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DOES SELF-COMPASSION ACT AS A MODERATOR FOR RISK FACTORS ASSOCIATED WITH PTSD SYMPTOM SEVERITY?

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Abstract

Threat based risk factors previously found to be associated with PTSD were investigated in a clinical population of treatment seeking individuals. Building on previous research, within evolutionary psychology, this study conceptualised experiential avoidance, shame and self-critical processes as activators of an individual's threat based affect system, following a trauma. These processes may play a central role in the sense of ongoing current threat found in PTSD sufferers. The concept of self-compassion was also investigated; this concept has been implicated in regulating threat based processes and moderating threat based responses. This study hypothesised that individuals higher in levels of self-compassion would demonstrate lower levels of PTSD symptomatology and that levels of self-compassion would moderate the effect of each threat based risk factor on PTSD symptom severity. Correlation and hierarchical multiple regression analyses were conducted and all hypotheses were either fully or partially upheld. An interesting and unexpected moderation effect was found between self-criticism and self-compassion. It was expected that self-compassion would fully moderate the relationship between self-criticism and PTSD symptom severity, however, results show that self-compassion only moderated this relationship when the level of self-criticism was low. This suggests that the interaction between self-criticism and self-compassion is more complex than originally thought. Implications of the findings as well as ideas for future research are discussed.

Statement of Contribution

Statement of contribution

The author of this research has contributed fully to the project design, ethical approval, literature review, recruitment of participants, data collection, scoring of questionnaires, entering of data and data analysis.

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Abstract

Threat based risk factors previously found to be associated with PTSD were investigated in a clinical population of treatment seeking individuals. Building on previous research within evolutionary psychology, this study conceptualised experiential avoidance, shame and self-critical processes as activators of an individual's threat based affect system following a trauma. These processes may play a central role in the sense of ongoing current threat found in PTSD sufferers. The concept of self-compassion was also investigated; this concept has been implicated in regulating threat based processes and moderating threat based responses. This study hypothesised that individuals higher in levels of self-compassion would demonstrate lower levels of PTSD symptomatology and that levels of self-compassion would moderate the effect of each threat based risk factor on PTSD symptom severity. Statistical analysis revealed that all hypotheses were either fully or partially upheld. An interesting and unexpected moderation effect was found between self-criticism and self-compassion

Introduction

This current study attempts to extend previous research that has identified shame, self-criticism and experiential avoidance as potential threat based processes that may contribute to the sense of ongoing current threat said to underpin the development and maintenance of Post Traumatic Stress Disorder (PTSD, Ehlers & Clark, 2000; Harman & Lee, 2010). Self-compassion has been proposed as a possible modulator of these threat based processes and as such, may act to reduce the ongoing threat found within PTSD (see Thompson & Waltz, 2008; Harman & Lee, 2010). This study aims to move research forward by investigating the extent to which these processes exist within a clinical population of trauma survivors and to assess whether self-compassion is a moderator between these factors and PTSD symptom severity.

PTSD has been found to have a lifetime prevalence of 7.8% in the general population (Kessler, Sonnega, Bromet, Hughes & Nelson, 1995). Prevalence rates tend to decrease with time elapsed, although up to one-half of the individuals diagnosed as having PTSD may continue to have it for years (Brewin, Dalgleish & Joseph, 1996). There is much debate over what factors contribute to the development of PTSD, although the view currently expressed in the DSM-IV-TR (American Psychiatric Association [APA], 2000) is that psychological individual differences can influence the development of PTSD (see extended paper 1.0). Research into risk factors associated with PTSD is often hindered by the level of co-morbidity with other psychiatric conditions. Indeed, the National Institute for Clinical Excellence (NICE, 2005) notes that PTSD may co-exist with many disorders, in particular depression and anxiety disorders. Furthermore, two large epidemiological studies conducted found that 85–88% of the men and 78–80% of the women with

PTSD had co-morbid psychiatric diagnoses (Kessler et al., 1995; Creamer, Burgess & McFarlane, 2001, see extended paper 1.0 for further details). Indeed, co-morbidity appears to occur more often than not.

PTSD and Shame

A number of models have been proposed to explain PTSD (see Foa & Rothbaum, 1998; Brewin, Dalgleish & Joseph, 1996). However, the factors of interest to this study are consistent with Ehlers and Clark's (2000) cognitive conceptualisation of persistent PTSD. This model proposes that persistent PTSD develops if an individual processes the trauma in a way that produces a sense of ongoing current threat. More specifically, they argue that it is the 'idiosyncratic negative appraisals' of the trauma that creates a sense of serious threat (Ehlers & Clark, 2000, p. 320). They conceptualise threat as being triggered by both external events and internal processes (see extended paper 1.1 for further details). Such appraisals can generate strong emotions; one that is particularly relevant is the emotion of shame. Lee, Scragg and Turner (2001) argue that appraisals that lead to a shame response can function as a current internal threat by attacking an individual's psychological integrity, leaving them feeling inferior, socially unattractive and powerless; which in turn, maintains their PTSD symptoms.

Diagnostic criteria for PTSD in the DSM-IV-TR (APA, 2000) do not include specific cognitive-affective appraisals such as shame, although it is mentioned as an associated feature (Andrews, Brewin, Rose & Kirk, 2000). However, recent research has highlighted shame as an important and significant predictor of PTSD development. For example, Brewin, Andrews and Rose (2000) found individuals with PTSD experienced feelings of shame and anger with others which independently predicted PTSD above and beyond the emotions described in the

DSM-IV-TR (i.e. fear, helplessness or horror; APA, 2000; see extended paper 1.2).

Shame

Shame can be conceived as a devastating and painful emotion in which the entire self is negatively evaluated (Tangney, 1991). Shame is associated with a desire to hide or conceal deficiencies and it involves painful self-scrutiny and feelings of worthlessness (Tangney, Dearing & Salovey, 2002; Lindsay-Hartz, 1984).

Gilbert (1997) separates external from internal shame. He proposes that external shame is related to what we believe others think of us, for example, if we are unattractive and thus rejectable or if we are vulnerable to attacks from others. Internal shame is related to experiences, feelings and evaluations of the self as inadequate, flawed or bad in a way that is damaging to self-identity. A key component of internal shame is thus self-devaluation and self-criticism.

Using Gilbert's (1997, 1998) psychoevolutionary perspective (see extended paper 1.3 for further details), humans have evolved the capacity to engage in internal dialogues with the self and through this we are able to create internal shame. Gilbert and Proctor (2006) argue that the consequence of an episode of shame can be that both the outside world and an individual's internal world becomes hostile, critical and persecuting. Under this type of threat, a person can feel unsafe both inside and outside the self, with little ability to soothe or calm themselves. In this way, shame can be conceptualised as being threatening and in the context of PTSD, it would seem reasonable to presume that individuals demonstrating high levels of shame would feel an additional sense of threat. Indeed, Gilbert (1993) has argued that shame is often linked with anxiety, which is an involuntary defensive reaction, evolved for rapid defence in potentially dangerous situations. In essence, thoughts directed towards the self can act as stimuli that activates the defence system

(Gilbert, 2001). This directly links to how Ehlers and Clark (2000) conceptualise internal threat and the maintenance of PTSD.

