*	.136	.000	-1.680	-.897
	3	-1.490*	.135	.000	-1.878	-1.102
	4	-1.788*	.145	.000	-2.205	-1.372
	5	-3.529*	.095	.000	-3.800	-3.257
2	1	1.288*	.136	.000	.897	1.680
	3	-.202	.094	.341	-.472	.068
	4	-.500*	.121	.001	-.848	-.152
	5	-2.240*	.152	.000	-2.676	-1.805
3	1	1.490*	.135	.000	1.102	1.878
	2	.202	.094	.341	-.068	.472
	4	-.298	.121	.157	-.646	.050
	5	-2.038*	.145	.000	-2.455	-1.622
4	1	1.788*	.145	.000	1.372	2.205
	2	.500*	.121	.001	.152	.848
	3	.298	.121	.157	-.050	.646
	5	-1.740*	.156	.000	-2.187	-1.293
5	1	3.529*	.095	.000	3.257	3.800
	2	2.240*	.152	.000	1.805	2.676
	3	2.038*	.145	.000	1.622	2.455
	4	1.740*	.156	.000	1.293	2.187

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Sickening' relates to the emotions below - Happy	1.32	.860	105
To what extent do you think the word 'Sickening' relates to the emotions below - Sad	3.03	1.411	105
To what extent do you think the word 'Sickening' relates to the emotions below - Fear	3.16	1.331	105
To what extent do you think the word 'Sickening' relates to the emotions below - Anger	3.52	1.324	105
To what extent do you think the word 'Sickening' relates to the emotions below - Disgust	4.54	.821	105

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.845	137.638[b]	4.000	101.000	.000	.845
	Wilks' Lambda	.155	137.638[b]	4.000	101.000	.000	.845
	Hotelling's Trace	5.451	137.638[b]	4.000	101.000	.000	.845
	Roy's Largest Root	5.451	137.638[b]	4.000	101.000	.000	.845

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

					Epsilon[b]		
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.661	42.451	9	.000	.813	.842	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	569.512	4	142.378	145.424	.000	.583
	Greenhouse-Geisser	569.512	3.250	175.208	145.424	.000	.583
	Huynh-Feldt	569.512	3.368	169.106	145.424	.000	.583
	Lower-bound	569.512	1.000	569.512	145.424	.000	.583
Error(Emotion)	Sphericity Assumed	407.288	416	.979			
	Greenhouse-Geisser	407.288	338.051	1.205			
	Huynh-Feldt	407.288	350.249	1.163			
	Lower-bound	407.288	104.000	3.916			

Pairwise Comparisons

Measure: MEASURE_1

					95% Confidence Interval for Difference[b]	
(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	Lower Bound	Upper Bound
1	2	-1.705*	.164	.000	-2.175	-1.234
	3	-1.838*	.149	.000	-2.265	-1.411
	4	-2.200*	.159	.000	-2.655	-1.745
	5	-3.219*	.137	.000	-3.611	-2.827
2	1	1.705*	.164	.000	1.234	2.175
	3	-.133	.108	1.000	-.444	.177
	4	-.495*	.113	.000	-.820	-.170
	5	-1.514*	.146	.000	-1.933	-1.096
3	1	1.838*	.149	.000	1.411	2.265
	2	.133	.108	1.000	-.177	.444
	4	-.362*	.109	.013	-.675	-.049
	5	-1.381*	.138	.000	-1.776	-.986
4	1	2.200*	.159	.000	1.745	2.655
	2	.495*	.113	.000	.170	.820
	3	.362*	.109	.013	.049	.675
	5	-1.019*	.130	.000	-1.391	-.647
5	1	3.219*	.137	.000	2.827	3.611
	2	1.514*	.146	.000	1.096	1.933
	3	1.381*	.138	.000	.986	1.776
	4	1.019*	.130	.000	.647	1.391

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Sincere' relates to the emotions below - Happy	3.60	1.123	107
To what extent do you think the word 'Sincere' relates to the emotions below - Sad	2.70	1.290	107
To what extent do you think the word 'Sincere' relates to the emotions below - Fear	2.08	1.117	107
To what extent do you think the word 'Sincere' relates to the emotions below - Anger	1.91	1.120	107
To what extent do you think the word 'Sincere' relates to the emotions below - Disgust	1.72	1.026	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.590	37.073[b]	4.000	103.000	.000	.590
	Wilks' Lambda	.410	37.073[b]	4.000	103.000	.000	.590
	Hotelling's Trace	1.440	37.073[b]	4.000	103.000	.000	.590
	Roy's Largest Root	1.440	37.073[b]	4.000	103.000	.000	.590

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.317	120.119	9	.000	.659	.677	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	249.551	4	62.388	61.798	.000	.368
	Greenhouse-Geisser	249.551	2.636	94.678	61.798	.000	.368
	Huynh-Feldt	249.551	2.709	92.114	61.798	.000	.368
	Lower-bound	249.551	1.000	249.551	61.798	.000	.368
Error(Emotion)	Sphericity Assumed	428.049	424	1.010			
	Greenhouse-Geisser	428.049	279.395	1.532			
	Huynh-Feldt	428.049	287.172	1.491			
	Lower-bound	428.049	106.000	4.038			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	.897*	.179	.000	.385	1.409
	3	1.514*	.170	.000	1.027	2.001
	4	1.692*	.171	.000	1.200	2.183
	5	1.879*	.164	.000	1.410	2.347
2	1	-.897*	.179	.000	-1.409	-.385
	3	.617*	.132	.000	.239	.995
	4	.794*	.122	.000	.444	1.145
	5	.981*	.135	.000	.593	1.370
3	1	-1.514*	.170	.000	-2.001	-1.027
	2	-.617*	.132	.000	-.995	-.239
	4	.178	.078	.255	-.047	.402
	5	.364*	.089	.001	.108	.621
4	1	-1.692*	.171	.000	-2.183	-1.200
	2	-.794*	.122	.000	-1.145	-.444
	3	-.178	.078	.255	-.402	.047
	5	.187	.084	.284	-.054	.428
5	1	-1.879*	.164	.000	-2.347	-1.410
	2	-.981*	.135	.000	-1.370	-.593
	3	-.364*	.089	.001	-.621	-.108
	4	-.187	.084	.284	-.428	.054

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Strong' relates to the emotions below - Happy	4.01	.922	108
To what extent do you think the word 'Strong' relates to the emotions below - Sad	2.72	1.244	108
To what extent do you think the word 'Strong' relates to the emotions below - Fear	2.72	1.267	108
To what extent do you think the word 'Strong' relates to the emotions below - Anger	2.61	1.338	108
To what extent do you think the word 'Strong' relates to the emotions below - Disgust	1.95	1.147	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.633	44.835[b]	4.000	104.000	.000	.633
	Wilks' Lambda	.367	44.835[b]	4.000	104.000	.000	.633
	Hotelling's Trace	1.724	44.835[b]	4.000	104.000	.000	.633
	Roy's Largest Root	1.724	44.835[b]	4.000	104.000	.000	.633

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.727	33.598	9	.000	.875	.908	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	240.433	4	60.108	63.684	.000	.373
	Greenhouse-Geisser	240.433	3.499	68.713	63.684	.000	.373
	Huynh-Feldt	240.433	3.632	66.201	63.684	.000	.373
	Lower-bound	240.433	1.000	240.433	63.684	.000	.373
Error(Emotion)	Sphericity Assumed	403.967	428	.944			
	Greenhouse-Geisser	403.967	374.405	1.079			
	Huynh-Feldt	403.967	388.612	1.040			
	Lower-bound	403.967	107.000	3.775			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	1.287*	.140	.000	.886	1.688
	3	1.287*	.142	.000	.879	1.695
	4	1.398*	.148	.000	.975	1.821
	5	2.056*	.152	.000	1.621	2.490
2	1	-1.287*	.140	.000	-1.688	-.886
	3	.000	.097	1.000	-.277	.277
	4	.111	.138	1.000	-.283	.505
	5	.769*	.125	.000	.412	1.125
3	1	-1.287*	.142	.000	-1.695	-.879
	2	.000	.097	1.000	-.277	.277
	4	.111	.134	1.000	-.272	.494
	5	.769*	.121	.000	.422	1.115
4	1	-1.398*	.148	.000	-1.821	-.975
	2	-.111	.138	1.000	-.505	.283
	3	-.111	.134	1.000	-.494	.272
	5	.657*	.118	.000	.320	.995
5	1	-2.056*	.152	.000	-2.490	-1.621
	2	-.769*	.125	.000	-1.125	-.412
	3	-.769*	.121	.000	-1.115	-.422
	4	-.657*	.118	.000	-.995	-.320

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Successful' relates to the emotions below - Happy	4.51	.719	107
To what extent do you think the word 'Successful' relates to the emotions below - Sad	1.89	1.119	107
To what extent do you think the word 'Successful' relates to the emotions below - Fear	2.21	1.274	107
To what extent do you think the word 'Successful' relates to the emotions below - Anger	1.62	.918	107
To what extent do you think the word 'Successful' relates to the emotions below - Disgust	1.45	.838	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.857	153.862[b]	4.000	103.000	.000	.857
	Wilks' Lambda	.143	153.862[b]	4.000	103.000	.000	.857
	Hotelling's Trace	5.975	153.862[b]	4.000	103.000	.000	.857
	Roy's Largest Root	5.975	153.862[b]	4.000	103.000	.000	.857

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.320	118.923	9	.000	.684	.703	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	670.243	4	167.561	249.671	.000	.702
	Greenhouse-Geisser	670.243	2.734	245.120	249.671	.000	.702
	Huynh-Feldt	670.243	2.814	238.193	249.671	.000	.702
	Lower-bound	670.243	1.000	670.243	249.671	.000	.702
Error(Emotion)	Sphericity Assumed	284.557	424	.671			
	Greenhouse-Geisser	284.557	289.841	.982			
	Huynh-Feldt	284.557	298.269	.954			
	Lower-bound	284.557	106.000	2.685			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	2.626*	.141	.000	2.221	3.032
	3	2.299*	.152	.000	1.865	2.734
	4	2.897*	.129	.000	2.528	3.266
	5	3.065*	.123	.000	2.712	3.419
2	1	-2.626*	.141	.000	-3.032	-2.221
	3	-.327*	.107	.028	-.634	-.021
	4	.271*	.077	.006	.050	.492
	5	.439*	.086	.000	.192	.687
3	1	-2.299*	.152	.000	-2.734	-1.865
	2	.327*	.107	.028	.021	.634
	4	.598*	.106	.000	.294	.902
	5	.766*	.108	.000	.458	1.075
4	1	-2.897*	.129	.000	-3.266	-2.528
	2	-.271*	.077	.006	-.492	-.050
	3	-.598*	.106	.000	-.902	-.294
	5	.168*	.056	.031	.009	.327
5	1	-3.065*	.123	.000	-3.419	-2.712
	2	-.439*	.086	.000	-.687	-.192
	3	-.766*	.108	.000	-1.075	-.458
	4	-.168*	.056	.031	-.327	-.009

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Terrific' relates to the emotions below - Happy	4.47	.948	109
To what extent do you think the word 'Terrific' relates to the emotions below - Sad	1.63	.969	109
To what extent do you think the word 'Terrific' relates to the emotions below - Fear	1.83	1.229	109
To what extent do you think the word 'Terrific' relates to the emotions below - Anger	1.58	.993	109
To what extent do you think the word 'Terrific' relates to the emotions below - Disgust	1.51	.968	109

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.793	100.374[b]	4.000	105.000	.000	.793
	Wilks' Lambda	.207	100.374[b]	4.000	105.000	.000	.793
	Hotelling's Trace	3.824	100.374[b]	4.000	105.000	.000	.793
	Roy's Largest Root	3.824	100.374[b]	4.000	105.000	.000	.793

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Epsilon[b] Huynh-Feldt	Epsilon[b] Lower-bound
Emotion	.156	197.790	9	.000	.487	.495	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	703.681	4	175.920	216.197	.000	.667
	Greenhouse-Geisser	703.681	1.946	361.532	216.197	.000	.667
	Huynh-Feldt	703.681	1.982	355.107	216.197	.000	.667
	Lower-bound	703.681	1.000	703.681	216.197	.000	.667
Error(Emotion)	Sphericity Assumed	351.519	432	.814			
	Greenhouse-Geisser	351.519	210.209	1.672			
	Huynh-Feldt	351.519	214.013	1.643			
	Lower-bound	351.519	108.000	3.255			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	95% Confidence Interval for Difference[b] Upper Bound
1	2	2.835*	.157	.000	2.384	3.285
	3	2.633*	.187	.000	2.096	3.170
	4	2.890*	.159	.000	2.435	3.345
	5	2.954*	.157	.000	2.505	3.403
2	1	-2.835*	.157	.000	-3.285	-2.384
	3	-.202	.091	.287	-.463	.059
	4	.055	.075	1.000	-.159	.269
	5	.119	.072	1.000	-.088	.326
3	1	-2.633*	.187	.000	-3.170	-2.096
	2	.202	.091	.287	-.059	.463
	4	.257*	.087	.038	.008	.506
	5	.321*	.097	.012	.044	.598
4	1	-2.890*	.159	.000	-3.345	-2.435
	2	-.055	.075	1.000	-.269	.159
	3	-.257*	.087	.038	-.506	-.008
	5	.064	.062	1.000	-.112	.241
5	1	-2.954*	.157	.000	-3.403	-2.505
	2	-.119	.072	1.000	-.326	.088
	3	-.321*	.097	.012	-.598	-.044
	4	-.064	.062	1.000	-.241	.112

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Vile' relates to the emotions below - Happy	1.24	.594	108
To what extent do you think the word 'Vile' relates to the emotions below - Sad	2.57	1.355	108
To what extent do you think the word 'Vile' relates to the emotions below - Fear	2.92	1.340	108
To what extent do you think the word 'Vile' relates to the emotions below - Anger	3.58	1.231	108
To what extent do you think the word 'Vile' relates to the emotions below - Disgust	4.66	.751	108

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.904	244.629[b]	4.000	104.000	.000	.904
	Wilks' Lambda	.096	244.629[b]	4.000	104.000	.000	.904
	Hotelling's Trace	9.409	244.629[b]	4.000	104.000	.000	.904
	Roy's Largest Root	9.409	244.629[b]	4.000	104.000	.000	.904

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Epsilon[b] Huynh-Feldt	Epsilon[b] Lower-bound
Emotion	.713	35.602	9	.000	.851	.883	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	688.011	4	172.003	173.303	.000	.618
	Greenhouse-Geisser	688.011	3.406	202.004	173.303	.000	.618
	Huynh-Feldt	688.011	3.531	194.823	173.303	.000	.618
	Lower-bound	688.011	1.000	688.011	173.303	.000	.618
Error(Emotion)	Sphericity Assumed	424.789	428	.992			
	Greenhouse-Geisser	424.789	364.434	1.166			
	Huynh-Feldt	424.789	377.868	1.124			
	Lower-bound	424.789	107.000	3.970			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	95% Confidence Interval for Difference[b] Upper Bound
1	2	-1.333*	.132	.000	-1.710	-.956
	3	-1.676*	.135	.000	-2.062	-1.290
	4	-2.343*	.133	.000	-2.724	-1.961
	5	-3.417*	.110	.000	-3.732	-3.101
2	1	1.333*	.132	.000	.956	1.710
	3	-.343*	.119	.047	-.682	-.003
	4	-1.009*	.141	.000	-1.415	-.604
	5	-2.083*	.160	.000	-2.542	-1.624
3	1	1.676*	.135	.000	1.290	2.062
	2	.343*	.119	.047	.003	.682
	4	-.667*	.136	.000	-1.057	-.277
	5	-1.741*	.152	.000	-2.176	-1.305
4	1	2.343*	.133	.000	1.961	2.724
	2	1.009*	.141	.000	.604	1.415
	3	.667*	.136	.000	.277	1.057
	5	-1.074*	.131	.000	-1.451	-.698
5	1	3.417*	.110	.000	3.101	3.732
	2	2.083*	.160	.000	1.624	2.542
	3	1.741*	.152	.000	1.305	2.176
	4	1.074*	.131	.000	.698	1.451

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Vulgar' relates to the emotions below - Happy	1.32	.722	107
To what extent do you think the word 'Vulgar' relates to the emotions below - Sad	2.54	1.341	107
To what extent do you think the word 'Vulgar' relates to the emotions below - Fear	2.90	1.387	107
To what extent do you think the word 'Vulgar' relates to the emotions below - Anger	3.54	1.223	107
To what extent do you think the word 'Vulgar' relates to the emotions below - Disgust	4.35	.972	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.828	124.023[b]	4.000	103.000	.000	.828
	Wilks' Lambda	.172	124.023[b]	4.000	103.000	.000	.828
	Hotelling's Trace	4.816	124.023[b]	4.000	103.000	.000	.828
	Roy's Largest Root	4.816	124.023[b]	4.000	103.000	.000	.828

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Epsilon[b] Huynh-Feldt	Epsilon[b] Lower-bound
Emotion	.751	29.855	9	.000	.876	.909	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	548.908	4	137.227	132.874	.000	.556
	Greenhouse-Geisser	548.908	3.503	156.691	132.874	.000	.556
	Huynh-Feldt	548.908	3.638	150.901	132.874	.000	.556
	Lower-bound	548.908	1.000	548.908	132.874	.000	.556
Error(Emotion)	Sphericity Assumed	437.892	424	1.033			
	Greenhouse-Geisser	437.892	371.332	1.179			
	Huynh-Feldt	437.892	385.578	1.136			
	Lower-bound	437.892	106.000	4.131			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-1.224*	.132	.000	-1.602	-.847
	3	-1.579*	.144	.000	-1.993	-1.166
	4	-2.224*	.141	.000	-2.630	-1.819
	5	-3.028*	.135	.000	-3.415	-2.641
2	1	1.224*	.132	.000	.847	1.602
	3	-.355	.128	.064	-.721	.011
	4	-1.000*	.151	.000	-1.432	-.568
	5	-1.804*	.158	.000	-2.257	-1.351
3	1	1.579*	.144	.000	1.166	1.993
	2	.355	.128	.064	-.011	.721
	4	-.645*	.130	.000	-1.016	-.273
	5	-1.449*	.150	.000	-1.880	-1.017
4	1	2.224*	.141	.000	1.819	2.630
	2	1.000*	.151	.000	.568	1.432
	3	.645*	.130	.000	.273	1.016
	5	-.804*	.115	.000	-1.134	-.473
5	1	3.028*	.135	.000	2.641	3.415
	2	1.804*	.158	.000	1.351	2.257
	3	1.449*	.150	.000	1.017	1.880
	4	.804*	.115	.000	.473	1.134

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Wise' relates to the emotions below - Happy	3.82	1.003	106
To what extent do you think the word 'Wise' relates to the emotions below - Sad	2.25	1.219	106
To what extent do you think the word 'Wise' relates to the emotions below - Fear	2.09	1.091	106
To what extent do you think the word 'Wise' relates to the emotions below - Anger	1.74	.908	106
To what extent do you think the word 'Wise' relates to the emotions below - Disgust	1.52	.807	106

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.747	75.225[b]	4.000	102.000	.000	.747
	Wilks' Lambda	.253	75.225[b]	4.000	102.000	.000	.747
	Hotelling's Trace	2.950	75.225[b]	4.000	102.000	.000	.747
	Roy's Largest Root	2.950	75.225[b]	4.000	102.000	.000	.747

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.387	98.128	9	.000	.736	.759	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	348.140	4	87.035	128.415	.000	.550
	Greenhouse-Geisser	348.140	2.943	118.275	128.415	.000	.550
	Huynh-Feldt	348.140	3.038	114.609	128.415	.000	.550
	Lower-bound	348.140	1.000	348.140	128.415	.000	.550
Error(Emotion)	Sphericity Assumed	284.660	420	.678			
	Greenhouse-Geisser	284.660	309.066	.921			
	Huynh-Feldt	284.660	318.951	.892			
	Lower-bound	284.660	105.000	2.711			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	1.566*	.142	.000	1.159	1.973
	3	1.726*	.132	.000	1.347	2.106
	4	2.085*	.130	.000	1.712	2.458
	5	2.302*	.131	.000	1.925	2.679
2	1	-1.566*	.142	.000	-1.973	-1.159
	3	.160	.092	.843	-.104	.424
	4	.519*	.108	.000	.208	.829
	5	.736*	.114	.000	.409	1.063
3	1	-1.726*	.132	.000	-2.106	-1.347
	2	-.160	.092	.843	-.424	.104
	4	.358*	.096	.003	.083	.634
	5	.575*	.101	.000	.285	.866
4	1	-2.085*	.130	.000	-2.458	-1.712
	2	-.519*	.108	.000	-.829	-.208
	3	-.358*	.096	.003	-.634	-.083
	5	.217*	.058	.003	.049	.385
5	1	-2.302*	.131	.000	-2.679	-1.925
	2	-.736*	.114	.000	-1.063	-.409
	3	-.575*	.101	.000	-.866	-.285
	4	-.217*	.058	.003	-.385	-.049

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Worthy' relates to the emotions below - Happy	4.12	.821	107
To what extent do you think the word 'Worthy' relates to the emotions below - Sad	2.17	1.193	107
To what extent do you think the word 'Worthy' relates to the emotions below - Fear	2.21	1.264	107
To what extent do you think the word 'Worthy' relates to the emotions below - Anger	1.75	1.065	107
To what extent do you think the word 'Worthy' relates to the emotions below - Disgust	1.58	.952	107

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.784	93.199[b]	4.000	103.000	.000	.784
	Wilks' Lambda	.216	93.199[b]	4.000	103.000	.000	.784
	Hotelling's Trace	3.619	93.199[b]	4.000	103.000	.000	.784
	Roy's Largest Root	3.619	93.199[b]	4.000	103.000	.000	.784

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.394	97.308	9	.000	.697	.718	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	443.794	4	110.949	147.280	.000	.581
	Greenhouse-Geisser	443.794	2.787	159.223	147.280	.000	.581
	Huynh-Feldt	443.794	2.870	154.624	147.280	.000	.581
	Lower-bound	443.794	1.000	443.794	147.280	.000	.581
Error(Emotion)	Sphericity Assumed	319.406	424	.753			
	Greenhouse-Geisser	319.406	295.448	1.081			
	Huynh-Feldt	319.406	304.235	1.050			
	Lower-bound	319.406	106.000	3.013			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	1.953*	.152	.000	1.519	2.388
	3	1.916*	.154	.000	1.475	2.357
	4	2.374*	.135	.000	1.986	2.761
	5	2.542*	.132	.000	2.165	2.919
2	1	-1.953*	.152	.000	-2.388	-1.519
	3	-.037	.089	1.000	-.293	.218
	4	.421*	.100	.001	.133	.708
	5	.589*	.115	.000	.259	.918
3	1	-1.916*	.154	.000	-2.357	-1.475
	2	.037	.089	1.000	-.218	.293
	4	.458*	.101	.000	.167	.749
	5	.626*	.111	.000	.309	.944
4	1	-2.374*	.135	.000	-2.761	-1.986
	2	-.421*	.100	.001	-.708	-.133
	3	-.458*	.101	.000	-.749	-.167
	5	.168	.070	.174	-.031	.368
5	1	-2.542*	.132	.000	-2.919	-2.165
	2	-.589*	.115	.000	-.918	-.259
	3	-.626*	.111	.000	-.944	-.309
	4	-.168	.070	.174	-.368	.031

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Descriptive Statistics

	Mean	Std. Deviation	N
To what extent do you think the word 'Yucky' relates to the emotions below - Happy	1.27	.610	106
To what extent do you think the word 'Yucky' relates to the emotions below - Sad	2.25	1.295	106
To what extent do you think the word 'Yucky' relates to the emotions below - Fear	2.49	1.326	106
To what extent do you think the word 'Yucky' relates to the emotions below - Anger	2.50	1.396	106
To what extent do you think the word 'Yucky' relates to the emotions below - Disgust	4.55	.758	106

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Emotion	Pillai's Trace	.889	204.405[b]	4.000	102.000	.000	.889
	Wilks' Lambda	.111	204.405[b]	4.000	102.000	.000	.889
	Hotelling's Trace	8.016	204.405[b]	4.000	102.000	.000	.889
	Roy's Largest Root	8.016	204.405[b]	4.000	102.000	.000	.889

a. Design: Intercept
Within Subjects Design: Emotion

b. Exact statistic

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b] Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Emotion	.554	61.075	9	.000	.729	.752	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: Emotion

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Emotion	Sphericity Assumed	603.264	4	150.816	169.395	.000	.617
	Greenhouse-Geisser	603.264	2.914	207.010	169.395	.000	.617
	Huynh-Feldt	603.264	3.006	200.665	169.395	.000	.617
	Lower-bound	603.264	1.000	603.264	169.395	.000	.617
Error(Emotion)	Sphericity Assumed	373.936	420	.890			
	Greenhouse-Geisser	373.936	305.989	1.222			
	Huynh-Feldt	373.936	315.664	1.185			
	Lower-bound	373.936	105.000	3.561			

Pairwise Comparisons

Measure: MEASURE_1

(I) Emotion	(J) Emotion	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-.981*	.124	.000	-1.338	-.625
	3	-1.217*	.129	.000	-1.586	-.848
	4	-1.226*	.136	.000	-1.617	-.836
	5	-3.274*	.114	.000	-3.601	-2.946
2	1	.981*	.124	.000	.625	1.338
	3	-.236	.103	.246	-.532	.061
	4	-.245	.102	.179	-.538	.047
	5	-2.292*	.152	.000	-2.727	-1.858
3	1	1.217*	.129	.000	.848	1.586
	2	.236	.103	.246	-.061	.532
	4	-.009	.104	1.000	-.308	.290
	5	-2.057*	.156	.000	-2.503	-1.610
4	1	1.226*	.136	.000	.836	1.617
	2	.245	.102	.179	-.047	.538
	3	.009	.104	1.000	-.290	.308
	5	-2.047*	.159	.000	-2.503	-1.592
5	1	3.274*	.114	.000	2.946	3.601
	2	2.292*	.152	.000	1.858	2.727
	3	2.057*	.156	.000	1.610	2.503
	4	2.047*	.159	.000	1.592	2.503

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 7 - Final pairs

Disgust	Valence	Arousal	Length	Positive	Valence	Arousal	Arousal Diff
Revolting	1.57	4.11	9	Beautiful	6.37	4.17	-0.06
Vile	1.62	4.12	4	Nice	5.61	3.71	0.41
Atrocious	1.63	3.99	9	Inspiring	6.17	4.48	-0.49
Repulsive	1.63	4.22	9	Brilliant	6.31	4.24	-0.02
Disgusting	1.65	4.07	9	Optimistic	5.88	4	0.07
Rotten	1.65	3.86	6	Strong	5.73	3.99	-0.13
Gruesome	1.68	3.88	8	Terrific	5.85	4.12	-0.24
Sickening	1.69	3.95	9	Desirable	5.9	3.82	0.13
Rancid	1.72	3.94	6	Elated	5.67	3.94	0
Repugnant	1.73	4.02	9	Overjoyed	6.13	4.35	-0.33
Reeking	1.75	3.92	7	Amiable	5.21	3.48	0.44
Appalling	1.81	4	9	Resilient	5.14	3.99	0.01
Foul	1.81	3.88	4	Kind	6	3.49	0.39
Vulgar	1.87	4.02	6	Joyful	6.15	4.2	-0.18
Hideous	1.9	3.84	7	Gallant	4.9	3.47	0.37
Filthy	1.92	3.8	6	Bright	6.05	3.81	-0.01
Putrid	1.93	3.96	6	Heroic	5.87	4.03	-0.07
Repellent	1.97	3.87	9	Fulfilled	5.73	3.43	0.44
Gross	2.01	3.71	5	Proud	5.9	4.09	-0.38
Horrid	2.04	3.69	5	Worthy	5.88	3.67	0.02
Grim	2.05	3.65	4	Wise	5.58	3.45	0.2
Contaminated	2.07	3.97	12	Advantageous	5.56	4.04	-0.07
Abhorrent	2.09	3.65	9	Efficient	5.25	3.67	-0.02
Dirty	2.1	3.93	4	Happy	6.28	3.92	0.01
Ghastly	2.18	3.7	7	Sincere	5.26	3.3	0.4
Yucky	2.26	3.39	5	Merry	5.84	3.74	-0.35
Festering	2.28	3.94	9	Proactive	5.62	4.27	-0.33

Appendix 8 - Demographics sheet for Study 2

Sheffield Hallam University

PARTICIPANT DEMOGRAPHICS SHEET FORM

Theoretical and Methodical Developments of Self-Disgust on Mental Health Outcomes

Participant code: ____________

1. Please state your age (in years)
2. Are you a native English speaker?

   Yes ☐ No ☐

3. What is your highest educational or school qualification you have completed? (please tick one)

   PhD or equivalent doctoral level qualification ☐
   Masters or equivalent higher degree level qualification ☐
   Bachelors or equivalent first degree level qualification ☐
   A-level or equivalent post-secondary level qualification ☐
   GCSE or equivalent secondary school qualification ☐
   None of the above ☐

Researcher's contact details:

Appendix 9 - Self-Disgust Scale

Removed for Copyright reasons.

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 (Washington, D.C.)*, *8*(3), 379–385. https://doi.org/10.1037/1528-3542.8.3.379

Appendix 10 - Disgust Propensity and Sensitivity Scale

Removed for Copyright reasons.

van Overveld, W. J. M., De Jong, P. J., Peters, M. L., Cavanagh, K., & Davey, G. C. (2006). Disgust propensity and disgust sensitivity: Separate constructs that are differentially related to specific fears. *Personality and Individual Differences*, *41*(7), 1241-1252. https://doi.org/10.1016/j.paid.2006.04.021

Appendix 11 - Positive and Negative Affect Scale

Removed for Copyright reasons.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063–1070. https://doi.org/10.1037//0022-3514.54.6.1063

Appendix 12 - Depression, Anxiety and Stress Scale: Depression only

Removed for Copyright reasons.

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, *33*(3), 335–343. https://doi.org/10.1016/0005-7967(94)00075-u

Appendix 13 - Test of Self-Conscious Affect

Removed for Copyright reasons.

Tangney, J. P., Dearing, R., Wagner, P. E., & Gramzow, R. (2000). The Test of Self-Conscious Affect-3 (TOSCA-3): George Mason University. *Fairfax, VA*.

https://doi.org/10.1037/t06464-000

Appendix 14 - UCLA Loneliness Scale

Removed for Copyright reasons.

Russell D. W. (1996). UCLA Loneliness Scale (Version 3): reliability, validity, and factor structure. *Journal of Personality Assessment*, *66*(1), 20–40. https://doi.org/10.1207/s15327752jpa6601_2

Appendix 15 - Rosenburg Self-Esteem Scale

Removed for Copyright reasons.

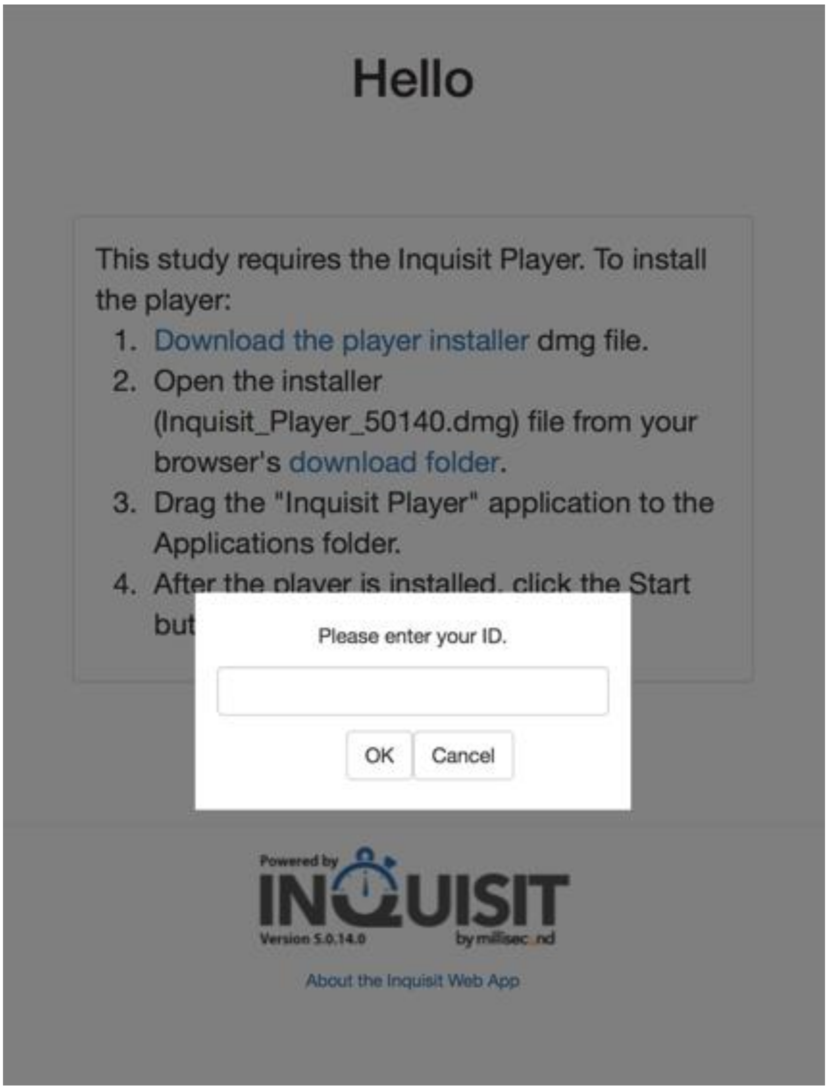
Rosenberg, M. (1965). Rosenberg self-esteem scale. *Journal of Religion and Health*.

https://doi.org/10.1037/t01038-000

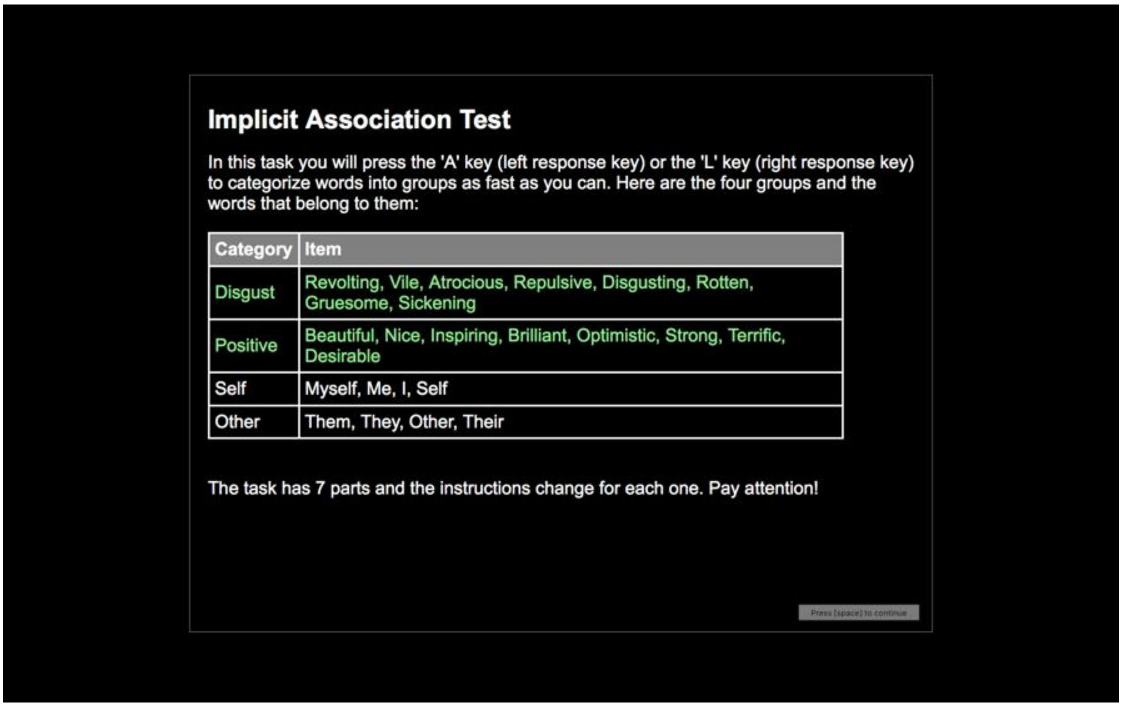
Appendix 16 - IAT 7 block sequence

Block	Description	Trials
1	Target category sorting training. E.g. self on left and other on right	10
2	Attribute sorting training. E.g. disgust on left and positive on right.	10
3	Dual pairings A E.g. self and disgust on left, and other and positive on right.	20
4	Dual pairings A	40
5	Target category sorting training with targets switching sides. E.g. other on left and self on right.	10
6	Dual pairings B E.g other and disgust on left, and self and positive on right.	20
7	Dual pairings B	40