Shame and Self-criticism

Gilbert (1997) emphasised that the method by which individuals shame themselves can be thought about in terms of inner dialogues. Gilbert, Clarke, Hempel, Miles and Irons (2004) have found clinical evidence that individuals can engage in a dialogue with the self and can experience an internal dominant-subordinate, self-self relationship. Gilbert et al., (2004) refers to this as the self-critical inner dialogue, which attacks the part of the self that is seen as inferior and unattractive. Shame is seen to result when individuals submit to their own self-critical attack. However, much of their research is based on non-clinical samples of female students and so it is unclear how this relationship would translate to other populations. (see extended paper 1.4 for further details). Empirically, self-criticism has been found to be significantly associated with shame proneness (Gilbert & Miles, 2000) and both permeate many psychological disorders (Gilbert & Irons, 2005).

Lee (2005) suggests that PTSD is characterised by a thinking style that is highly self-critical and lacks the ability to self soothe. Gilbert (2000) notes that individuals who experience shame seem to lack the ability to be caring and compassionate towards themselves, making the submission to their own self-critical attacks more likely. Lee (2005) argues that individuals who self-attack through a continual internal dialogue of hostile and critical comments manifest a sense of ongoing threat to the self which is similar to the sense of threat found in PTSD. In this way, shame and self-criticism could be seen as central to maintaining the sense of ongoing current threat observed in PTSD sufferers (see extended paper 1.2 for relevant research).

Experiential Avoidance

Thompson and Waltz (2008) have found a significant negative correlation between self-compassion and avoidance; they suggest that this relationship could be understood through the concept of experiential avoidance, which has been found to maintain PTSD symptoms over time (Marx & Sloan, 2005). Furthermore, they suggest that following trauma exposure, trauma related cues might trigger fear and a self-critical response, which may increase avoidance behaviours. Hayes, Wilson, Gifford, Follette and Strosahl (1996) hypothesise that experiential avoidance results from learned associations built from connecting internal experiences with strong threat or danger appraisal patterns. Conceptually, experiential avoidance could be linked to shame and self-criticism in its association with PTSD. This idea is consistent with the Ehlers and Clark (2000) model, which suggests strong emotions (e.g. shame) generated through negative appraisals, may motivate an individual to engage in maladaptive strategies in order to control the sense of threat that they create.

Wagner and Linehan (1998) suggest that avoidance serves to regulate particular aspects of the trauma in an attempt to cope with the experience. However, although attempts to avoid unwanted emotions, thoughts, memories and sensations may initially serve to lessen the frequency and severity of these internal experiences, attempts to do so eventually result in their increase (Hayes, Strosahl & Wilson, 1999). Marx and Sloan (2005) highlight that attempts to distance, control or suppress unwanted private experiences appear to cause psychological and behavioural difficulties, therefore, PTSD symptomatology may be the ‘by-product of the experiential avoidance process’ (Marx & Sloan, 2005, p.571; see extended paper 1.5. for additional studies).

Hypothetically, it could be said that individuals who are high in shame and/or self-criticism who have been exposed to a traumatic event are more likely to engage in experiential avoidance than individuals who report low shame and/or self-criticism. Indeed, avoidance is a common response to threat (Gilbert, 1998) and this proposition appears theoretically sound, given that shame and self-criticism are being conceptualised as threatening.

Affect Systems and Self-compassion

Shame and self-criticism have been linked to two key processes. The first is 'the degree of self-directed hostility, contempt and self-loathing that permeates self-criticism' (Gilbert & Proctor, 2006, p.355; Whelton & Greenberg, 2005; Gilbert, 2000). The second is the inability to engage in self-soothing and self- reassurance.

Gilbert (2005) uses an evolutionary model with which to explain these processes called social mentalities theory (See extended paper 1.6 for further details). By using neuroscientific research derived from Depue & Morrone-Strupinsky's (2005) neurobehavioral model of affiliative bonding, Gilbert (2009) theorises three key affect systems, 1) a threat system, 2) an incentive/resource focused system and 3) a calming/soothing system, all of which are shaped by an individual's life experiences. Although, it is important to note that not all researchers conceptualise these neurophysiological systems in the same way and different sub divisions have been described (See Panksepp, 1998) The calming/soothing system is thought to develop through secure attachments with caregivers, so that compassion becomes internalised which fosters the development of self-soothing behaviour and a tolerance for distress (Gilbert, 2005, 2009). This system may then be available, with various implicit memories and implicit procedures, for use in both positive relationships and importantly, for self-regulation in stressful situations

(Gilbert, Baldwin, Irons, Baccus & Palmer, 2006). In contrast an individual who has been subject to hostility, negativity and abusive experiences from caregivers, is likely to have an over stimulated threat system, which often results in significant levels of shame and self-criticism as an adult (Pauley & McPherson, 2010; Gilbert, 2005; Gilbert & Proctor, 2006). Research has found that self-soothing lowers stress and cortisol, where shame and criticism have the opposite effect (Dickerson & Kemeny, 2004). Gilbert (2005) conceptualises these affect systems as separate but interactive, reciprocal and dependent on both genetics and early childhood experiences.

From a social psychological perspective, Neff (2003b) describes self-compassion in terms of being touched by and open to our own suffering, not avoiding it but generating the desire to heal our suffering and ourselves with kindness. It involves taking a non-judgemental approach to one's own pain, inadequacies and failures, so that experiences are seen as part of the larger human condition (See extended paper 1.7 for further details). Studies have gathered evidence that indicates self-compassion can moderate reactions to real and potential failure (Leary, Tate, Adams, Allen & Hancock, 2007). Neff, Kirkpatrick and Rude (2007) found that increases in self-compassion were associated with decreases in self-criticism, depression, thought suppression and anxiety.

Thompson and Waltz (2008) hypothesise that individuals high in self-compassion may be less likely to feel threatened by and therefore, avoid painful thoughts, memories and emotions. Instead, they may be more likely to experience a natural process of exposure to trauma related stimuli. Indeed, Leary et al. (2007) found that higher self-compassion was correlated with a lower need to avoid painful experiences.

Trauma Treatment

Researchers have now begun to explore the possibility that self-compassion, via the soothing affect system could regulate threat based processes and moderate an individual's threat response. Gilbert and Proctor (2006) devised a programme aimed at fostering compassion and decreasing shame and self-criticism in patients with personality and/or mood disorders. Their results show significant reductions in depression, anxiety, self-criticism, shame, inferiority and submissive behaviour. Additionally, there was a significant increase in the participants' ability to be self-soothing and focus on feelings of warmth and reassurance for the self. Gilbert and Proctor (2006) argue that compassionate mind training may be a useful treatment addition, especially for those individuals with traumatic backgrounds. However, this study was a designed as a pre-trial study with a small sample size and therefore did not include a control group, which limits the applicability of the findings (see extended paper 1.8 for further details).