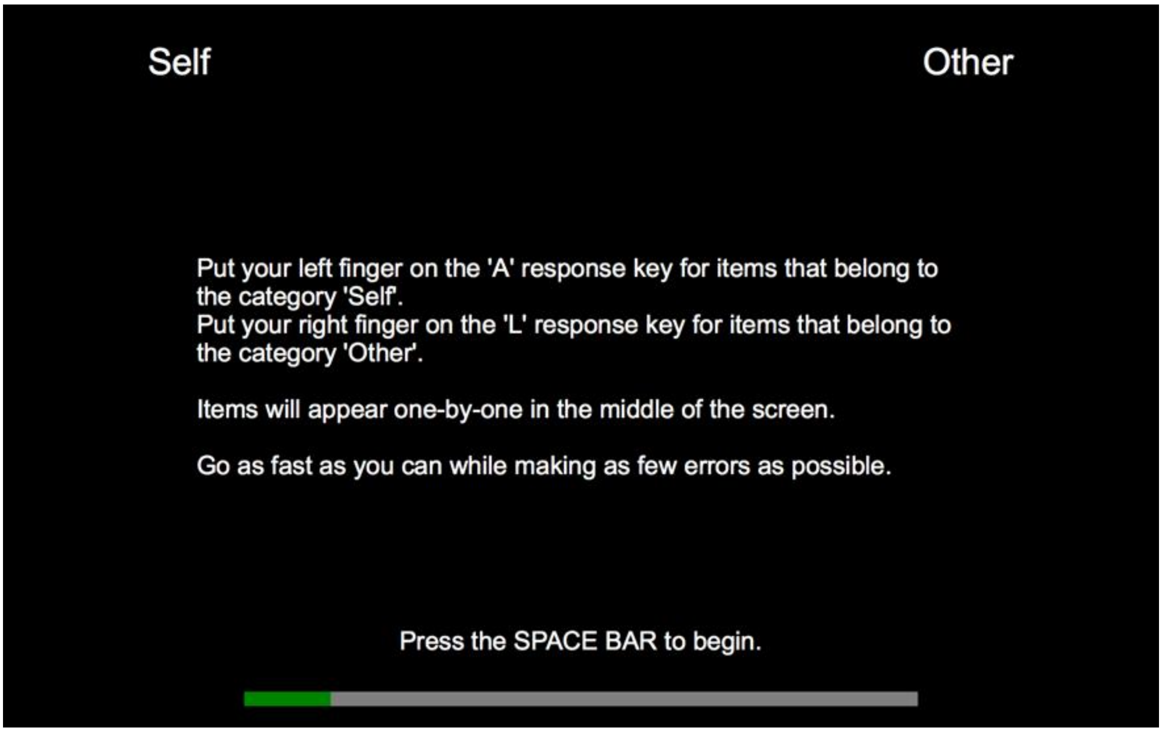
Appendix 17 - Inquisit start up page



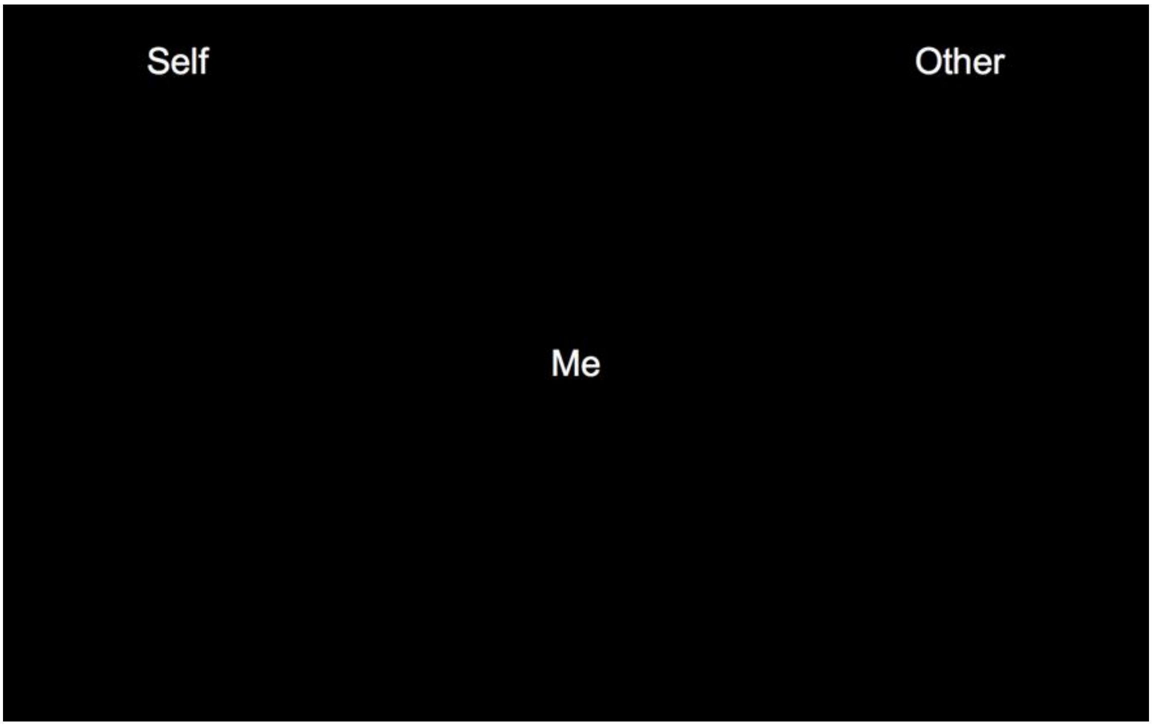
Appendix 18 - General instruction screen



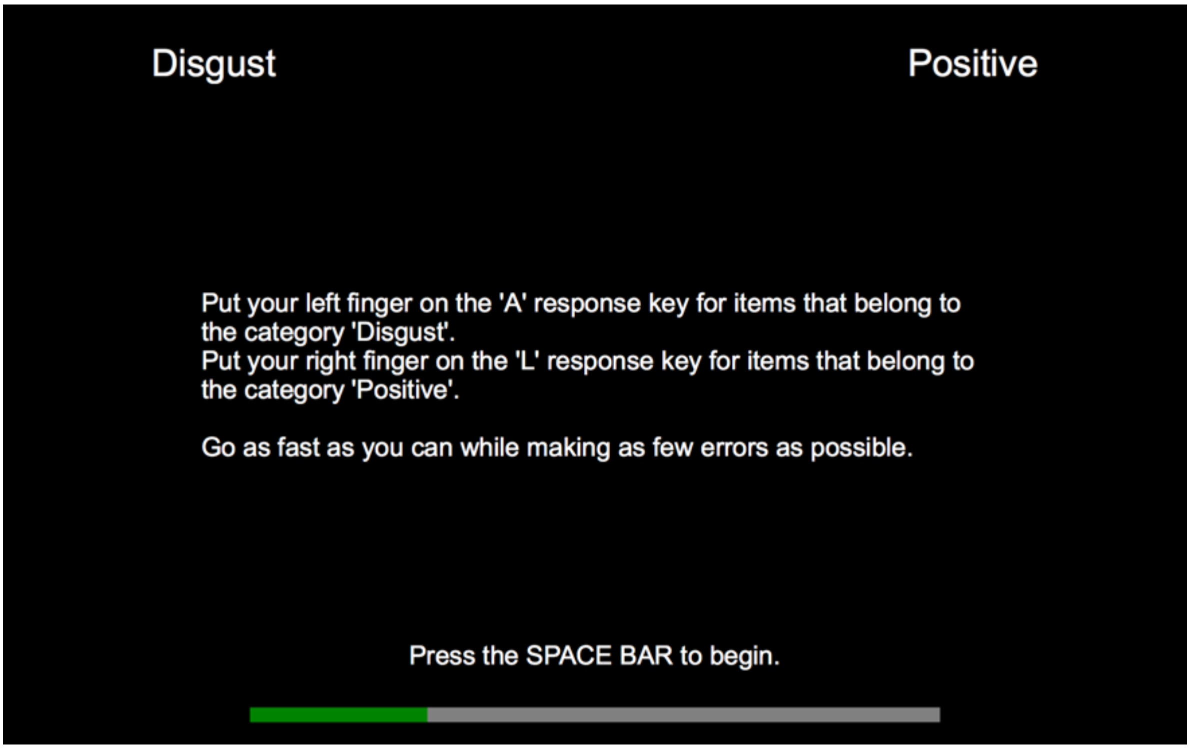
Appendix 19 - Block 1 instruction screen



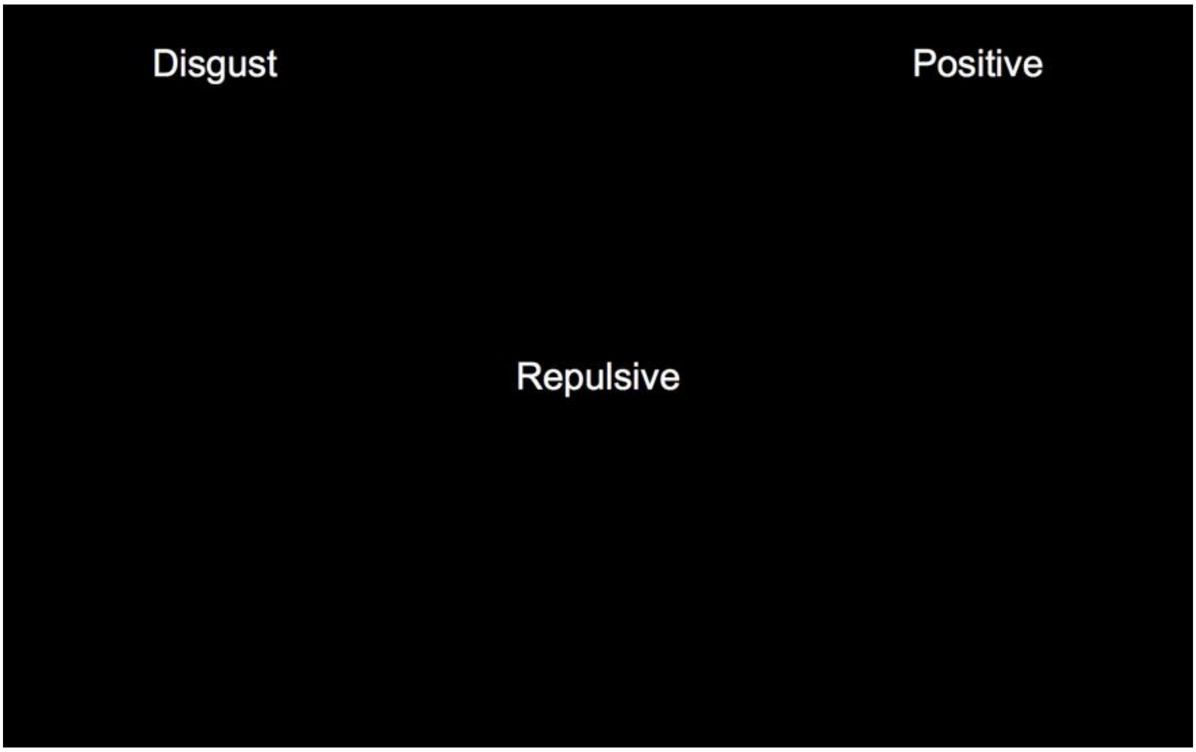
Appendix 20 - Example of Block 1 and 5



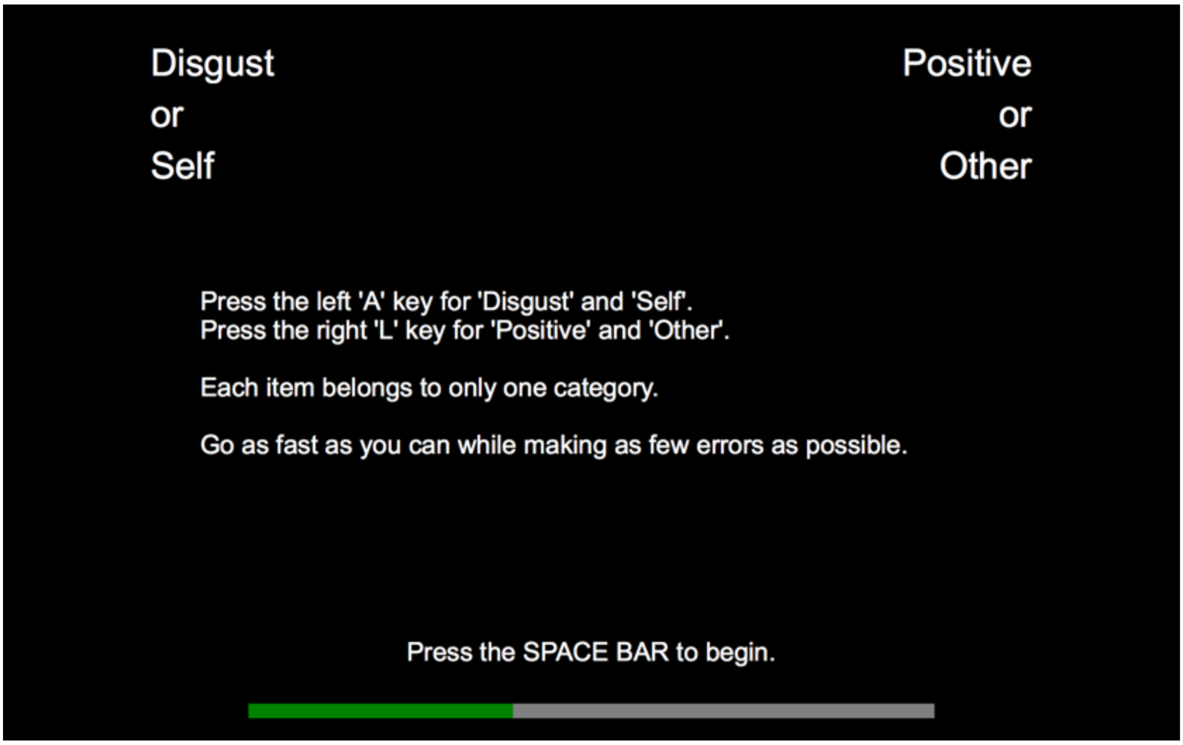
Appendix 21 - Block 2 instruction screen



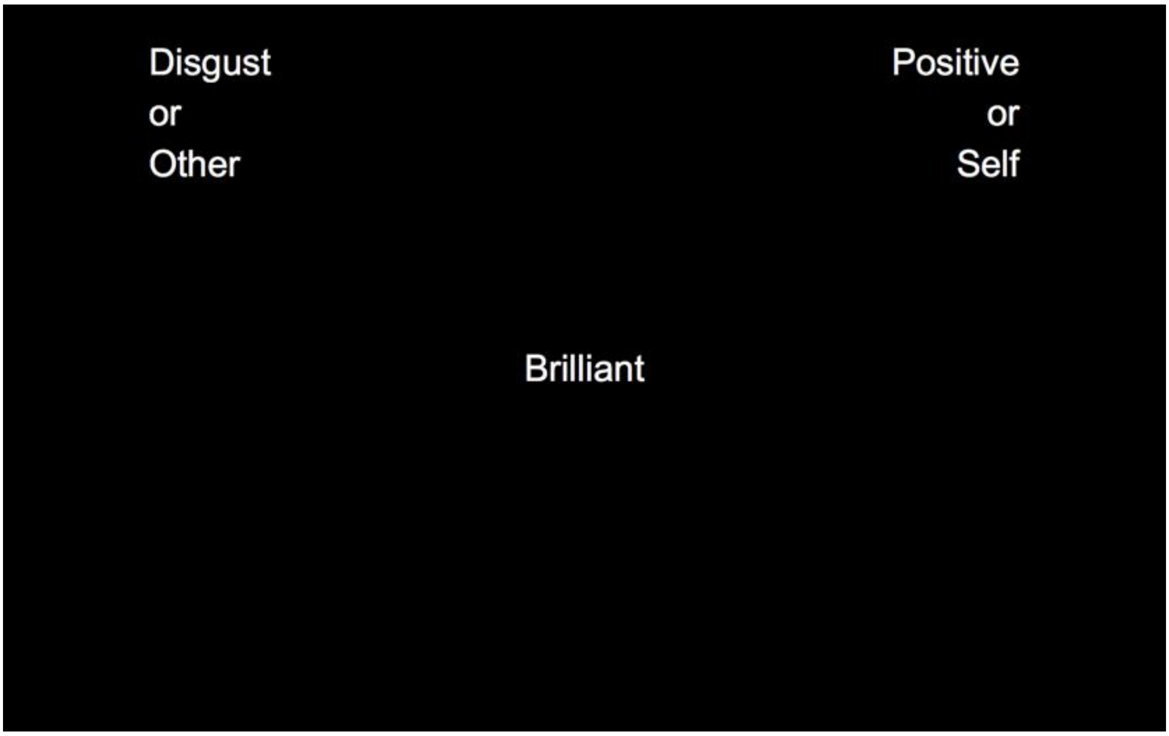
Appendix 22 - Example of Block 2



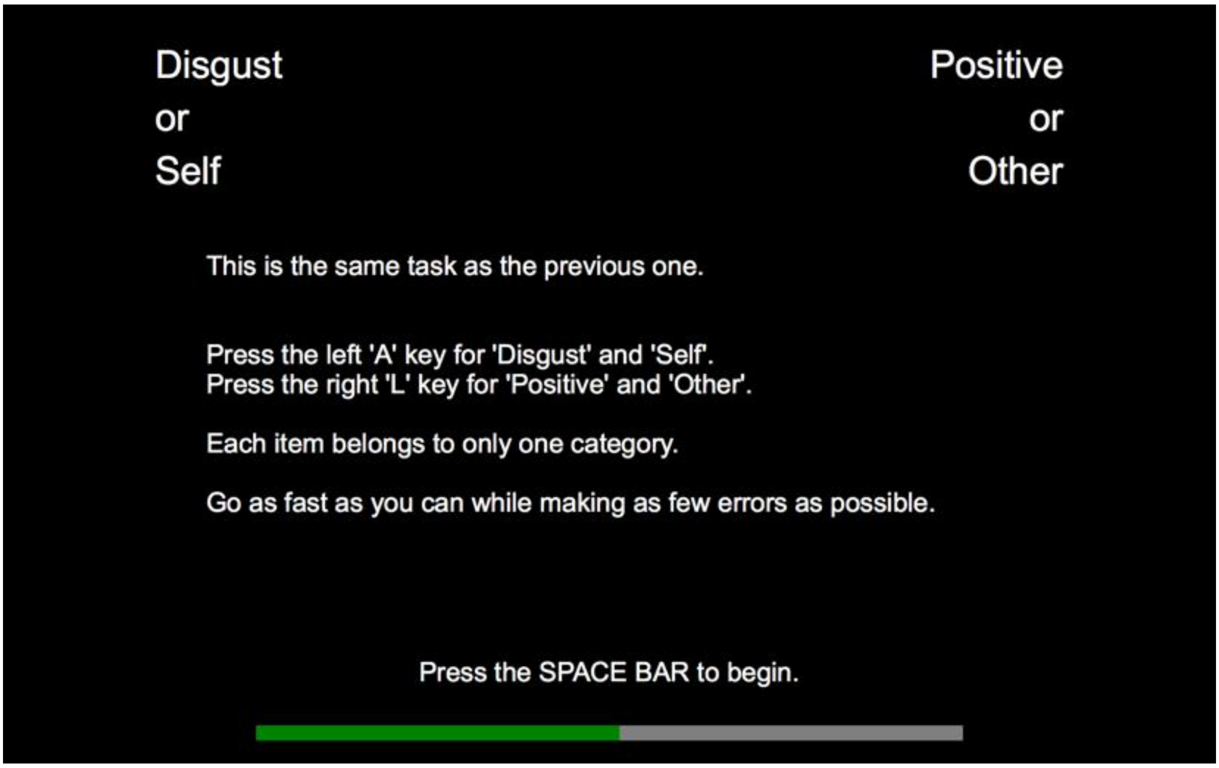
Appendix 23 - Block 3 instruction screen



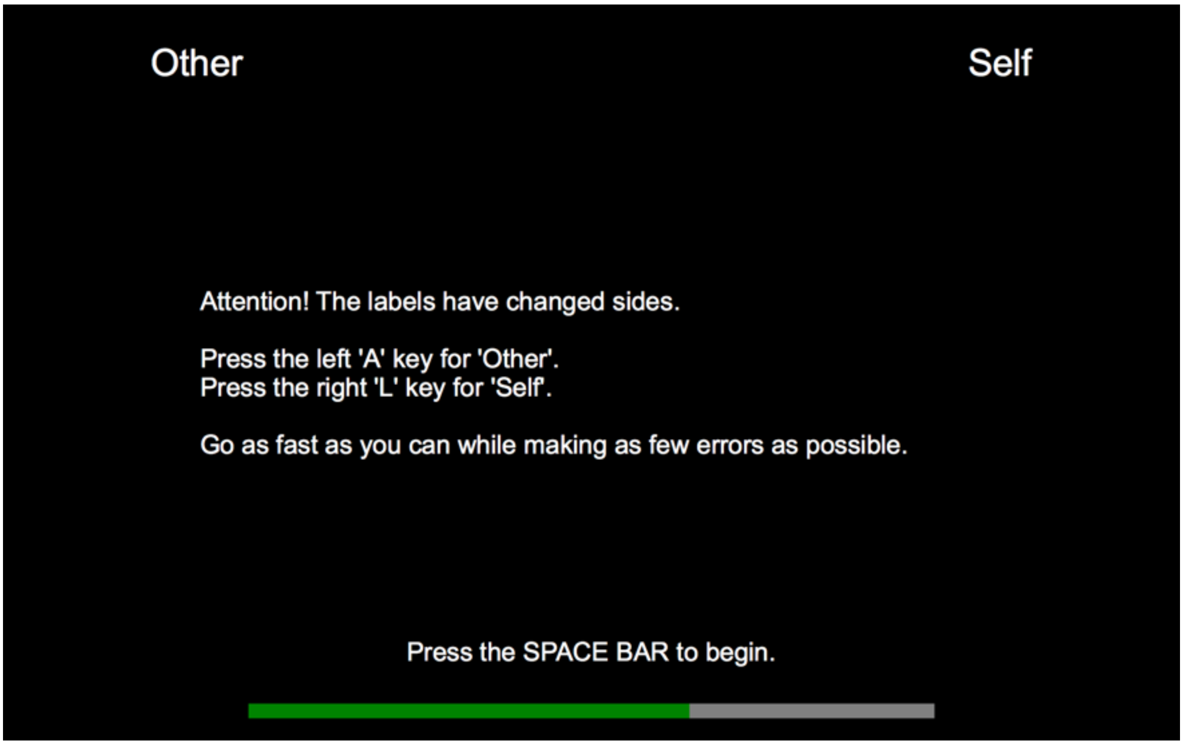
Appendix 24 - Example of Blocks 3, 4, 6 and 7



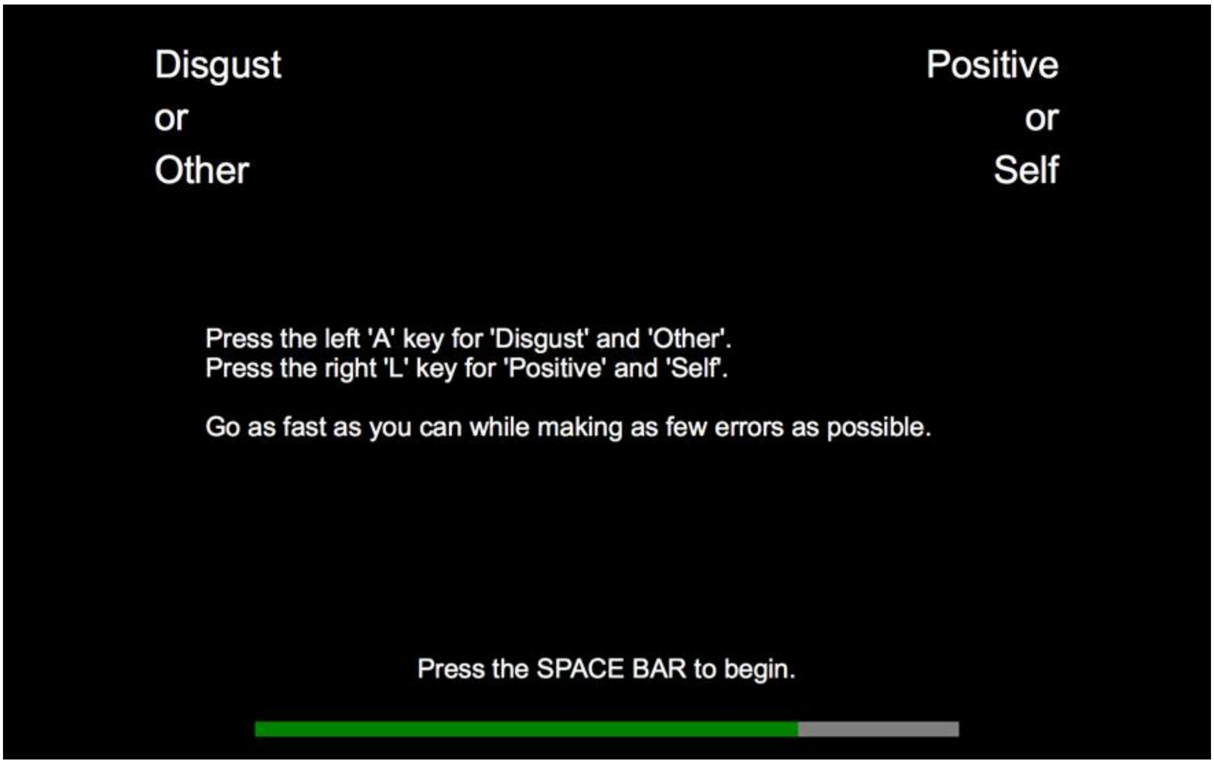
Appendix 25 - Block 4 instruction screen



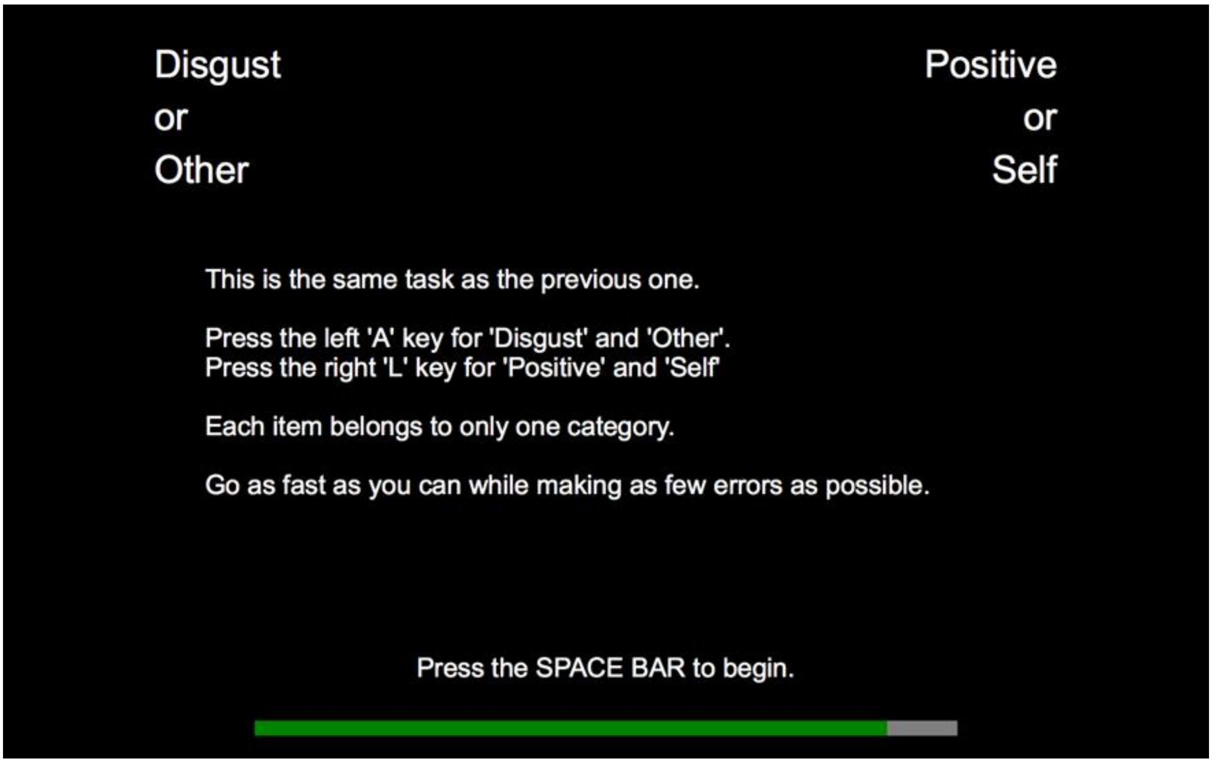
Appendix 26 - Block 5 instruction screen



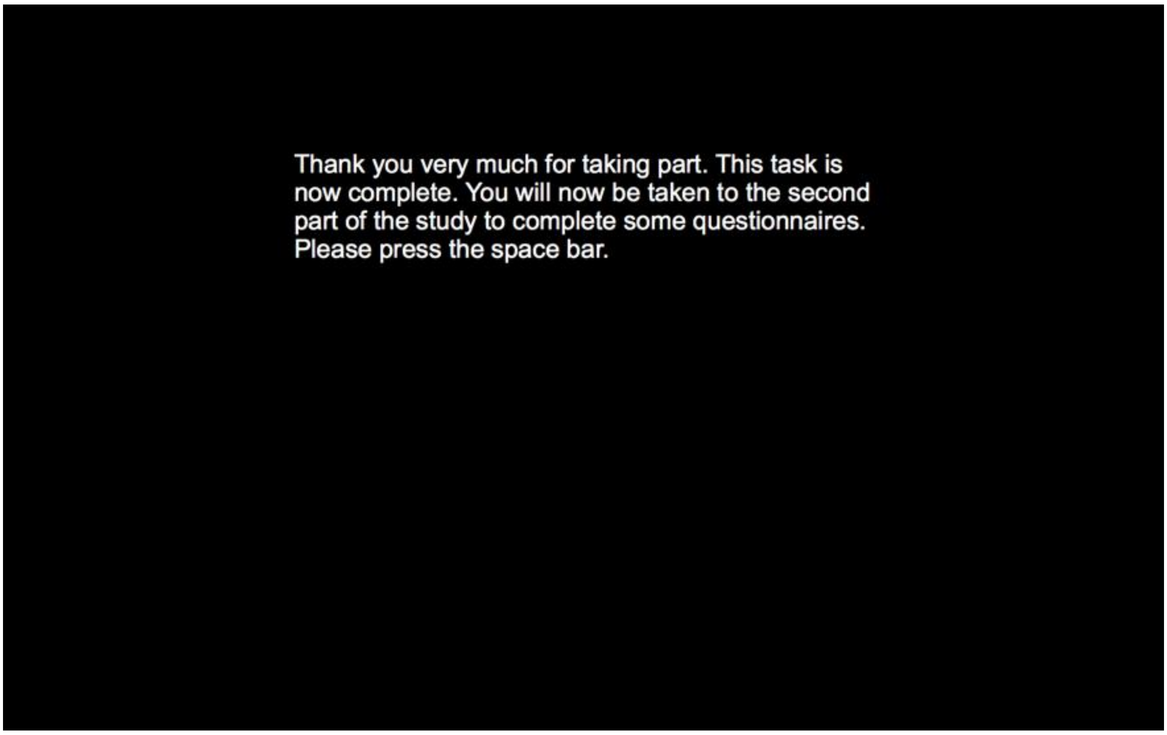
Appendix 27 - Block 6 instruction screen



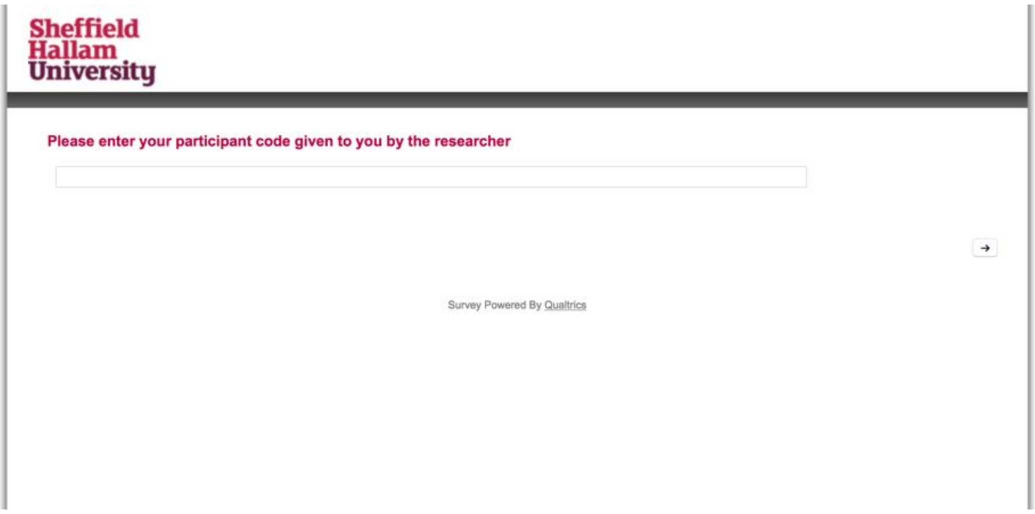
Appendix 28 - Block 7 instruction screen



Appendix 29 - IAT completion screen



Appendix 30 - Qualtrics continuation screen



Appendix 31 - Study 2 information sheet and consent form

Information Sheet

Thank you for volunteering to complete this online study. The study involves a computer task where you match words to the categories given and then some questionnaires to measure you emotional regulation and feelings. The whole study will take around 30 minutes to complete. Each task/ questionnaire will give clear instructions to you before it begins.

After reading this consent form, you will be presented with a consent form to confirm your participation. All participation is voluntarily. All data will use an anonymous code rather than personal details and therefore it will not be identifiable to you.

You have the right to withdraw your data at any point during the study until two weeks post participation.

Thank you.

Anna Robson

Sheffield Hallam University

PARTICIPANT CONSENT FORM

Theoretical and Methodical Developments of Self-Disgust on Mental Health Outcomes

Please answer the following questions by ticking the response that applies

		YES	NO
1.	I have read the Information Sheet for this study and have had details of the study explained to me.	☐	☐
2.	My questions about the study have been answered to my satisfaction and I understand that I may ask further questions at any point.	☐	☐
3.	I understand that I am free to withdraw from the study within the time limits outlined in the Information Sheet, without giving a reason for my withdrawal or to decline to answer any particular questions in the study without any consequences to my future treatment by the researcher.	☐	☐
4.	I agree to provide information to the researchers under the conditions of confidentiality set out in the Information Sheet.	☐	☐
5.	I wish to participate in the study under the conditions set out in the Information Sheet.	☐	☐
6.	I consent to the information collected for the purposes of this research study, once anonymised (so that I cannot be identified), to be used for any other research purposes.	☐	☐

Participant's Signature: ____ **Date:** ___________

Participant's Name (Printed): ____________________________________

Researcher's Name (Printed): ____________________________________ **Date:** ___________

Researcher's Signature: ____

Researcher's contact details:

Appendix 32- Study 2 Debrief

Debrief Sheet

Thank you for completing this study. The study aims to develop and validate a new measure for Self-Disgust in an implicit methodology. All data will use an anonymous code rather than personal details and therefore it will not be identifiable to you. You have the right to withdraw your data at any point up until two weeks post participation.

If you require any support following the emotions brought up in this study, please contact the Samaritans helpline, 116 123 (free from any phone, 24 hours a day, 365 days a year).

If you have any questions, please don't hesitate to contact me on ar2901@exchange.shu.ac.uk

We are asking for some participants to complete the word matching computer task again one week later. If you are willing and able to do this, please inform the researcher.

Thank you.