A limited number of studies have begun to assess some of the threat based constructs highlighted within a trauma population. Harman and Lee (2010) found that individuals who reported high levels of shame were prone to engage in self-critical thinking, and showed a lower propensity for self-reassurance. The authors argue that their results suggest alongside traditional methods for treating trauma, patients might also need to be taught techniques that help them develop inner caring, compassion and self-reassurance. However, without utilising a prospective design and being correlational in nature, the study was unable to ascertain any directional causation.

Research Aims

If one applies these ideas presented as a whole, it could be hypothesised that

individuals who demonstrate higher levels of self-compassion following a traumatic event are likely to experience lower levels of shame, self-criticism and experiential avoidance because (it is conceptualised that) their threat affect regulation system would be less activated. Hypothetically, if this system is less activated, their sense of ongoing current threat would not be as pervasive, thus leading to lower levels of PTSD symptom severity.

This study aimed to investigate these links (see extended paper 1.10) using the following hypotheses: (1) shame, self-criticism and experiential avoidance will be positively correlated with PTSD symptom severity; (2) self-compassion will be negatively correlated with PTSD symptom severity, shame, self-criticism and experiential avoidance; (3) shame, self-criticism and experiential avoidance and self-compassion, when assessed together will significantly predict the variance in PTSD symptom severity; (4) self-compassion will moderate the strength of the relationship between shame, self-criticism and experiential avoidance on PTSD symptom severity.

Method

The style of this report has been written in accordance with the guidelines set out by the Journal of Traumatic Stress (see Appendix 1)

Design

A cross-sectional, quantitative design was employed for this study. The study consisted of five independent variables (IVs): shame, positive self-compassion, negative self-compassion, self-criticism, experiential avoidance and one dependent variable (DV), PTSD symptom severity.

Participants

The study consisted of 62 participants, 52% women (*n* = 32) and 48% men (*n* = 30, M_{age} = 38.6, *SD* = 11.05, range: 20-64 years) who had experienced at least one traumatic incident that met criterion A of the DSM-IV-TR criteria for PTSD (APA, 2000,) were recruited from the assessment and treatment waiting lists of five NHS adult services across England and Wales (see extended paper 1.10).

Participants met the inclusion criteria for the study if they were over 18 years old, fulfilled criterion A and E of the DSM-IV-TR (APA, 2000) and were literate in the English language. Participants were not included in the study if they were deemed to be actively psychotic or if they had a learning disability (see extended paper 1.10 for further details). 262 questionnaire packs were given out and 62 packs were returned giving a 24% uptake rate, this is similar to other studies (See Harman & Lee, 2010). Demographic characteristics of the sample are shown in Appendix 2 and types of traumatic experiences are shown in Appendix 3. All participants who returned their questionnaires met the criteria for the study; therefore, no participants were excluded on this basis.

Procedure

Five services offering treatment for trauma agreed to take part in the study. At each site, the local collaborator and existing clinicians identified participants from their assessment and/or treatment waiting lists that would meet the exclusion and inclusion criteria. Participants were either sent an optional questionnaire pack or they were given a pack after they had attended their initial appointment at the service. These packs contained an introductory letter from the service (see Appendix 4) and an information sheet outlining the study (see Appendix 5), the seven questionnaires (see Appendix 6-12) plus an additional demographics

questionnaire (see Appendix 13).

Ethics

Ethical approval was granted by the Nottingham Research Ethics Committee 1 on 2nd September 2009 (see Appendix 16; see extended paper 1.12 for further details).

Trauma Measures

Individual questions designed by the researcher, regarding the duration of symptoms, emotions felt during the trauma as well as the Life Events Checklist (LEC; Gray, Litz, Hsu & Lombardo, 2004) assessed for criterion A and E of the DSM-IV-TR (APA, 2000, see Appendix 14 for further details).

The Impact of Events Scale-Revised (IES-R, Weiss & Marmar, 1997).

This is a 22-item self report measure that assesses an individual's current subjective distress for a specific traumatic life event over the last seven days. The measure assesses the following three subscales of the DSM-IV-TR (APA, 2000): re-experiencing; avoidance/numbing and hyperarousal. Respondents answer on a five-point scale. Briere's (2004) study found that the Cronbach's alphas for the subscale re-experiencing ranged from .87 - .92; for the avoidance subscale ranged from .84 - .86 and for the hyperarousal subscale ranged from .79 - .90. Weiss and Marmar (1997) reported test–retest correlation coefficients ranging from .57 - .94 for re-experiencing, .51 - .89 for avoidance and .59 - .92 for hyperarousal.

The Life Events Checklist (LEC; Gray et al., 2004).

This measure was designed to assess exposure to 16 events known to potentially result in PTSD or distress and includes one item assessing any other stressful event not captured by the first 16 items. As a measure of direct trauma, Gray et al. (2004) found that the LEC achieved a mean kappa of .61 for reliability

and a retest correlation of .82. The correlation between the LEC and other measures of traumatic life experiences was -.55, where lower scores on the LEC indicate more direct exposure. Gray et al. (2004) also found the LEC to be correlated with PTSD symptom severity with Pearson *r* coefficients ranging from .34 - .48.

The Experience of Shame Scale (ESS; Andrews, Qian & Valentine, 2002).

This is a 25-item questionnaire that assesses characterological shame, behavioural shame and bodily shame but also provides a total shame score. This measurement approach involves direct questions about shame and has been highly effective in predicting post-traumatic stress symptoms (Andrews et al., 2000). Andrews et al., (2000) argue that the ESS avoids purely negative evaluations to distinguish it from measures such as self criticism. Andrews, Qian and Valentine (2002) demonstrate that the ESS has high internal consistency with a Cronbach's's alpha of .92 and test-retest reliability over 11 weeks of .83. Construct and discriminant validity were also demonstrated through significant correlations with the Test of Self-Conscious Affect (TOSCA, Tagney, Wagner & Gramzow, 1989) which is a well-established questionnaire measuring shame, guilt, externalization, detachment and pride.

The Self-compassion Scale (SCS; Neff, 2003a).

This is a 26-item self report measure that assesses three dimensions with six subscales. Neff (2003a) identified the following components of self-compassion: self kindness versus self judgement, common humanity versus isolation and mindfulness versus over identification. The SCS has demonstrated good internal consistency (.92), as well as test-retest reliability (r = .93) over a three week interval (Neff, 2003a). In terms of divergent validity, the SCS demonstrated significant negative

correlations with self-criticism (-.65) and significant positive correlations with scales measuring similar constructs (e.g. The Social Connectedness Scale, Lee & Robbins, 1995). In this study the negative and positive items of this scale were studied separately and not as a single factor scale. This is because positive feelings (of compassion) and negative (threat) feelings are typically seen as two independent dimensions of affect (Watson, Clark, Weber, Assenheimer, Strauss & McCormick, 1995a,b) and fMRI data suggests that they are tapping different physiological systems and probably should not be seen as a unitary concept (Longe et al., 2010).

The Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., submitted).

This is a ten-item measure of experiential avoidance. It uses a Likert scale ranging from one (*never true*) to seven (*always true*). The ten items assess the key aspects associated with the construct of experiential avoidance and link this to inaction, the literalness of thoughts, controlling private events in the same way as real-world events and escape or avoidance of negatively evaluated content. The internal consistency of the AAQ-II has been found to range between .81 - .87 (Bond et al., submitted). It has been found to correlate moderately to highly with measures of general psychopathology (e.g. Becks Depression and Anxiety Inventories, Bond et al., submitted). Convergent validity has also been found with the White Bear Suppression Inventory (-.58; Wegner & Zanakos, 1994), which is another measure of avoidant coping.

The Forms of Self-Criticising and Self-Reassuring Scale (FSCRS; Gilbert et al., 2004).

This is a 22-item scale that measures the forms and styles of peoples' critical and reassuring self-evaluative responses to a setback or disappointment.

Participants respond on a five-point Likert scale to questions designed to assess trait self-criticism and trait self-reassurance. Theoretically individuals can score high on both measures, Gilbert et al. (2004) argue that these components are not simply opposite ends of a unitary construct expand. The FSCRS correlated significantly with other measures of self-criticism (e.g. the Levels of Self-Criticism Scale, Thompson & Zuroff, 2000) and Gilbert et al. (2004) report good internal consistency, convergent and discriminant validity.

The Depression Anxiety Stress Scales 21 (DASS-21; Henry & Crawford, 2005).

Brown, Chorpita, Korotitsch and Barlow (1997) suggested that the subscales of the DASS-21 measure the three dimensions specified in the tripartite model; low positive affectivity (DASS-Depression), physiological hyperarousal (DASS-anxiety), and negative affectivity (DASS-Stress). Henry and Crawford (2005) found high internal consistencies for the DASS-21 total scales of .88, with subscale alphas ranging from .82 - .93. They also found evidence of good convergent and discriminant validity when compared with other validated measures of depression and anxiety (e.g. Beck Depression Inventory, Beck Anxiety Inventory). Henry and Crawford (2005) also suggest that by combining the depression, anxiety and stress scale it is possible to gain a measure of general psychological distress that has considerable validity. In this study, the DASS-21 will be used to assess and control for the presence of co-morbid disorders alongside PTSD symptomatology.

Results

Data was analysed using SPSS (2007, Version 16). The data was initially tested for missing data, this was found to be less than 5% and missing completely at

random therefore, analysis of the data was conducted by missing cases pairwise (See extended results 2.1). The assumptions required for parametric correlations were then tested (see extended results 2.2-2.4). Outliers were identified and transformed on the following measures: IES-R and the negative self-compassion scale. Normality tests indicated all variables were normally distributed except the AAQ-II, the DASS and the negative self-compassion scale (see extended paper 2.3). Variables that were normally distributed also met the assumptions for linearity and homoscedasticity.

Parametric and non-parametric tests were used in the correlational analyses and tests were performed using a two-tailed test, unless there was a directional hypothesis, in which case one-tailed tests were used. When testing multiple correlations, to reduce the likelihood of Type I errors, Bonferroni Corrections were applied to the data and the adjusted alpha levels are reported for each significant correlation (see extended paper 2.6).

Descriptive statistics

Table 1 shows the means, standard deviations and Cronbach's alpha coefficients for the IES-R, the DASS, self-criticism, the AAQ-II, the ESS, positive self-compassion and negative self-compassion (see extended paper 2.5 for additional descriptive statistics). The mean and standard deviation obtained for the IES-R total was similar to previous research using a treatment seeking sample of participants with a diagnosis of PTSD (2.64, *SD* = 0.69; Creamer, Bell & Failla, 2003). The IES-R demonstrated high internal consistency for the total scale (Cronbach's alpha = .92), again this was similar to alpha levels found in previous research (.96; Creamer, Bell & Failla, 2003; see extended paper 2.5 (i) for additional questionnaire statistics).

Table 1

Means, Standard Deviations and Cronbach's Alpha Levels

	Mean	*SD*	α
IES-R (*n* = 60)	2.73	0.66	.92
DASS (*n* = 60)	81.43	33.92	.96
Self-criticism (*n* = 62)	35.55	13.84	.92
AAQ-II (*n* = 60)	49.87	14.77	.90
ESS (*n* = 61)	72.25	20.5	.96
Positive Self Compassion (*n* = 61)	7.32	2.25	.88
Negative Self Compassion (*n* = 61)	11.89	2.2	.91

Correlational Analyses

In order to test hypotheses one and two and to explore additional intercorrelations between the measures, a correlation matrix was produced to show one-tailed Pearson Product Moment correlations, one tailed Spearman's Rho correlations and two tailed correlations for age and gender (see extended paper 2.6. for additional correlational analyses). Spearman's Rho correlations were calculated on the variables that did not meet parametric assumptions.

Table 2

Correlational Analyses

	Variables	Age	Gender	IES-R	Self-Crit	Self-R	Pos SC	AAQ-II	Neg SC	DASS
1	Age[††]									
2	Gender[††]	.14								
3	IES-R	-.06	-.04							
4	Self-Criticism	-.17	-.09	.74[†]						
5	Self-Reassurance	-.02	.04	-.36[†]	-.47[†]					
6	ESS	-.19	.02	.70[†]	.74[†]	-.40[†]				
7	Pos Self-Compasssion	-.03	-.11	-.39[†]	-.36[†]	.64[†]	-.36[†]			
8	AAQ-II[a]	.13	.15	.51[†]	.54[†]	-.45[†]	.47[†]	-.50[†]		
9	Neg Self-Compassion[a]	-.16	-.07	.65[†]	.66[†]	-.53[†]	.69[†]	-.64[†]	.54[†]	
10	DASS [†† a]	.13	.11	.77**	.71**	-.47**	.77**	-.45**	.55**	.68**

[a] Spearman Rho correlations were used to analyse these variables

**Correlation is significant at the Bonferroni adjusted alpha level of $p < .005$ (.05/10; 2-tailed)

[†] Correlation is significant at the Bonferroni adjusted alpha level of $p < .005$ (.05/10; 1-tailed)

[††] Correlations with age, gender and DASS are two-tailed. Gender is analysed using a point-biserial correlation.

As shown in Table 2, hypothesis one is supported; significant positive relationships were found between the predictor variables; shame and PTSD symptom scores (r = .70, p = .001), self-criticism and PTSD symptom scores (r = .74, p = .001), experiential avoidance and PTSD symptom scores (r_s = .51, p = .001). Hypothesis two was also supported; significant negative correlations were found between positive self-compassion and PTSD symptom scores (r = -.39, p = .001). Additionally, self reassurance was found to be significantly negatively correlated with PTSD symptom scores (r = -.36, p = .002).