Anna Robson

Appendix 33 - Word comprehension sheet

Sheffield Hallam University

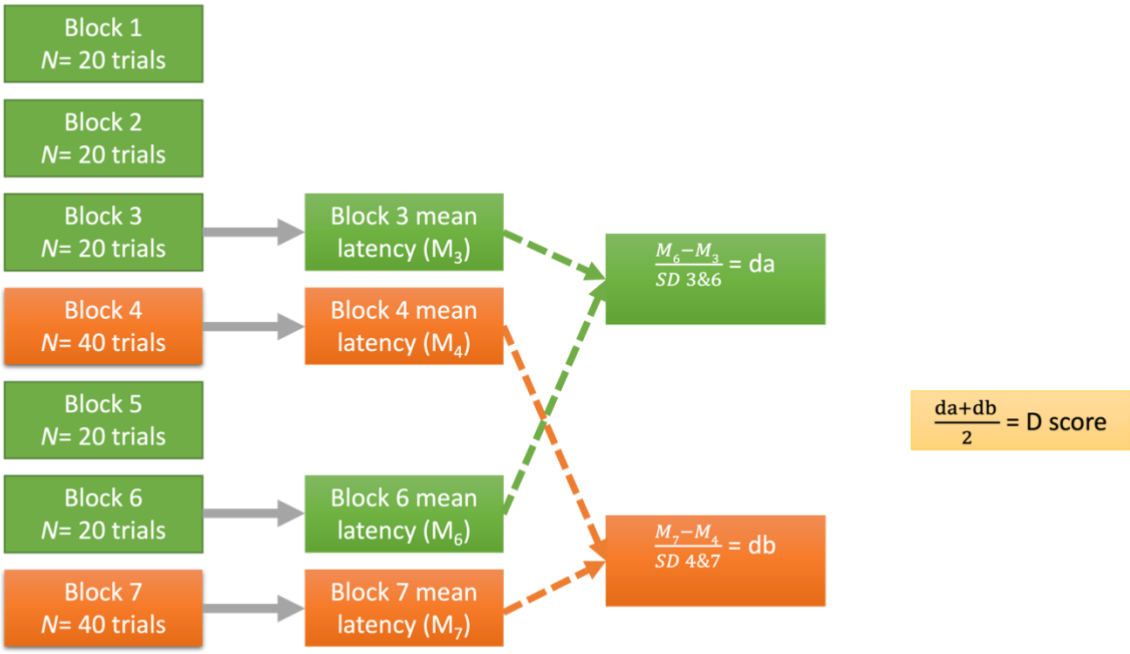
PARTICIPANT COMPREHENSION FORM

Theoretical and Methodical Developments of Self-Disgust on Mental Health Outcomes

Please answer the following questions after completing the study tasks.

	YES	NO
1. Were the instructions on the computer task clear to understand?	☐	☐
If no, please state why		
2. I understand the meaning of the word **revolting**?	☐	☐
3. I understand the meaning of the word **vile**?	☐	☐
4. I understand the meaning of the word **atrocious**?	☐	☐
5. I understand the meaning of the word **repulsive**?	☐	☐
6. I understand the meaning of the word **disgusting**?	☐	☐
7. I understand the meaning of the word **rotten**?	☐	☐
8. I understand the meaning of the word **gruesome**?	☐	☐
9. I understand the meaning of the word **sickening**?	☐	☐
10. I understand the meaning of the word **beautiful**?	☐	☐
11. I understand the meaning of the word **nice**?	☐	☐
12. I understand the meaning of the word **inspiring**?	☐	☐
13. I understand the meaning of the word **brilliant**?	☐	☐
14. I understand the meaning of the word **optimistic**?	☐	☐
15. I understand the meaning of the word **strong**?	☐	☐
16. I understand the meaning of the word **terrific**?	☐	☐
17. I understand the meaning of the word **desirable**?	☐	☐

Appendix 34 - D score calculation



Appendix 35 - Study 2 output

Descriptives

Descriptives

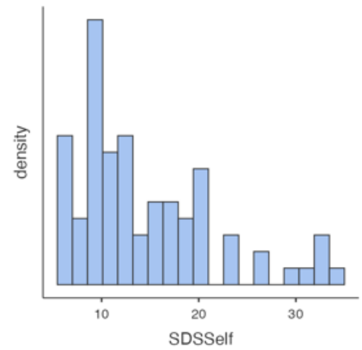
	SDS_Group	SDSTotal	SDSSelf	SDSWays	PANAS_POS	PANAS_NEG	DASS_Total	RSE_Total	UCLA_Total	DPSS_Prop	DPSS_Sens	TOSCA_SHAME	TOSCA_GUILT	NEW_D
Median	Low	20.00	8.00	8.50	37.50	14.50	8.00	17.00	31.50	13.00	9.00	45.00	57.00	−0.53
	High	46.50	20.00	19.00	23.50	27.00	15.50	26.50	54.50	15.00	13.00	55.00	59.00	−0.65
	Other	27.00	12.00	11.00	35.00	18.00	10	21.00	37.00	14	10	51.00	58.00	−0.67
IQR	Low	3.00	2.25	2.00	6.25	4.25	2.00	3.25	13.25	4.25	3.75	6.00	8.50	0.35
	High	22.00	8.00	8.50	8.25	7.50	7.75	4.50	10.50	6.00	10.25	5.00	5.50	0.66
	Other	8.00	4.00	4.00	12.00	8.00	4.00	5.00	12.00	6.00	5.00	6.00	6.00	0.47

Descriptives

Descriptives

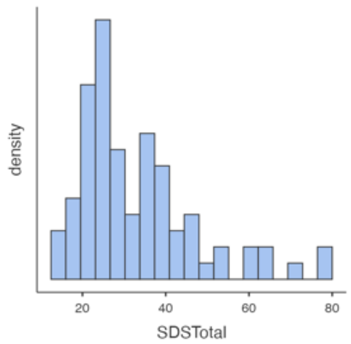
	SDSTotal	SDSSelf	SDSWays	PANAS_POS	PANAS_NEG	DASS_Total	RSE_Total	UCLA_Total	DPSS_Prop	DPSS_Sens	TOSCA_SHAME	TOSCA_GUILT	NEW_D
Median	28.00	12.00	12.00	33.00	19.00	10	21.00	38.00	14	10	51.00	57.00	−0.61
IQR	15.00	9.00	7.00	14.00	10.00	6.00	7.00	18.00	6.00	6.00	9.50	6.50	0.44
Skewness	1.32	1.14	1.27	−0.18	1.09	1.24	0.33	0.51	−0.02	1.12	−0.54	−0.60	0.78
Std. error skewness	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Kurtosis	1.47	0.72	1.43	−0.78	1.30	0.73	0.16	−0.39	−0.48	0.98	−0.30	0.23	0.23
Std. error kurtosis	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.54
Shapiro-Wilk W	0.88	0.89	0.89	0.97	0.92	0.84	0.98	0.97	0.98	0.90	0.96	0.97	0.95
Shapiro-Wilk p	<.001	<.001	<.001	0.073	<.001	<.001	0.282	0.027	0.258	<.001	0.011	0.029	0.003

SDSSelf

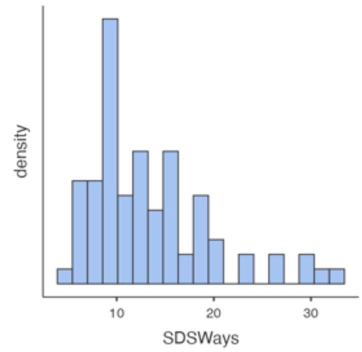


Plots

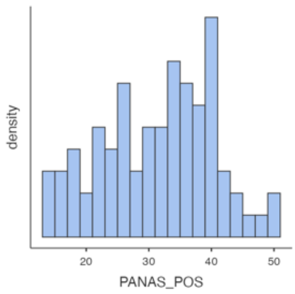
SDSTotal



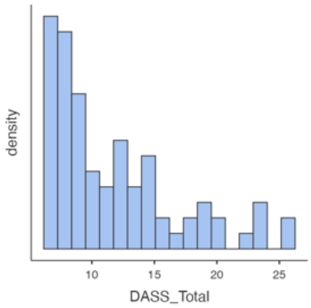
SDSWays



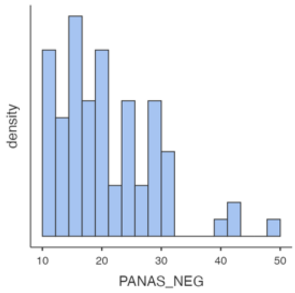
PANAS_POS



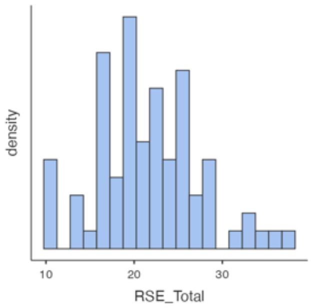
DASS_Total



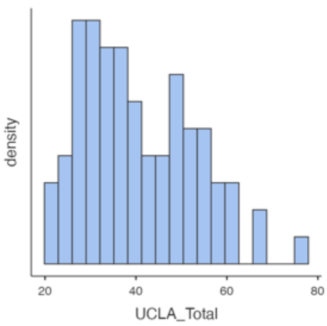
PANAS_NEG



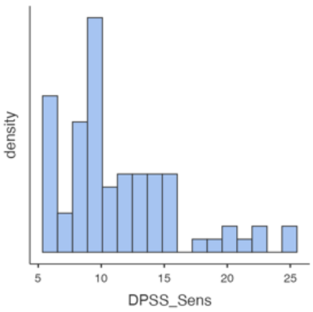
RSE_Total



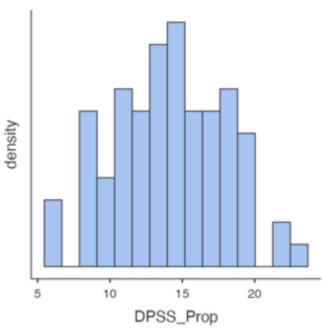
UCLA_Total



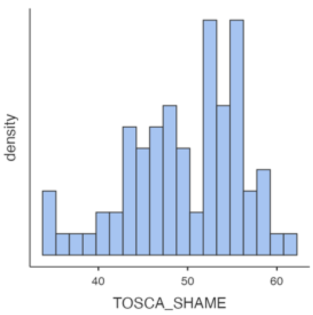
DPSS_Sens



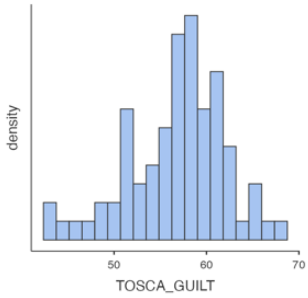
DPSS_Prop



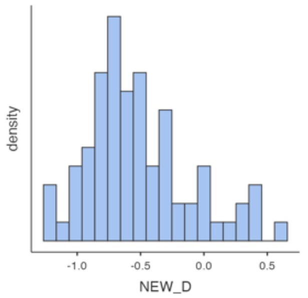
TOSCA_SHAME



TOSCA_GUILT



NEW_D



Correlation Matrix

Correlation Matrix

		SDSTotal	SDSSelf	SDSWays	PANAS_POS	PANAS_NEG	DASS_Total	RSE_Total	UCLA_Total	DPSS_Prop	DPSS_Sens	TOSCA_SHAME	TOSCA_GUILT	NEW_D
SDSTotal	Spearman's rho	—												
	p-value	—												
SDSSelf	Spearman's rho	0.92***	—											
	p-value	<.001	—											
SDSWays	Spearman's rho	0.87***	0.66***	—										
	p-value	<.001	<.001	—										
PANAS_POS	Spearman's rho	−0.59***	−0.48***	−0.57***	—									
	p-value	<.001	<.001	<.001	—									
PANAS_NEG	Spearman's rho	0.69***	0.59***	0.70***	−0.52***	—								
	p-value	<.001	<.001	<.001	<.001	—								
DASS_Total	Spearman's rho	0.68***	0.59***	0.67***	−0.66***	0.70***	—							
	p-value	<.001	<.001	<.001	<.001	<.001	—							
RSE_Total	Spearman's rho	0.83***	0.77***	0.72***	−0.69***	0.61***	0.64***	—						
	p-value	<.001	<.001	<.001	<.001	<.001	<.001	—						
UCLA_Total	Spearman's rho	0.76***	0.64***	0.72***	−0.72***	0.72***	0.74***	0.73***	—					
	p-value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	—					
DPSS_Prop	Spearman's rho	0.13	0.05	0.20	0.08	0.18	0.10	0.02	0.07	—				
	p-value	0.247	0.682	0.068	0.483	0.107	0.359	0.836	0.533	—				
DPSS_Sens	Spearman's rho	0.35**	0.30**	0.30**	−0.31**	0.36**	0.35**	0.35**	0.29**	0.37***	—			
	p-value	0.001	0.006	0.006	0.005	0.001	0.001	0.002	0.009	<.001	—			
TOSCA_SHAME	Spearman's rho	0.49***	0.48***	0.41***	−0.47***	0.54***	0.59***	0.47***	0.50***	0.14	0.32**	—		
	p-value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	0.232	0.004	—		
TOSCA_GUILT	Spearman's rho	0.13	0.20	−0.01	−0.26*	0.16	0.23*	0.25*	0.18	−0.11	0.14	0.32**	—	
	p-value	0.268	0.070	0.920	0.022	0.166	0.038	0.026	0.119	0.324	0.210	0.004	—	
NEW_D	Spearman's rho	−0.03	−0.05	−0.02	−0.08	−0.12	0.08	0.00	0.06	0.10	−0.00	−0.12	−0.04	—
	p-value	0.802	0.677	0.871	0.490	0.296	0.508	0.999	0.580	0.367	0.998	0.292	0.705	—

Note. * p < .05, ** p < .01, *** p < .001

Independent Samples T-Test

Independent Samples T-Test

		Statistic	p	Mean difference	SE difference		Effect Size
PANAS_POS	Mann-Whitney U	41.50	<.001	14.00		Rank biserial correlation	0.83
PANAS_NEG	Mann-Whitney U	38.50	<.001	−13.00		Rank biserial correlation	0.84
DASS_Total	Mann-Whitney U	36.00	<.001	−8.00		Rank biserial correlation	0.85
RSE_Total	Mann-Whitney U	0.00	<.001	−10.00		Rank biserial correlation	1.00
UCLA_Total	Mann-Whitney U	7.00	<.001	−24.00		Rank biserial correlation	0.97
DPSS_Prop	Mann-Whitney U	184.00	0.189	−2.00		Rank biserial correlation	0.23
DPSS_Sens	Mann-Whitney U	132.50	0.011	−4.00		Rank biserial correlation	0.45
TOSCA_SHAME	Mann-Whitney U	91.50	0.001	−8.00		Rank biserial correlation	0.58
TOSCA_GUILT	Mann-Whitney U	172.50	0.249	−2.00		Rank biserial correlation	0.21
NEW_D	Mann-Whitney U	188.00	0.596	0.07		Rank biserial correlation	0.10

[4]

Assumptions

Normality Test (Shapiro-Wilk)

	W	p
PANAS_POS	0.97	0.313
PANAS_NEG	0.92	0.005
DASS_Total	0.96	0.126
RSE_Total	0.98	0.644
UCLA_Total	0.98	0.825
DPSS_Prop	0.98	0.690
DPSS_Sens	0.95	0.077
TOSCA_SHAME	0.96	0.199
TOSCA_GUILT	0.94	0.022
NEW_D	0.94	0.041

Note. A low p-value suggests a violation of the assumption of normality

Homogeneity of Variances Test (Levene's)

	F	df	df2	p
PANAS_POS	0.98	1	42	0.328
PANAS_NEG	4.22	1	42	0.046
DASS_Total	32.88	1	42	<.001
RSE_Total	0.88	1	42	0.353
UCLA_Total	0.85	1	42	0.362
DPSS_Prop	0.11	1	42	0.745
DPSS_Sens	7.76	1	42	0.008
TOSCA_SHAME	1.38	1	40	0.247
TOSCA_GUILT	0.26	1	40	0.615
NEW_D	2.12	1	39	0.153

Note. A low p-value suggests a violation of the assumption of equal variances

Correlation Matrix

Correlation Matrix

		RETEST D	NEW_D
RETEST D	Spearman's rho	—	
	p-value	—	
	N	—	
NEW_D	Spearman's rho	0.37	—
	p-value	0.261	—
	N	11	—

Note. * p < .05, ** p < .01, *** p < .001

Appendix 36 - Study 3 demographic questions

Sheffield Hallam University

How old are you? (in years)

What gender do you identify as?

- Male
- Female
- Other
- Prefer not to say

Which is your dominant hand?

- Left
- Right
- Ambidextrous (both)
- Other

Is English your first language?

- Yes
- No

Sheffield Hallam University

Do you have a history of mental health difficulties?

- Yes
- No

→

Sheffield Hallam University

If yes, please answer the following questions.

	Yes	No
Are these difficulties ongoing?	○	○
Do you have a mental health diagnosis?	○	○
Do you take medication as a result of your mental health difficulties?	○	○

→

Appendix 37 - DASS-21

Removed for Copyright reasons.

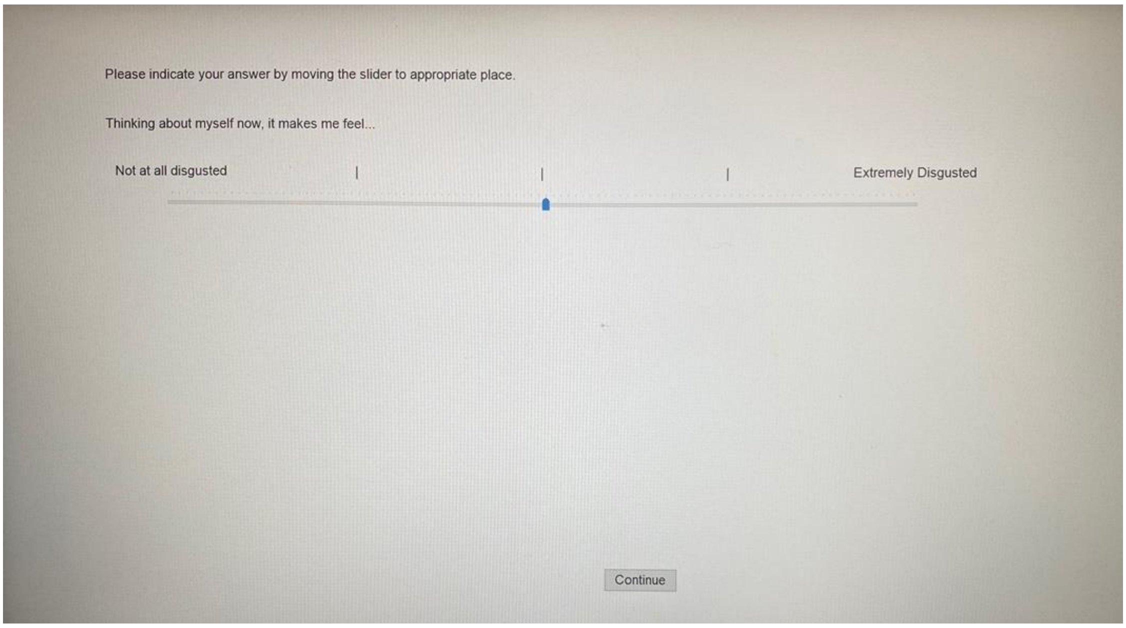
Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, *33*(3), 335–343. https://doi.org/10.1016/0005-7967(94)00075-u

Appendix 38 - TOSCA shortened version

Removed for Copyright reasons.