Both positive self-compassion and self reassurance were positively correlated with each other (r = .64, p = .001). Negative self-compassion, which measures factors that demonstrate a lack of self-compassion (e.g. self-judgement), was significantly correlated with all the continuous variables; demonstrating positive correlations with shame (r_s = .69, p = .001), self criticism (r_s = .66, p = .001), experiential avoidance (r_s = .54, p = .001) and PTSD symptom scores (r_s = .65, p = .001) and negative correlations with positive self-compassion (r_s = -.64, p = .001) and self reassurance (r_s = -.53, p = .001; see extended paper 2.8 for further comments).

Neither age nor gender were significantly correlated with any of the variables and were therefore not considered as control variables. Table 2 also shows the significantly high correlations between the DASS measure and all of the continuous variables including the PTSD symptom scores (r_s = .77, p = .001). Therefore, the DASS measure was entered as a control variable in all subsequent analyses (see extended paper 2.6 for additional information on control variables). Interestingly, in a separate analysis, experiential avoidance and the avoidance subscale of the IES-R were not correlated (r_s = .24, p = .069, 2-tailed), therefore no further adjustments were made to control for any possible contamination between these measures.

Hierarchical regression

To test hypothesis three, a hierarchical multiple regression analysis was conducted to assess the variance within PTSD symptom scores that could be accounted for by shame, self-criticism, experiential avoidance and positive self-compassion whilst controlling for the effects of depression, anxiety and stress (DASS). Table 3 highlights the regression analysis conducted.

Table 3

Predicting PTSD Symptom Scores

Model		sr^2	*B*	SE *B*	β	*t*	95% CI
Step 1	(Constant)		1.522	0.15		10.18	1.22, 1.82
	DASS	0.76	0.02	0.00	.76	8.74*	0.01, 0.02
Step 2	(Constant)		0.93	0.57		1.63	
	DASS	0.21	0.01	0.00	.37	2.61**	0.00, 0.01
	Self-criticism	0.18	0.02	0.01	.31	2.25**	0.00, 0.03
	AAQ-II	0.02	0.00	0.01	.02	0.19	-0.01, 0.01
	ESS	0.11	0.01	0.00	.18	1.32	-0.00, 0.01
	Pos Self-compassion	-0.04	-0.02	0.03	-.05	-0.55	-0.07, 0.04

Note. CI = Confidence interval

R^2 = .57 for step 1, R^2 = .65 for step 2, ΔR^2 = .08 for step 2

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

All assumptions for the regression model were explored and met (see extended paper 2.9). In relation to hypothesis three, the regression model as a whole accounted for 65% of the variation in PTSD symptom scores. The DASS measure accounted for 57% of the variance (step 1) and the addition of the predictors (step 2) accounted for an additional 8% of the variation above that

explained by the DASS alone. As such, the change in the amount of variance that can be explained by the predictors gives rise to an *F*-ratio of 3.12, which is significant ($F(4, 53)$ $p < .05$, $f^2 = .05$)[1]. Therefore, the hypothesis that shame, self-criticism, experiential avoidance and self-compassion would account for a significant amount of the variance in PTSD symptom scores is upheld; however, these combined variables, contrary to expectation, were much less predictive than the DASS. It may be that the high inter-correlation between the DASS and PTSD symptoms reflects a common underlying factor (i.e. psychological distress) that obscures and underplays the effects of the predictor variables. Therefore, additional regression analyses have been conducted to explore the predictive utility of the model when the DASS is excluded (see extended paper 2.10).

Although no hypothesis was stated regarding the significant contribution of each individual predictor on PTSD symptom scores, the regression model highlighted that both the DASS ($t(53) = 2.61$, $p = .01$, $f^2 = .05$) and self-criticism ($t(53) = 2.25$, $p < .05$, $f^2 = .05$) significantly predicted PTSD symptom scores. Their associated standardised beta values (.37 and .31 respectively) indicate the number of SDs that the DV will change as a result of one SD change in the predictor when all other variables are held constant (Field, 2009). These results highlight that when the DASS is held constant, self-criticism is the only other important predictor in the model.

[1] Effect sizes for the predictors in the multiple regression analysis were computed as Cohen's f^2, which indicates the percentage of variance accounted for in the context of the other predictors in the model. By convention, f^2 effect sizes of 0.02, 0.15, and 0.35 are considered small, medium, and large, respectively (Cohen, 1988).

Moderation Analyses

To test hypothesis four, moderation analyses were performed to examine the moderating effects of positive self-compassion on the relationship between shame, self-criticism, experiential avoidance and PTSD symptom scores. In these hierarchical multiple regression analyses, the continuous level predictor and moderator were centred and the centred predictor and moderator terms were multiplied to form the interaction term (see extended paper 2.11 for further details). This procedure is recommended by Aiken & West (1991) to reduce problems with multicollinearity and to facilitate interpretation of significant interaction effects. Self-compassion did not moderate the relationship between shame, experiential avoidance and PTSD symptom scores (see extended paper 2.12). However, a significant interaction was found between self-compassion and self-criticism on PTSD symptom scores (see Table 4). Beta weights are reported from the final step of the equation and therefore reflect the unique contribution of each variable.

Table 4

Regression of IES-R Scores on the Interaction between Self-criticism and Self-compassion

Model		*B*	SE *B*	β	*t*	95% CI
Step 1	(Constant)	2.77	0.06		46.96	2.65, 2.89
	Pos Self-compassion	-0.05	0.03	-.18	-1.96	-0.11, 0.00
	Self-criticism	0.03	0.00	.66	7.14*	0.02, 0.04
Step 2	Pos Self-compassion X Self-criticism	0.00	0.00	.18	2.13**	0.00, 0.01

Note. CI = Confidence interval

R^2 = .56 for step 1, R^2 = .59 for step 2, ΔR^2 change = .03 for step 2

* $p < .001$, ** $p < .05$

The results from Table 4 are interpreted using the guidance offered by Aiken & West (1991). The unstandardised regression coefficient for self-compassion was not significant ($F(1, 56) = 4.52$, $p = .06$, $f^2 = .07$). The unstandardised regression coefficient for self-criticism was significant revealing a significant positive relation between self-criticism and PTSD symptom scores ($F(1, 56) = 4.52$, $p < .001$, $f^2 = .07$). The unstandardised regression coefficient for the interaction term between self-compassion and self-criticism was significant ($F(1, 56) = 4.52$ $p = .04$, $f^2 = .07$). The

R^2 change associated with the interaction term revealed that the interaction explained an additional 3% of the variance in PTSD symptom scores over and above the 56% explained by the first order effects of self-compassion and self-criticism.

In order to assess the form of this significant interaction, regression lines were plotted as described by Aiken and West (1991), so that scores for both the predictor and moderator variables represented the four combinations of low and high scores on the two variables (see extended paper 2.13 for further details).