Tangney, J. P., Dearing, R., Wagner, P. E., & Gramzow, R. (2000). The Test of Self-Conscious Affect-3 (TOSCA-3): George Mason University. *Fairfax, VA*. https://doi.org/10.1037/t06464-000

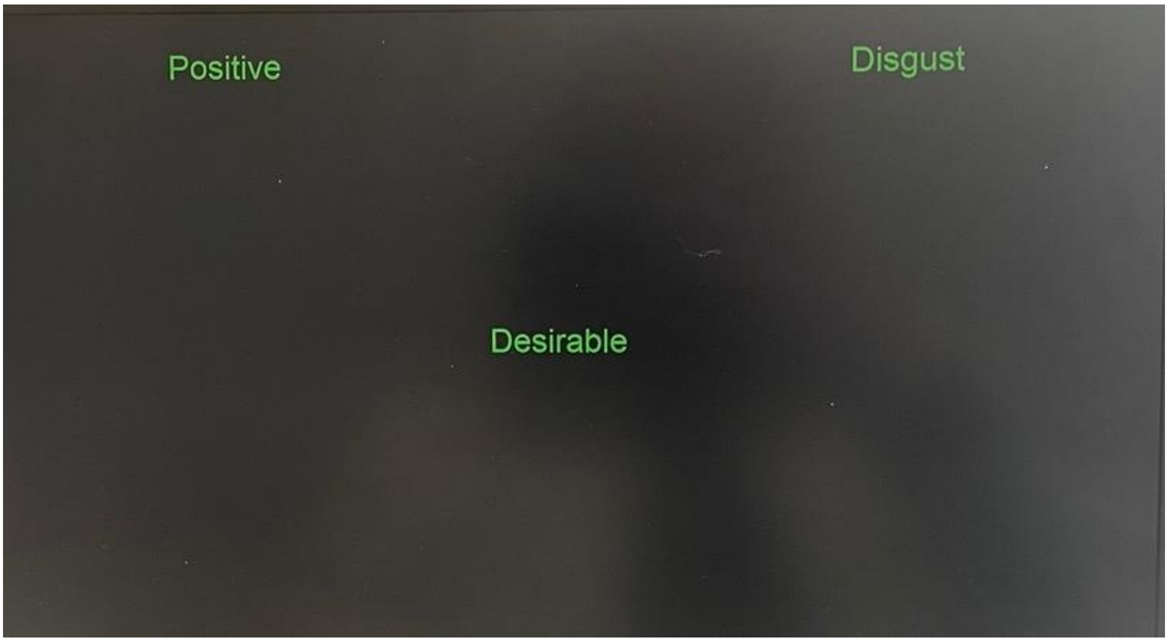
Appendix 39 - SD VAS example



Appendix 40 - 5 block structure

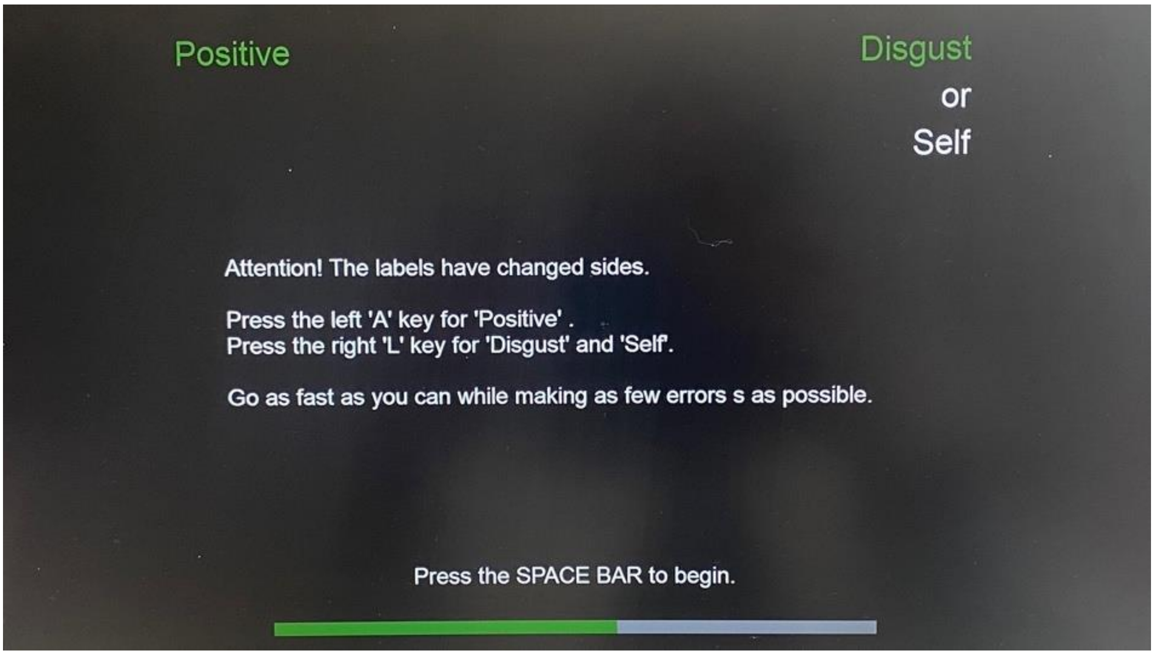
Block	Description	Trials
1	Attribute sorting training. E.g. disgust on left and positive on right.	20
2	Pairings A E.g. self and positive on left, and disgust on right.	20
3	Pairings A	40
4	Pairings B E.g positive on left, and self and disgust on right.	20
5	Pairings B	40

Appendix 41 - Block 1 example

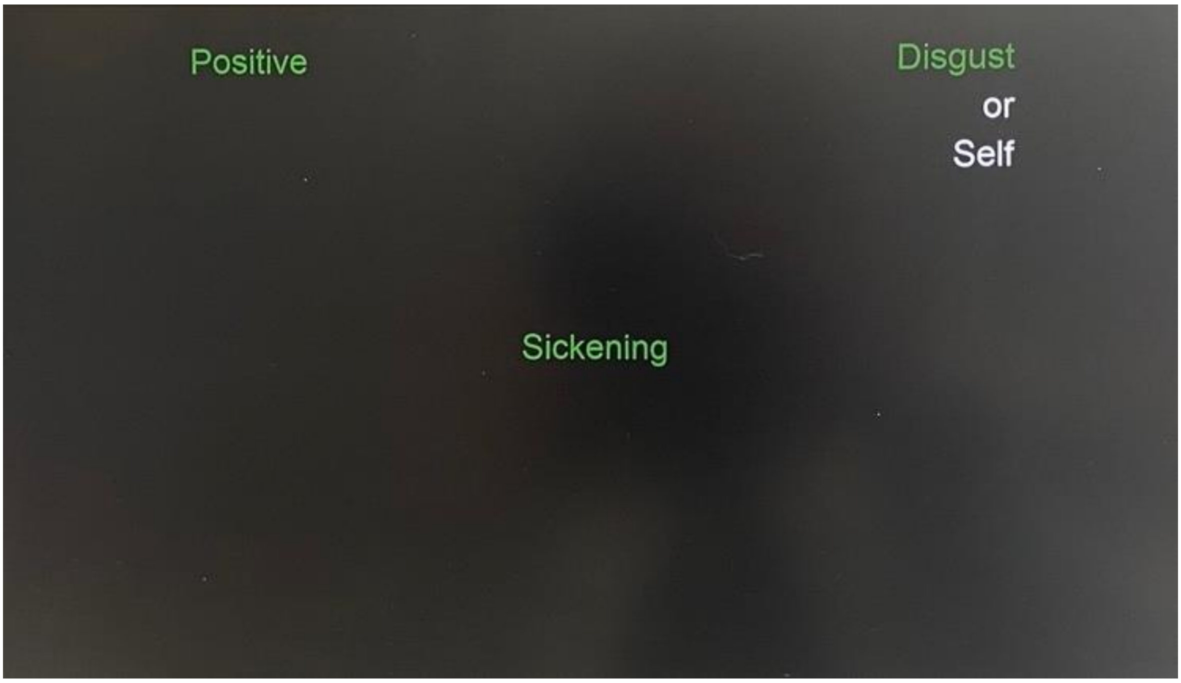


Appendix 42 - Block 2 and 3 example

Appendix 43 - Instructions for Block 4



Appendix 44 - Block 4 and 5 example



Appendix 45 - Study 3 information sheet

Information Sheet

Thank you for volunteering to complete this study. The study involves two parts. Part one consists of completing a few questionnaires online regarding emotions, following this some participants will be asked to complete a second task between 7 and 14 days after completing part one, asking you to categorise words into groups. Part one will take around 10 minutes and part two takes approximately 10 minutes. Each task/ questionnaire will give clear instructions to you before it begins.

To take part in this research, you must be aged between 18-60 and have English as a first language (or attain an IELTS score above 6.5).

After reading this consent form, you will be presented with a consent form to confirm your participation. All participation is voluntarily. All data will be confidential and will use an anonymous code rather than personal details and therefore it will not be identifiable to you.

You have the right to withdraw your data at any point during the study until two weeks post participation of part two.

Thank you.

Anna Robson

Appendix 46 - Study 3 consent form

PARTICIPANT CONSENT FORM

Please answer the following questions by ticking the response that applies

1. I have read the Information Sheet for this study and have had details of the study explained to me.

2. My questions about the study have been answered to my satisfaction and I understand that I may ask fu

3. I understand that I am free to withdraw from the study within the time limits outlined in the Information Sh withdrawal or to decline to answer any particular questions in the study without any consequences to my f

4. I agree to provide information to the researchers under the conditions of confidentiality set out in the Info

5. I wish to participate in the study under the conditions set out in the Information Sheet.

6. I consent to the information collected for the purposes of this research study, once anonymised (so that any other research purposes.

Please enter your prolific ID here

Please choose a unique identifying code made up of two numbers and two letters, that you can use to identify your data, do not tell anyone what this code is, but do not forget it. e.g. 12AR

By selecting continue, you are consenting to take part in this study.

→

Appendix 47 - Study 3 debrief

Sheffield Hallam University

Debrief

Thank you for completing this study. The study aims to gain a better understanding of mental health and feelings of self-disgust. All data will use an anonymous code rather than personal details and therefore it will not be identifiable to you. You have the right to withdraw your data at any point up until two weeks post participation.

If you require any support following the emotions brought up in this study, please contact the Samaritans helpline, 0114 116 123 (free from any phone, 24 hours a day, 365 days a year).

If you have any questions, please don't hesitate to contact me on ar2901@exchange.shu.ac.uk

Some participants will be contacted through prolific to complete part two of the study within the next 7-14 days.

You must click continue to be redirected back to prolific.

Thank you.

Anna Robson

→

Appendix 48 - Output for Study 3

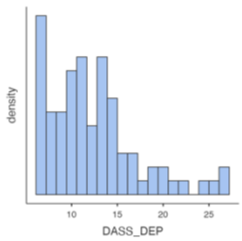
Descriptives

Descriptives

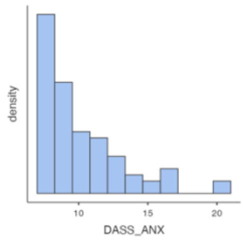
	DASS_DEP	DASS_ANX	DASS_STR	TOSCA-SHA	TOSCA-GUI	TOSCA-BLA	SDS_Tot	SDS_SEL	SDS_WAY	VAS	New D scores with error
N	83	83	83	83	83	83	83	83	83	83	83
Skewness	1.26	1.46	0.42	−0.59	−1.05	0.38	0.61	0.54	0.53	0.65	0.02
Std. error skewness	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Kurtosis	1.43	2.18	−0.15	1.93	1.59	0.10	−0.68	−0.79	−1.01	−0.85	0.38
Std. error kurtosis	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
Shapiro-Wilk W	0.88	0.84	0.96	0.96	0.92	0.98	0.93	0.93	0.91	0.85	0.99
Shapiro-Wilk p	<.001	<.001	0.019	0.007	<.001	0.236	<.001	<.001	<.001	<.001	0.561

Plots

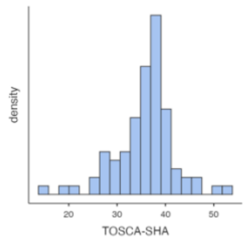
DASS_DEP



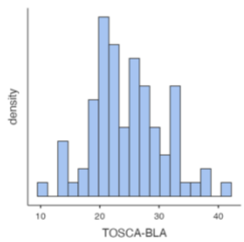
DASS_ANX



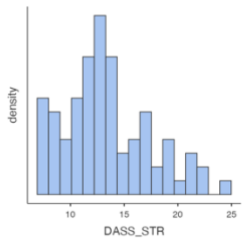
TOSCA-SHA



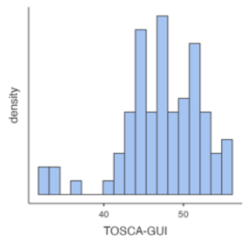
TOSCA-BLA



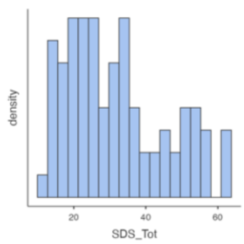
DASS_STR



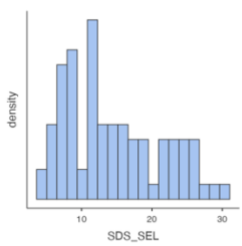
TOSCA-GUI



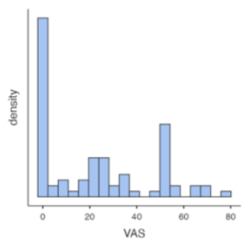
SDS_Tot



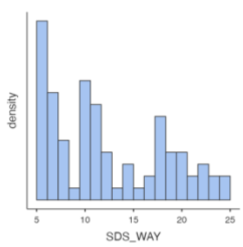
SDS_SEL



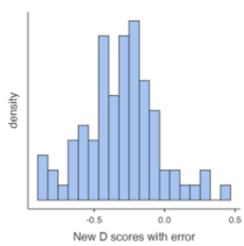
VAS



SDS_WAY



New D scores with error



Descriptives

Descriptives

	DASS_DEP	DASS_ANX	DASS_STR	TOSCA-SHA	TOSCA-GUI	TOSCA-BLA	SDS_Tot	SDS_SEL	SDS_WAY	VAS	New D scores with error
N	83	83	83	83	83	83	83	83	83	83	83
Missing	0	0	0	0	0	0	0	0	0	0	0
Median	11	9	13	36	48	24	29	13	11	20	−0.29
Standard deviation	4.83	3.18	3.98	6.18	5.01	6.07	13.86	6.82	5.84	22.67	0.26
IQR	5.00	3.00	5.00	6.00	6.00	7.50	20.50	10.50	11.00	42.50	0.29
Minimum	7	7	7	14	32	11	12	5	5	1	−0.90
Maximum	27	21	24	52	55	42	63	31	25	79	0.40

Descriptives

Descriptives

	SD Group	DASS_DEP	DASS_ANX	DASS_STR	TOSCA-SHA	TOSCA-GUI	TOSCA-BLA	SDS_Tot	SDS_SEL	SDS_WAY	VAS	New D scores with error
N	LOW	30	30	30	30	30	30	30	30	30	30	30
	MIDDLE	30	30	30	30	30	30	30	30	30	30	30
	HIGH	23	23	23	23	23	23	23	23	23	23	23
Missing	LOW	0	0	0	0	0	0	0	0	0	0	0
	MIDDLE	0	0	0	0	0	0	0	0	0	0	0
	HIGH	0	0	0	0	0	0	0	0	0	0	0
Median	LOW	9.00	7.50	11.50	34.50	48.00	23.00	19.00	7.00	7.00	1.00	−0.36
	MIDDLE	12.00	10.00	13.00	36.00	48.00	25.50	30.50	13.50	11.00	23.00	−0.24
	HIGH	16	11	16	40	48	23	51	23	20	51	−0.24
Standard deviation	LOW	2.09	1.79	3.42	6.62	5.22	4.93	3.70	2.26	2.00	11.43	0.23
	MIDDLE	3.33	2.84	3.48	3.91	4.04	6.82	4.26	3.47	3.26	18.04	0.26
	HIGH	5.65	3.70	3.59	5.44	5.96	6.32	6.80	4.07	2.32	21.34	0.29
IQR	LOW	3.75	2.00	5.00	7.50	7.00	4.75	6.50	2.00	1.75	0.00	0.29
	MIDDLE	4.00	3.50	4.00	4.75	5.75	9.75	7.75	5.50	2.75	24.50	0.28
	HIGH	7.00	4.50	4.50	5.00	6.50	9.50	9.00	4.00	4.00	20.00	0.28
Minimum	LOW	7	7	7	14	32	14	12	5	5	1	−0.86
	MIDDLE	7	7	10	27	34	11	25	8	6	1	−0.90
	HIGH	7	8	9	27	32	14	39	15	17	1	−0.89
Maximum	LOW	14	14	21	43	55	38	24	13	12	51	0.25
	MIDDLE	21	17	22	41	53	42	38	21	20	69	0.26
	HIGH	27	21	24	52	55	38	63	31	25	79	0.40