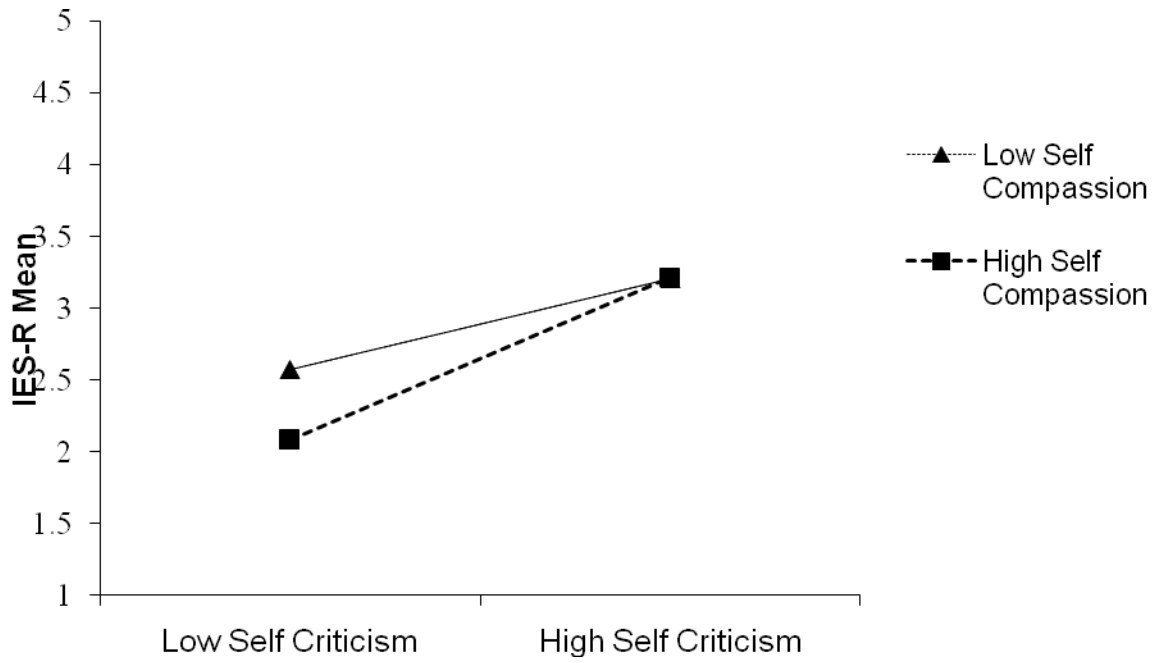

Figure 1. Regression lines to show significant interaction between self-compassion and self-criticism

Figure 1 shows that, when self-criticism is high, PTSD symptoms remain the same regardless of the level of self-compassion; therefore in this instance, self-compassion does not appear to have a moderating influence on PTSD symptom scores. However, when self-criticism is low, the level of self-compassion does have an impact on PTSD symptom scores; more specifically, at the level of low self-criticism, high levels of self-compassion equate to lower levels of PTSD symptom scores and low levels of self-compassion equate to higher levels of PTSD symptoms.

The difference between the high and low self-compassion data points was tested using an independent samples *t* test. From the test output, equal variances were assumed (Levene's test, $p > .05$). When self-criticism is low and self-compassion is low PTSD symptom scores are higher ($M = 2.67$, $SE = 0.11$) than when self-criticism is low and self-compassion is high ($M = 2.02$, $SE = 0.14$). This

difference is significant ($t(28) = 3.564$, $p = .001$), with a medium-sized effect ($r = .31$). This suggests that hypothesis four is partially upheld because although the interaction model between self-compassion and self-criticism is significant, the moderating effects of self-compassion are more complex than the hypothesis states, in that the moderating effects of self-compassion are dependent on the level of self-criticism.

Discussion

This study examined the relationships between shame, self-criticism, experiential avoidance and self-compassion in a clinical population, all of whom had experienced at least one traumatic event and were currently on the waiting list for psychological therapy. All of the hypotheses were either partially or fully upheld.

Hypothesis one was fully upheld; shame, self-criticism and experiential avoidance were all significantly positively correlated with PTSD symptom severity. These findings are consistent with previous research that has demonstrated high levels of shame and self-criticism within a PTSD population (Brewin, Andrews & Rose, 2000; Cox, MacPherson, Enns & McWilliams, 2004; Harman & Lee, 2010) and high levels of experiential avoidance (Marx & Sloan, 2005; Tull & Roemer, 2003). In this way, these findings give support to the Ehlers & Clark (2000) model of persistent PTSD; internal cognitive and emotional threat appraisals generated through shame and self-criticism and maladaptive responses such as experiential avoidance may be important factors in the development and maintenance of PTSD. There are a number of possible explanations for these findings: it may be that a proneness to shame, self-criticism and experiential avoidance predates the trauma and therefore is a risk factor for the development of PTSD; it could also be that over time PTSD

symptoms generate these threat-based factors (e.g. through appraisals of symptoms) or alternatively it could be that the particular elements of trauma exposure that lead to PTSD are associated with these measures (e.g. through actions taken at the time of the trauma). However, due to the study being retrospective and correlational in design, a distinction cannot be made between these competing arguments (see extended paper 3.1 for further discussion).

Hypothesis two was fully upheld; positive self-compassion was significantly negatively correlated with PTSD symptom severity, shame, self-criticism and experiential avoidance, with experiential avoidance demonstrating the highest negative correlation. This latter finding is consistent with previous research (Thompson & Waltz, 2008) that suggests individuals higher in self-compassion may feel less threatened by trauma related cues such as fear and self-criticism; as such they may be less likely to avoid painful memories, thoughts and emotions generated by the trauma, which is likely to lead to reduced PTSD symptomatology. As stated previously, this study cannot offer comment regarding the causal pathways in which self-compassion may operate; consequently alternative possibilities may be posited.

As opposed to feeling less threatened by fear and self-criticism, individuals with higher levels of self-compassion following a traumatic event may not experience internal shame in the way that individuals with low self-compassion do. Reminders of the trauma that cause a sense of internal shame can activate underlying core schemas and generate emotions, cognitions and behaviours that are threatening (Gilbert & Proctor, 2006). These are considered threatening because they are generally associated with early frightening and shaming experiences which can be viewed as schema congruent (Lee, 2005). Consequently, the learned associations that are built from connecting these internal experiences with strong threat or danger

appraisal patterns (Hayes et al., 1996) combined with the desire to hide and escape generated by shame (Herman, 2007), could lead to experiential avoidance. Thus, preventing a change in the trauma memory and maintaining the sense of ongoing threat central to PTSD (Ehlers & Clark, 2000). This idea also links to Gilbert's (2000b, 2005, 2009) hypothesised affect regulation systems, in that, over-activation of the threat system through threatening early experiences can modulate and weaken the development of the self-soothing system that generates compassion. A weakened self-soothing affect system can lead to threat-focused individuals who struggle to regulate these affective states and who engage in well-rehearsed, focused self-attack (Baldwin, 2005). Indeed, Gilbert (2000) conceives the possibility that the warm and soothing affect system is underdeveloped in self-critical and shame prone individuals (see extended paper 3.1 for further discussion).