Correlation Matrix

Correlation Matrix

		New D scores with error	SDS_Tot	SDS_SEL	SDS_WAY	DASS_DEP	DASS_ANX	DASS_STR	TOSCA-SHA	TOSCA-GUI	TOSCA-BLA	VAS
New D scores with error	Spearman's rho	—										
	p-value	—										
SDS_Tot	Spearman's rho	0.20	—									
	p-value	0.072	—									
SDS_SEL	Spearman's rho	0.18	0.93***	—								
	p-value	0.096	<.001	—								
SDS_WAY	Spearman's rho	0.16	0.92***	0.74***	—							
	p-value	0.154	<.001	<.001	—							
DASS_DEP	Spearman's rho	0.11	0.68***	0.56***	0.68***	—						
	p-value	0.312	<.001	<.001	<.001	—						
DASS_ANX	Spearman's rho	0.01	0.58***	0.55***	0.51***	0.65***	—					
	p-value	0.935	<.001	<.001	<.001	<.001	—					
DASS_STR	Spearman's rho	−0.01	0.53***	0.47***	0.51***	0.72***	0.61***	—				
	p-value	0.941	<.001	<.001	<.001	<.001	<.001	—				
TOSCA-SHA	Spearman's rho	0.01	0.55***	0.52***	0.54***	0.49***	0.43***	0.53***	—			
	p-value	0.941	<.001	<.001	<.001	<.001	<.001	<.001	—			
TOSCA-GUI	Spearman's rho	0.07	0.11	0.10	0.11	0.05	0.03	0.21	0.52***	—		
	p-value	0.536	0.323	0.382	0.317	0.650	0.780	0.062	<.001	—		
TOSCA-BLA	Spearman's rho	−0.25*	0.12	0.03	0.20	0.28*	0.17	0.30**	0.13	−0.24*	—	
	p-value	0.025	0.292	0.819	0.071	0.011	0.125	0.006	0.237	0.032	—	
VAS	Spearman's rho	0.16	0.72***	0.72***	0.59***	0.49***	0.42***	0.43***	0.43***	0.15	0.05	—
	p-value	0.151	<.001	<.001	<.001	<.001	<.001	<.001	<.001	0.167	0.637	—

Note. * p < .05, ** p < .01, *** p < .001

Correlation Matrix

Correlation Matrix

		New D scores with error	SDS_Tot	SDS_SEL	SDS_WAY
New D scores with error	Spearman's rho	—			
	p-value	—			
SDS_Tot	Spearman's rho	0.20*	—		
	p-value	0.036	—		
SDS_SEL	Spearman's rho	0.18*	0.93***	—	
	p-value	0.048	<.001	—	
SDS_WAY	Spearman's rho	0.16	0.92***	0.74***	—
	p-value	0.077	<.001	<.001	—

Note. H_a is positive correlation
Note. * p < .05, ** p < .01, *** p < .001, one-tailed

Independent Samples T-Test

Side of screen for disgust

Independent Samples T-Test

						95% Confidence Interval			
		Statistic	p	Mean difference	SE difference	Lower	Upper		Effect Size
New D scores with error	Mann-Whitney U	783.00	0.499	−0.04		−0.15	0.07	Rank biserial correlation	0.09

Independent Samples T-Test

Categorisation Order

Independent Samples T-Test

		Statistic	p	Mean difference	SE difference		Effect Size
New D scores with error	Mann-Whitney U	745.00	0.294	−0.06		Rank biserial correlation	0.13

Independent Samples T-Test

VAS order

Independent Samples T-Test

		Statistic	p	Mean difference	SE difference		Effect Size
New D scores with error	Mann-Whitney U	739.00	0.274	0.06		Rank biserial correlation	0.14

Independent Samples T-Test

Independent Samples T-Test

		Statistic	p	Mean difference	SE difference		Effect Size
New D scores with error	Mann-Whitney U	263.00	0.145	−0.09		Rank biserial correlation	0.24

[8]

Correlation Matrix

Correlation Matrix

		New D scores with error	New d retest amended
New D scores with error	Pearson's r	—	
	p-value	—	
New d retest amended	Pearson's r	0.35 *	—
	p-value	0.045	—

Note. * p < .05, ** p < .01, *** p < .001

Appendix 49 - Study 4 demographics

How old are you? (in years)

What gender do you identify as?

- Male
- Female
- Other
- Prefer not to say

Which is your dominant hand? (Which hand do you write with?)

- Left
- Right
- Ambidextrous (both)
- Other

Is English your first language?

- Yes
- No

WITHDRAW →

Do you have a history of mental health difficulties?

- Yes
- No

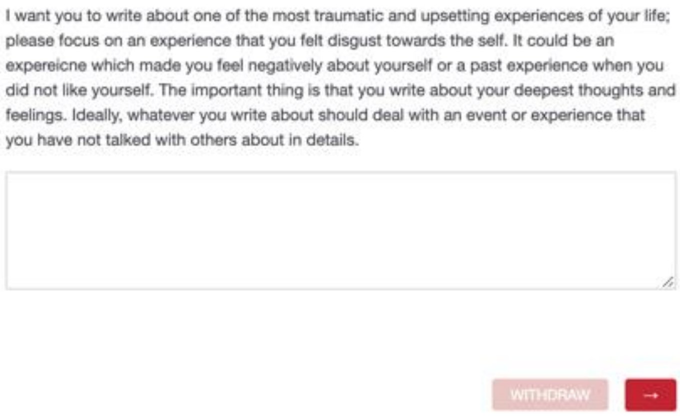
WITHDRAW →

If yes, please answer the following questions.

	Yes	No
Are these difficulties ongoing?	○	○
Do you have a mental health diagnosis?	○	○
Do you take medication as a result of your mental health difficulties?	○	○

WITHDRAW →

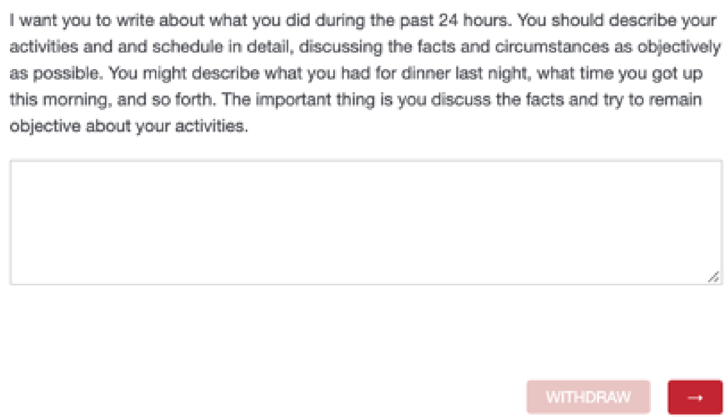
Appendix 50 - Prime condition writing task



I want you to write about one of the most traumatic and upsetting experiences of your life; please focus on an experience that you felt disgust towards the self. It could be an expereicne which made you feel negatively about yourself or a past experience when you did not like yourself. The important thing is that you write about your deepest thoughts and feelings. Ideally, whatever you write about should deal with an event or experience that you have not talked with others about in details.

WITHDRAW →

Appendix 51 - Control condition writing task



I want you to write about what you did during the past 24 hours. You should describe your activities and and schedule in detail, discussing the facts and circumstances as objectively as possible. You might describe what you had for dinner last night, what time you got up this morning, and so forth. The important thing is you discuss the facts and try to remain objective about your activities.

WITHDRAW →

Appendix 52 – HADS

Removed for Copyright reasons.

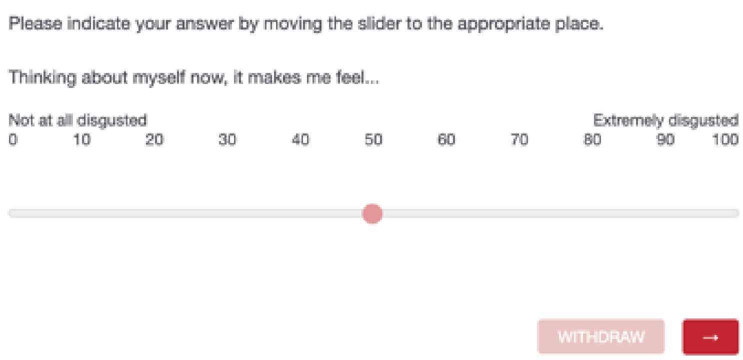
Zigmond, A. S., & Snaith, R. P. (1983). The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica*, *67*(6), 361–370. https://doi.org/10.1111/j.1600-0447.1983.tb09716.x

Appendix 53 - PCL 5 with LEC 5 and criterion A

Removed for Copyright reasons.

Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013). *The PTSD Checklist for DSM-5 (PCL-5) – LEC-5 and Extended Criterion A* [Measurement instrument]. Available from https://www.ptsd.va.gov/

Appendix 54 - Self-disgust VAS



Please indicate your answer by moving the slider to the appropriate place.

Thinking about myself now, it makes me feel...

Not at all disgusted — Extremely disgusted

0 10 20 30 40 50 60 70 80 90 100

WITHDRAW →

Appendix 55 - Study 4 information sheet

Information Sheet

Project Title: Emotional Processing in individuals with and without Post Traumatic Stress Disorder

What is the purpose of the study?

People generally process emotional information relevant to their own trauma experiences in a way that might affect their self-image. The perception of the self is quite crucial for people that have PTSD and/or trauma related experiences, as that might change the way they see themselves and they might change their reactions as a result of this. In this project we will use a computerised task to understand how people with PTSD and those from the general population perceive themselves emotionally.

Why have you asked me to take part?

To take part in this study, you must be aged between 18 – 60. You must speak English fluently (native language, or an IELTs score of 6.5 or higher). This study requires individuals who have had trauma related experiences or suffer from post-traumatic stress disorder.

What will I be required to do?

If you decide to take part in the study, you will be asked to do a short writing task, where you are asked to give a detailed description of either a past event or recent activities, a computer task where you match words to the categories given and some questionnaires to measure your emotional regulation and feelings. The whole study will take around 30 minutes to complete. Each task/ questionnaire will give clear instructions to you before it begins.

Please be aware you will be asked about your trauma related experiences which you might find triggering or upsetting. You may want to have someone with you while you complete this in case you are distressed by it. You are able to leave at any point or miss out any questions you feel you do not want to answer.

Are there any benefits or risks to me taking part?

The benefits to taking part is to help further the knowledge of PTSD and emotional processing of the self. You will also be reimbursed for your time through prolific credit.

The risk to you taking part is that you may become distressed given the sensitive nature of this topic. If you are currently in a distressed state, we advise you not to take part. You may take a break or stop your participation at any point if it becomes too much and you are provided with helplines in the information sheet and the debrief for your use if necessary.

Where will this take place?

Participation is online and therefore will take place at a suitable location for you. We suggest it takes place in a quiet place so you can focus on the tasks.

What will I receive for taking part?

You will be reimbursed for your time spent participating in the study with prolific credit at the rate specified on prolific. The research team reserves the right to monitor survey completion times and discard data that is suspected to be aberrant (e.g. completed by bots).

How long will the study last for?

The study will take part online in a single session at a time of your convenience when you load it, through prolific. Participation should take around 30 minutes to complete.

When will I have the opportunity to discuss my participation?

You are able to email the researchers at any point before, during or after participation to ask any questions you may have in relation to the study, using the details provided below.

Who will be responsible for all of the information when this study is over?

The information collected in this study will be under the responsibility of principal researcher Anna Robson (see below for contact details).

Who will have access to the information I provide?

Only the researchers directly involved with the study will have access to the information you provide which will be securely stored on a password protected computer.

What will happen to the information when this study is over? How will you use what you find out?

All information gathered during this research will be stored in line with the General Data Protection Regulation (GDPR) and will be destroyed 10 years following the conclusion of the study. The data will be generalised and used for the purposes appropriate to the research question. This study is part of an educational qualification. Data may be published in a scientific journal or presented at a conference.

Will anyone be able to identify me as a participant?

All data will only be connected to your prolific ID rather than personal details and therefore it will not be identifiable to you. This will then be anonymised further and after 2 weeks your prolific ID will also be removed from the data set.

What if I do not want to take part?

Participation in this study is completely voluntary. If you decide you do not wish to take part, you may end this session by closing the browser or clicking on the 'Debrief and leave' link at the bottom of the page.

What if I change my mind during the study?

You have the right to withdraw your data at any point during the study by closing the browser with the study on or clicking on the 'Debrief and leave' link at the bottom of each page. You are also able to withdraw your data up to two weeks after you have participated, by contacting the researcher and identifying your prolific ID.

Any other questions?

If you have any other questions at this point or during/ after the study, please contact the researcher with the contact details provided below.

Contact details of the principal investigator and supervisor:

Support Service details for your use:

Samaritans

Confidential support for people experiencing feelings of distress or despair.

Phone: 116 123 (free 24-hour helpline)

Campaign Against Living Miserably (CALM)

A charity providing a mental health helpline and webchat.

Phone: 0800 58 58 58 (daily, 5pm to midnight)

Rethink Mental Illness

Support and advice for people living with mental illness.

Phone: 0300 5000 927 (Monday to Friday, 9:30am to 4pm)

British Red Cross Coronavirus Support line

Here to help feelings of loneliness, mild depression, isolation and grief after bereavement.

Phone: 0808 196 3651 (daily, 10am to 6pm)

Appendix 56 - Study 4 control group information sheet

Information Sheet

Project Title: Emotional Processing in individuals with and without Post Traumatic Stress Disorder

What is the purpose of the study?

People generally process emotional information relevant to their own trauma experiences in a way that might affect their self-image. The perception of the self is quite crucial for people that have PTSD and/or trauma related experiences, as that might change the way they see themselves and they might change their reactions as a result of this. In this project we will use a computerised task to understand how people with PTSD and those from the general population perceive themselves emotionally.

Why have you asked me to take part?

To take part in this study, you must be aged between 18 – 60. You must speak English fluently (native language, or an IELTs score of 6.5 or higher). This study requires individuals who **have not** had trauma related experiences and do not suffer from post-traumatic stress disorder.

What will I be required to do?

If you decide to take part in the study, you will be asked to do a short writing task, where you are asked to give a detailed description of either a past event or recent activities, a computer task where you match words to the categories given and some questionnaires to measure your emotional regulation and feelings. The whole study will take around 20 minutes to complete. Each task/ questionnaire will give clear instructions to you before it begins.

Please be aware you will be asked about your trauma related experiences which you might find triggering or upsetting. You may want to have someone with you while you complete this in case you are distressed by it. You are able to leave at any point or miss out any questions you feel you do not want to answer.

Are there any benefits or risks to me taking part?

The benefits to taking part is to help further the knowledge of PTSD and emotional processing of the self. You will also be reimbursed for your time through prolific credit.

The risk to you taking part is that you may become distressed given the sensitive nature of this topic. If you are currently in a distressed state, we advise you not to take part. You may take a break or stop your participation at any point if it becomes too much and you are provided with helplines in the information sheet and the debrief for your use if necessary.

Where will this take place?

Participation is online and therefore will take place at a suitable location for you. We suggest it takes place in a quiet place so you can focus on the tasks.

What will I receive for taking part?

You will be reimbursed for your time spent participating in the study with prolific credit at the rate specified on prolific.

How long will the study last for?

The study will take part online in a single session at a time of your convenience when you load it, through prolific. Participation should take around 30 minutes to complete.

When will I have the opportunity to discuss my participation?

You are able to email the researchers at any point before, during or after participation to ask any questions you may have in relation to the study, using the details provided below.

Who will be responsible for all of the information when this study is over?

The information collected in this study will be under the responsibility of principal researcher Anna Robson (see below for contact details).

Who will have access to the information I provide?

Only the researchers directly involved with the study will have access to the information you provide which will be securely stored on a password protected computer.

What will happen to the information when this study is over? How will you use what you find out?

All information gathered during this research will be stored in line with the General Data Protection Regulation (GDPR) and will be destroyed 10 years following the conclusion of the study. The data will be generalised and used for the purposes appropriate to the research question. Data may be published in a scientific journal or presented at a conference.

Will anyone be able to identify me as a participant?

All data will only be connected to your prolific ID rather than personal details and therefore it will not be identifiable to you. This will then be anonymised further and after 2 weeks your prolific ID will also be removed from the data set.

What if I do not want to take part?

Participation in this study is completely voluntary. If you decide you do not wish to take part, you may end this session by closing the browser or clicking on the 'Debrief and leave' link at the bottom of the page.

What if I change my mind during the study?

You have the right to withdraw your data at any point during the study by closing the browser with the study on or clicking on the 'Debrief and leave' link at the bottom of each page. You are also able to withdraw your data up to two weeks after you have participated, by contacting the researcher and identifying your prolific ID.

Any other questions?

If you have any other questions at this point or during/ after the study, please contact the researcher with the contact details provided below.

Contact details of the principal investigator and supervisor:

Support Service details for your use:

Samaritans

Confidential support for people experiencing feelings of distress or despair.

Phone: 116 123 (free 24-hour helpline)

Campaign Against Living Miserably (CALM)

A charity providing a mental health helpline and webchat.

Phone: 0800 58 58 58 (daily, 5pm to midnight)

Rethink Mental Illness

Support and advice for people living with mental illness.

Phone: 0300 5000 927 (Monday to Friday, 9:30am to 4pm)

British Red Cross Coronavirus Support line

Here to help feelings of loneliness, mild depression, isolation and grief after bereavement.

Phone: 0808 196 3651 (daily, 10am to 6pm)

Appendix 57 - Study 4 consent form

PARTICIPANT CONSENT FORM

Please answer the following questions by ticking the response that applies

	Yes	No
1. I have read the Information Sheet for this study and the details of the study have been explained.	○	○
2. I understand that I may ask further questions at any point by contacting the researcher.	○	○
3. I understand that I am free to withdraw from the study within the time limits outlined in the Information Sheet, without giving a reason for my withdrawal or to decline to answer any particular questions in the study without any consequences to my future treatment by the researcher.	○	○
4. I agree to provide information to the researchers under the conditions of confidentiality set out in the Information Sheet.	○	○
5. I wish to participate in the study under the conditions set out in the Information Sheet.	○	○
6. I understand my participation is completely voluntary.	○	○
7. I give permission for the information I provide, to be stored, analysed and published under the conditions set out in the information sheet	○	○

Please enter your prolific ID here

Please make a unique code here of two letters followed by two numbers that you can use throughout the participation e.g. 27AR

By clicking continue you are consenting to take part in this study.