Hypothesis three was upheld but not to the extent predicted when the DASS was entered as a control variable[2]. Taken together, shame, self-criticism, experiential avoidance and positive self-compassion accounted for a significant amount of the variance within PTSD symptom scores (8%; see extended paper 3.2 for additional findings), however although this was significant, the variance these predictors accounted for was much less than what the Depression, Anxiety and Stress measure (DASS) accounted for (57%). The DASS was entered as a control variable due to its high correlations with all the predictor variables and PTSD symptom scores, however there is an argument that this shared variance has obscured the effects of the predictor variables (see extended paper 2.10 & 3.3).

[2] Additional analysis of the predictor variables without controlling for DASS revealed that shame, self-criticism, experiential avoidance and self-compassion accounted for 61% of the variance in PTSD symptom scores (see extended paper 2.10).

The finding that the DASS shows high correlations with the measures is not surprising given the research on co-morbid disorders and PTSD. Studies have found between 50% to 90% of individuals meet the criteria for another psychiatric disorder (Yehuda & McFarland, 1995). A number of possible explanations can be considered. Firstly, there may be overlap in terms of how the DASS and the IES-R measure their associated constructs. Henry and Crawford (2005) suggest that the combination of the depression, anxiety and stress scale in the DASS gives a measure of general psychological distress. The assessment of PTSD symptoms could also be described as a measure of general distress, indeed there is much overlap within the items themselves (e.g. concentration, numbing symptoms, heightened arousal). Weiss & Marmar (1997) state the IES-R assesses an individual's current subjective distress for a specific trauma. Secondly, one could speculate that the current study had a high rate of pre-existing psychiatric conditions which may have served to increase participants' vulnerability to the development of PTSD following traumatic exposure (Creamer Bell & Failla, 2003). Participants were found to score in the extremely severe range for depression and anxiety and in the severe range for stress (Lovibond & Lovibond, 1995). This may, in part, be due to collecting participants from secondary mental health services and trauma clinics where higher levels of psychopathology would be expected. A third possible interpretation could be that the causal pathways between mood and PTSD symptoms may have a 'shared diathesis', or an underlying vulnerability (Breslau, Davis, Peterson and Schultz, 2000). What can be concluded from this finding is that there is a complex interaction between PTSD and affective mood states. This knowledge may call for a broader conceptualization of the response to traumatic events, going beyond the present emphasis on PTSD. Future studies could

concentrate on addressing the occurrence of mood and anxiety disorders among trauma survivors. Studies could seek to go beyond categorical outcome measures to include continuous dimensions of the response to trauma (Shalev et al., 1998).

Hypothesis four predicted that the relationships between self-criticism, shame, experiential avoidance and PTSD symptom scores would be moderated by self-compassion. The results suggest that self-compassion partially, rather than fully moderated the relationship between self-criticism and PTSD symptom scores (see extended paper 3.4 for exploration of non-significant results). Although the results of the moderation analysis were significant, further exploration revealed that high self-compassion was only a moderator of PTSD symptom scores when levels of self-criticism were low. Therefore, when self-criticism was high, levels of self-compassion had no impact on PTSD symptom scores. This was an interesting and unexpected finding. According to Gilbert (2000b, 2005, 2009) and Neff (2003a, b), high self-compassion should lead to a reduction in threat type processes such as self-criticism, which in turn, as the current study hypothesises, should lead to a reduction in PTSD symptom severity. However, this was only the case when levels of self-criticism were low. This may suggest that the interaction between self-compassion and self-criticism is more complex than originally thought. Indeed, some studies have found that participants high in self-criticism demonstrate threat-like responses when asked to focus on compassionate images (Rockliff et al., 2008), if this is the case, rather than compassion acting as regulator and soother of the threat system, it may actually stimulate it and therefore a reduction in PTSD symptomatology would not be expected.

It may also be the case that individuals who are highly self-critical are continually stimulating their threat system and this has a detrimental impact on

positive affect and its ability to moderate this threat (Gilbert, 2007). Indeed, it might be reasonable to presume that self-criticism, due to its threat based and ruminative process, may limit an individual's capacity to utilise and benefit from self-compassion whereas others who are less self-critical may be able to make use of self-soothing strategies, enabling them to engage in processes that would counter the ongoing threat associated with PTSD symptoms. Although this conclusion would require additional research to ascertain its validity, an interesting area of research in the future may look to conduct compassion-based treatments for traumatised individuals and analyse groups of participants separately based on their levels of self-criticism.

The findings highlighted in this study have to be interpreted with caution due the study's relatively small sample size and its retrospective, correlational design. It is also important to note that this study in comparison to other similar studies, found considerably higher mean scores of PTSD symptoms, shame, experiential avoidance, depression, anxiety and stress. This may limit the extent to which the results can be generalised. Future research would benefit from replicating this study using a prospective design, for example, collecting measures at one month and six months post-trauma and collecting participants from a variety of services so that wider variations in PTSD symptoms can be assessed. These steps would allow for a clearer understanding as to the factors that may increase or decrease PTSD symptoms.

This study reveals the importance of self-critical processes within PTSD and suggests that this may be an important construct for clinicians to assess before conducting any PTSD treatment. The relative importance of shame, experiential avoidance and self-compassion in predicting the variance of PTSD symptoms remains unclear due to the confounding effects of the DASS and further research is

needed to ascertain the impact of these variables.

Self-compassion remains an interesting construct and this study tentatively suggests that compassion may be an important factor in reducing PTSD symptoms within individuals who demonstrate low levels of self-criticism. For individuals high in self-criticism, they may have less capacity to make use of compassion based strategies and they may also find them threatening. Indeed, Gilbert & Proctor (2006) note that some people are frightened of showing themselves inner warmth and compassion, therefore clinicians will need to bear this in mind when considering treatment options. Research and developments into self-compassion are still relatively new and further research is required to determine the impact of enhancing and stimulating compassionate processes. Specifically, further research is needed within a trauma population to develop a more coherent theoretical understanding of how threat based processes may be modulated by compassion and if this actually leads to a reduction in PTSD symptomatology.

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Extended Background

1.0. Risk Factors in PTSD and Co-morbidity Issues

Following exposure to a traumatic incident, a number of individuals will go on to develop Post Traumatic Stress Disorder (PTSD). This can be a potentially debilitating reaction to trauma, which includes re-experiencing symptoms (e.g., flashbacks), avoidance and numbing symptoms (e.g., avoidance of trauma reminders) and hyperarousal (e.g., exaggerated startled response; DSM-IV-TR; APA, 2000). Indeed, longer-term studies have shown PTSD lasting up to 40 years in World War II combat veterans and POWs (see Davidson, Kudler, Saunders & Smith, 1990).