Appendix 58 - Study 4 debrief

Sheffield
Hallam
University

Debrief Sheet

Thank you for completing this study. The study aimed to develop a new task to measure self-directed negative emotions in an automatic process with people with and without Post Traumatic Stress Disorder. You were asked to categorise negative and positive words, to complete a small writing task and to complete a series of questionnaires related to emotions. In the writing task, some of you will have talked about your traumatic experiences while others will have talked about your daily routine. The aim was to see whether thinking about these experiences resulted in you having a more negative view of yourself.
Research has previously identified individuals suffering from trauma related experiences tend to have higher levels of self-directed negative emotion. This research is being done with individuals who do and do not suffer from trauma related experiences to further understand these differences.
All data will use a prolific IDs rather than personal details and therefore it will not be identifiable to you. You have the right to withdraw your data at any point up until two weeks post participation by contacting the researcher with your prolific ID.
If you require any support following the emotions brought up in this study, please contact one of the support services listed here:
Samaritans
Confidential support for people experiencing feelings of distress or despair.
Phone: 116 123 (free 24-hour helpline)

Campaign Against Living Miserably (CALM)
A charity providing a mental health helpline and webchat.
Phone: 0800 58 58 58 (daily, 5pm to midnight)

Rethink Mental Illness
Support and advice for people living with mental illness.
Phone: 0300 5000 927 (Monday to Friday, 9:30am to 4pm)

British Red Cross Coronavirus Support line
Here to help feelings of loneliness, mild depression, isolation and grief after berravement.
Phone: 0808 196 3651 (daily, 10am to 6pm)

If you have any questions, please don't hesitate to contact me using the details provided below.

Appendix 59 - Study 4 output

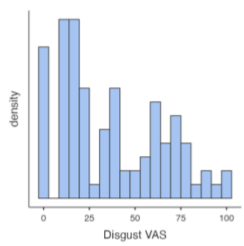
Descriptives

Descriptives

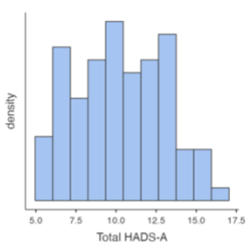
	Disgust VAS	Total HADS-A	Total HADS-D	Total SDS	Total PCL	SD_Self	SDS_Ways	PCL Re-experiencing	PCL Avoidance	PCL Neg alterations in cognition and mood	PCL Hyperarousal	D score with errors NEW
N	93	93	93	93	45	93	93	45	45	45	45	93
Missing	0	0	0	0	48	0	0	48	48	48	48	0
Skewness	0.49	0.15	0.23	0.11	−0.22	0.16	0.19	−0.10	−0.38	−0.02	−0.11	0.61
Std. error skewness	0.25	0.25	0.25	0.25	0.35	0.25	0.25	0.35	0.35	0.35	0.35	0.25
Kurtosis	−0.91	−0.72	−0.78	−0.92	−1.13	−1.00	−0.46	−1.05	−1.29	−1.11	−0.93	1.23
Std. error kurtosis	0.50	0.50	0.50	0.50	0.69	0.50	0.50	0.69	0.69	0.69	0.69	0.50
Shapiro-Wilk W	0.92	0.96	0.97	0.97	0.95	0.96	0.98	0.96	0.89	0.96	0.96	0.97
Shapiro-Wilk p	<.001	0.012	0.028	0.035	0.048	0.008	0.202	0.106	<.001	0.114	0.184	0.031

Plots

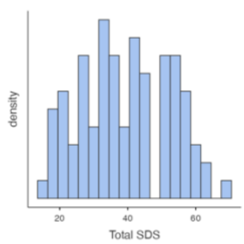
Disgust VAS



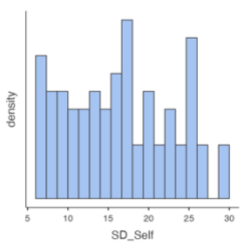
Total HADS-A



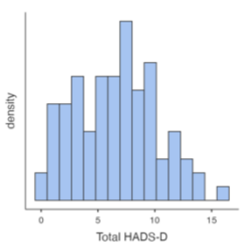
Total SDS



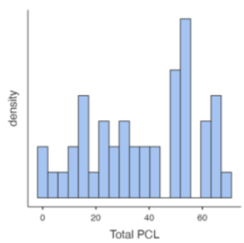
SD_Self



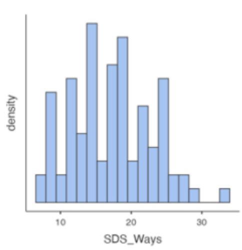
Total HADS-D



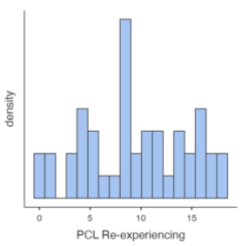
Total PCL



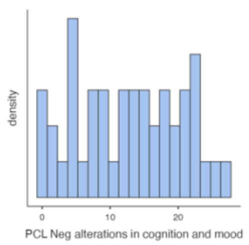
SDS_Ways



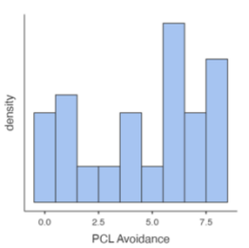
PCL Re-experiencing



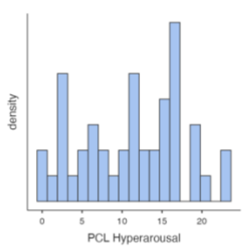
PCL Neg alterations in cognition and mood



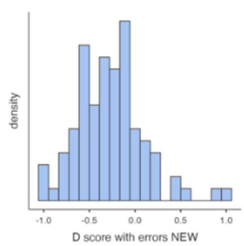
PCL Avoidance



PCL Hyperarousal



D score with errors NEW



Descriptives

Descriptives

	Primed?	Group	Words in prime
Mean	Yes	PTSD	165.04
		Control	93.00
	No	PTSD	133.90
		Control	128.56
Median	Yes	PTSD	117.50
		Control	78
	No	PTSD	107
		Control	99
Standard deviation	Yes	PTSD	182.15
		Control	57.29
	No	PTSD	91.55
		Control	82.60
Minimum	Yes	PTSD	3
		Control	20
	No	PTSD	36
		Control	26
Maximum	Yes	PTSD	866
		Control	218
	No	PTSD	420
		Control	305

Descriptives

Descriptives

	Words in prime
N	93
Missing	0
Mean	131.15
Median	105
Standard deviation	115.73
Minimum	3
Maximum	866

Descriptives

Descriptives

	Group	Disgust VAS	Total HADS-A	Total HADS-D	Total SDS	SD_Self	SDS_Ways	Total PCL	PCL Re-experiencing	PCL Avoidance	PCL Neg alterations in cognition and mood	PCL Hyperarousal	D score with errors NEW
N	PTSD	45	45	45	45	45	45	45	45	45	45	45	45
	Control	48	48	48	48	48	48	0	0	0	0	0	48
Missing	PTSD	0	0	0	0	0	0	0	0	0	0	0	0
	Control	0	0	0	0	0	0	48	48	48	48	48	0
Mean	PTSD	41.76	11.40	7.78	45.40	19.62	19.09	37.96	9.49	4.56	12.67	11.24	−0.34
	Control	31.27	9.33	5.42	34.17	13.71	15.44	NaN	NaN	NaN	NaN	NaN	−0.21
Median	PTSD	40.00	12.00	7.00	45.00	20.00	19.00	40.00	9.00	6.00	13.00	12.00	−0.37
	Control	20.00	9.00	5.00	34.00	13.00	15.00	NaN	NaN	NaN	NaN	NaN	−0.21
Standard deviation	PTSD	27.90	2.50	3.63	12.16	5.87	5.72	20.15	5.24	2.80	7.81	6.33	0.36
	Control	27.70	2.22	3.63	11.67	5.92	5.03	NaN	NaN	NaN	NaN	NaN	0.37
Minimum	PTSD	0.00	6.00	1.00	19.00	7.00	8.00	0.00	0.00	0.00	0.00	0.00	−1.05
	Control	0.00	6.00	0.00	16.00	6.00	7.00	NaN	NaN	NaN	NaN	NaN	−0.74
Maximum	PTSD	100.00	17.00	16.00	70.00	30.00	33.00	69.00	18.00	8.00	27.00	23.00	0.55
	Control	100.00	15.00	14.00	61.00	27.00	27.00	NaN	NaN	NaN	NaN	NaN	0.95

Descriptives

Descriptives

	Group	Disgust VAS	Total HADS-A	Total HADS-D	Total SDS	SD_Self	SDS_Ways	Total PCL	PCL Re-experiencing	PCL Avoidance	PCL Neg alterations in cognition and mood	PCL Hyperarousal	D score with errors NEW
N	PTSD	26	26	26	26	26	26	26	26	26	26	26	26
	Control	48	48	48	48	48	48	0	0	0	0	0	48
Missing	PTSD	0	0	0	0	0	0	0	0	0	0	0	0
	Control	0	0	0	0	0	0	48	48	48	48	48	0
Mean	PTSD	51.92	12.46	8.92	50.77	22.23	21.27	52.77	12.88	6.27	17.92	15.69	−0.26
	Control	31.27	9.33	5.42	34.17	13.71	15.44	NaN	NaN	NaN	NaN	NaN	−0.21
Median	PTSD	60.50	13.00	10.00	53.00	23.00	22.00	53.50	13.50	6.00	18.00	15.50	−0.27
	Control	20.00	9.00	5.00	34.00	13.00	15.00	NaN	NaN	NaN	NaN	NaN	−0.21
Standard deviation	PTSD	29.13	2.10	3.75	9.93	4.86	5.23	10.14	3.49	1.43	5.13	3.55	0.31
	Control	27.70	2.22	3.63	11.67	5.92	5.03	NaN	NaN	NaN	NaN	NaN	0.37
Minimum	PTSD	0.00	9.00	1.00	32.00	13.00	12.00	33.00	6.00	4.00	7.00	10.00	−0.84
	Control	0.00	6.00	0.00	16.00	6.00	7.00	NaN	NaN	NaN	NaN	NaN	−0.74
Maximum	PTSD	100.00	17.00	16.00	70.00	30.00	33.00	69.00	18.00	8.00	27.00	23.00	0.26
	Control	100.00	15.00	14.00	61.00	27.00	27.00	NaN	NaN	NaN	NaN	NaN	0.95

Correlation Matrix

Correlation Matrix

		Disgust VAS	Total HADS-A	Total HADS-D	Total SDS	SD_Self	SDS_Ways	Total PCL	PCL Re-experiencing	PCL Avoidance	PCL Neg alterations in cognition and mood	PCL Hyperarousal
Disgust VAS	Spearman's rho	—										
	p-value	—										
Total HADS-A	Spearman's rho	0.50 ***	—									
	p-value	<.001	—									
Total HADS-D	Spearman's rho	0.41 ***	0.47 ***	—								
	p-value	<.001	<.001	—								
Total SDS	Spearman's rho	0.50 ***	0.63 ***	0.67 ***	—							
	p-value	<.001	<.001	<.001	—							
SD_Self	Spearman's rho	0.43 ***	0.55 ***	0.63 ***	0.93 ***	—						
	p-value	<.001	<.001	<.001	<.001	—						
SDS_Ways	Spearman's rho	0.51 ***	0.60 ***	0.60 ***	0.90 ***	0.72 ***	—					
	p-value	<.001	<.001	<.001	<.001	<.001	—					
Total PCL	Spearman's rho	0.42 **	0.63 ***	0.46 **	0.54 ***	0.54 ***	0.49 ***	—				
	p-value	0.004	<.001	0.001	<.001	<.001	<.001	—				
PCL Re-experiencing	Spearman's rho	0.40 **	0.53 ***	0.33 *	0.42 **	0.36 *	0.43 **	0.88 ***	—			
	p-value	0.007	<.001	0.028	0.004	0.015	0.003	<.001	—			
PCL Avoidance	Spearman's rho	0.33 *	0.35 *	0.18	0.24	0.33 *	0.16	0.70 ***	0.60 ***	—		
	p-value	0.026	0.020	0.247	0.117	0.029	0.294	<.001	<.001	—		
PCL Neg alterations in cognition and mood	Spearman's rho	0.38 *	0.59 ***	0.50 ***	0.60 ***	0.60 ***	0.52 ***	0.95 ***	0.77 ***	0.55 ***	—	
	p-value	0.011	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	—	
PCL Hyperarousal	Spearman's rho	0.43 **	0.66 ***	0.41 **	0.55 ***	0.55 ***	0.48 ***	0.93 ***	0.74 ***	0.63 ***	0.89 ***	—
	p-value	0.003	<.001	0.005	<.001	<.001	<.001	<.001	<.001	<.001	<.001	—
D score with errors NEW	Spearman's rho	0.04	0.20	0.14	0.04	0.04	0.02	0.39 **	0.30 *	0.28	0.45 **	0.29
	p-value	0.671	0.059	0.181	0.731	0.696	0.856	0.008	0.042	0.062	0.002	0.052

Note. * p < .05, ** p < .01, *** p < .001

Independent Samples T-Test

Independent Samples T-Test

		Statistic	p	Mean difference	SE difference	95% Confidence Interval Lower	95% Confidence Interval Upper		Effect Size
Total SDS	Mann-Whitney U	554.50	<.001	12.00		7.00	17.00	Rank biserial correlation	0.49

Group Descriptives

	Group	N	Mean	Median	SD	SE
Total SDS	PTSD	45	45.40	45.00	12.16	1.81
	Control	48	34.17	34.00	11.67	1.68

Independent Samples T-Test

Independent Samples T-Test

		Statistic	p	Mean difference	SE difference	95% Confidence Interval Lower	95% Confidence Interval Upper		Effect Size
Total SDS	Mann-Whitney U	188.50	<.001	18.00		12.00	23.00	Rank biserial correlation	0.70

Group Descriptives

	Group	N	Mean	Median	SD	SE
Total SDS	PTSD	26	50.77	53.00	9.93	1.95
	Control	48	34.17	34.00	11.67	1.68

Independent Samples T-Test

Independent Samples T-Test

		Statistic	p	Mean difference	SE difference	95% Confidence Interval Lower	95% Confidence Interval Upper
D score with errors NEW	Mann-Whitney U	623.00	0.996	8.01e–4		–0.19	0.15

Independent Samples T-Test

Independent Samples T-Test

		Statistic	p	Mean difference	SE difference	95% Confidence Interval Lower	95% Confidence Interval Upper		Effect Size
Disgust VAS	Mann-Whitney U	784.50	0.023	14.00		1.00	24.00	Rank biserial correlation	0.27

Group Descriptives

	Group	N	Mean	Median	SD	SE
Disgust VAS	Yes	45	43.89	40.00	29.94	4.46
	No	48	29.27	20.00	24.60	3.55

Independent Samples T-Test

Independent Samples T-Test

		Statistic	p	Mean difference	SE difference	95% Confidence Interval Lower	95% Confidence Interval Upper		Effect Size
D score with errors NEW	Mann-Whitney U	233.00	0.302	–0.09		–0.26	0.11	Rank biserial correlation	0.18

Group Descriptives

	Group	N	Mean	Median	SD	SE
D score with errors NEW	Yes	21	–0.25	–0.27	0.41	0.09
	No	27	–0.19	–0.16	0.34	0.07

Independent Samples T-Test

Independent Samples T-Test

		Statistic	p	Mean difference	SE difference	95% Confidence Interval Lower	95% Confidence Interval Upper		Effect Size
D score with errors NEW	Mann-Whitney U	239.00	0.778	–0.03		–0.25	0.20	Rank biserial correlation	0.05

Group Descriptives

	Group	N	Mean	Median	SD	SE
D score with errors NEW	Yes	24	–0.35	–0.37	0.35	0.07
	No	21	–0.32	–0.33	0.38	0.08

Linear Regression

Model Fit Measures

				Overall Model Test			
Model	R	R^2	Adjusted R^2	F	df1	df2	p
1	0.39	0.15	0.13	7.50	1	43	0.009

Model Coefficients - Total PCL

Predictor	Estimate	SE	t	p
Intercept	45.20	3.85	11.73	<.001
D score with errors NEW	21.49	7.84	2.74	0.009

Data Summary

Cook's Distance

			Range	
Mean	Median	SD	Min	Max
0.02	0.01	0.04	4.68e−5	0.20

Assumption Checks

Durbin–Watson Test for Autocorrelation

Autocorrelation	DW Statistic	p
−0.03	2.06	0.844

[3]

Collinearity Statistics

	VIF	Tolerance
D score with errors NEW	1.00	1.00

[3]

Normality Test (Shapiro-Wilk)

Statistic	p
0.97	0.277

Linear Regression

Model Fit Measures

				Overall Model Test			
Model	R	R^2	Adjusted R^2	F	df1	df2	p
1	0.62	0.38	0.35	12.87	2	42	<.001

Model Coefficients - Total PCL

Predictor	Estimate	SE	t	p
Intercept	4.71	10.75	0.44	0.663
Total SDS	0.83	0.21	3.96	<.001
D score with errors NEW	13.46	7.07	1.90	0.064

Assumption Checks

Durbin–Watson Test for Autocorrelation

Autocorrelation	DW Statistic	p
−0.21	2.40	0.166

[3]

Collinearity Statistics

	VIF	Tolerance
Total SDS	1.09	0.92
D score with errors NEW	1.09	0.92

[3]

Normality Test (Shapiro-Wilk)

Statistic	p
0.98	0.713

Linear Regression

Model Fit Measures

				Overall Model Test			
Model	R	R^2	Adjusted R^2	F	df1	df2	p
1	0.45	0.20	0.17	6.10	1	24	0.021

Model Coefficients - Total PCL

Predictor	Estimate	SE	t	p
Intercept	56.62	2.39	23.68	<.001
D score with errors NEW	14.96	6.06	2.47	0.021

Data Summary

Cook's Distance

			Range	
Mean	Median	SD	Min	Max
0.05	0.03	0.09	3.39e−6	0.45

Assumption Checks

Durbin–Watson Test for Autocorrelation

Autocorrelation	DW Statistic	p
0.11	1.68	0.422

[3]

Collinearity Statistics

	VIF	Tolerance
D score with errors NEW	1.00	1.00

[3]

Normality Test (Shapiro-Wilk)

Statistic	p
0.98	0.824

Linear Regression

Model Fit Measures

				Overall Model Test			
Model	R	R^2	Adjusted R^2	F	df1	df2	p
1	0.49	0.24	0.17	3.57	2	23	0.045

Model Coefficients - Total PCL

Predictor	Estimate	SE	t	p
Intercept	46.49	10.24	4.54	<.001
Total SDS	0.19	0.19	1.02	0.320
D score with errors NEW	13.71	6.18	2.22	0.037

Assumption Checks

Durbin–Watson Test for Autocorrelation

Autocorrelation	DW Statistic	p
0.14	1.59	0.380

[3]

Collinearity Statistics

	VIF	Tolerance
Total SDS	1.04	0.96
D score with errors NEW	1.04	0.96

[3]

Normality Test (Shapiro-Wilk)

Statistic	p
0.98	0.785