Epidemiologic studies suggest that the occurrence of PTSD following a traumatic event 'is the exception rather than the rule' (Yehuda & McFarland, 1995, p.1707). Prospective studies have shown that approximately only 30% of trauma-exposed individuals will meet the criteria for PTSD, measured after a four-month period (Shalev et al., 1998) which suggests that the majority of individuals appear resilient to its development. Due to the discovery that not everyone who experiences a traumatic event will go on to have PTSD (Yehuda & McFarland, 1995), researchers have become interested in the risk factors that may be associated with the development of this disorder. Generally, researchers want to assess pretrauma, peritrauma and post-trauma factors. In particular, researchers are often interested in the emotions during the trauma and the emotions after the trauma. The former are known as peritraumatic emotions which are primary emotions that occur as a direct result of facing overwhelming circumstances (Hathaway, Boals & Banks, 2009) and the latter, post-trauma secondary emotions which arise from cognitive processes following the event and its associated primary emotions (Brewin, Dalgleish & Joseph, 1996; Ehlers & Clark, 2000).

Brewin, Andrews, and Valentine (2000) conducted a meta-analysis of factors predictive of PTSD; overall they found that social support post-trauma was the best predictive factor. They also found proximal factors such as the association between pre-trauma risk factors and immediate trauma responses to be more important than distal factors such as education, ethnicity and gender. However, they caution against building a vulnerability model because

the factors influencing outcomes vary across different populations and traumas, and are dependent on whether a retrospective or prospective design was employed in the study's design.

A meta-analysis of risk factors conducted by Ozer, Best, Lipsey and Weiss (2003) has identified that important predictors of PTSD include; peritraumatic dissociation, peritraumatic emotions, perceived threat to life, perceived social support, family history of psychopathology, prior adjustment and prior trauma. However, when the authors included the only four studies that assessed depression as a risk factor, this was found to be more significantly associated with PTSD than any prior adjustment factors (NICE, 2005).

Brewin, Dalgleish and Joseph (1996) argue that prior trauma may account for the link between previous clinical history and the severity of PTSD. However, the problem with research of this nature is that it involves assessing participants after a traumatic event has occurred rather than at the time of the event. Therefore, it is difficult to obtain a measure of what was happening for an individual peritraumatically, because this information is recalled at a later date, it is subject to recall bias, therefore, all trauma research is limited by this problem. Nevertheless, the recent NICE guidelines have stated that there is currently no accurate means with which to screen individuals post-trauma for the later development of PTSD; this is due to current screening methods demonstrating limited overall efficiency (NICE, 2005).

The reasons why only a minority of trauma victims are likely to go onto develop PTSD are not clear (Cox et al., 2004). Some studies suggest it is the nature of the event that leads to PTSD symptoms such as: combat; torture; incarceration; assault and life threatening accidents (Brewin, Andrews & Rose, 2000). Kessler et al. (1995) reported a high prevalence of PTSD among rape victims. Some studies have found empirical support for the association between subjective perception of intense threat at the time of the trauma and the later development of PTSD symptoms (e.g. Blanchard, Jones-Alexander, Buckley & Forneris, 1996). Other studies have shown that a history of psychological or behavioural problems is predictive of PTSD symptoms in adults after a natural disaster (McFarlane, 1989), other researchers have not found any prior clinical history to be associated with outcome (Solkoff, Gray &

Keill, 1986; Speed, Engdahl, Schwartz & Eberly, 1989. Summarising much of this literature Brewin (2003) has argued that 'chronic PTSD reflects a variety of more specific psychological or biological processes rather than being a single coherent syndrome' (p.74).

Given these findings, the current study attempted to assess some of the more robust predictive findings, such as, social support, previous mental health difficulties and type of trauma. However, because these factors were not central to the study's aims any significant associations with the measures of trauma would be used as control variables in the analyses conducted.

Co-morbidity within PTSD populations tends to be the rule rather than the exception. Creamer, Burgess & McFarlane (2001) found that nearly 50% of females and over 60% of males with PTSD met criteria for two or more Axis 1 diagnoses which are similar findings to that of the National Co-morbidity Study (NCS) conducted by Kessler et al. (1995). Depression is one of the most commonly occurring disorders in PTSD. In fact, it has been found that among people who have or have had a diagnosis of PTSD, approximately 48% also had current or past depression (Shalev et al., 1998). People with PTSD are almost 7 times as likely as people without PTSD to also have depression (Breslau et al., 2000; Breslau, 2002). Several reasons for this co-occurrence have been cited in the literature. Firstly, pre-existing depression may increase an individual's susceptibility to the effects of traumatic events (Breslau et al., 2000; Connor & Davidson, 1997). Secondly, PTSD may increase the risk for depressive disorders (Breslau et al., 2000). Interestingly, there is evidence to suggest that major depression increases the risk for exposure to traumatic events and exposure to stressful life events (Kendler et al., 1993, 1999; Breslau et al., 2000). Breslau et al. (2000) argue that these causal pathways suggest the possibility of a 'shared diathesis, an underlying vulnerability to both PTSD and major depression' (p. 902); they emphasise that individual vulnerabilities play an important role in PTSD and the 'depressive effects of stressors' (p. 902). Indeed, PTSD and depression do share similar diagnostic features e.g. disturbed sleep, numbing symptoms, heightened irritability and poor concentration (APA, 2000).

1.1 Ehlers and Clark's Cognitive Model of PTSD (2000)

The Ehlers and Clark (2000) conceptualisation of PTSD can be a useful model with which to think about the concept of threat. According to Ehlers and Clark (2000) threat can result from: re-living symptoms (e.g., flashbacks); the impact the trauma has had on a person's perception of the world (e.g., the world is not a safe place); negative appraisals of the self during the trauma (e.g., I could have prevented this) or negative appraisals of the self post-trauma (e.g., I'm a useless person because I am not coping). The emotion that most readily corresponds with the notion of threat in PTSD is fear; however, the model proposed by Ehlers and Clark (2000) allows attention to be paid to other emotions and the role these might play in the development of ongoing current threat.

1.2. Research into PTSD, Shame and Self-criticism

In a study of former prisoner of war veterans, Leskela, Dieperink and Thuras (2002) found that scores on a trauma measure were significantly correlated with proneness to shame. They also found, using a cutoff score for PTSD that those who were identified as having PTSD exhibited higher shame proneness than those whose scores did not reach the cutoff. There are a number of possible explanations for this; it may be that a proneness to shame predates the trauma and therefore is a risk factor for the development of PTSD, it could also be that years of PTSD symptoms generate shame-proneness or alternatively, it could be that the particular elements of trauma exposure that lead to PTSD are associated with shame reactions. Unfortunately, due to the study employing a retrospective correlational design, the data does not allow a distinction to be made between these competing arguments. However, the authors argue that shame seems important in understanding PTSD and they suggest that attention to shame will be needed when planning treatment with these patients. It is important to highlight that this study did not use a randomly selected sample and their participants had been traumatised for an average of 50 years prior to the study. This raises questions as to how valid these results would be in a non-veteran population whose trauma exposure was much more recent.

Similarly, Andrews et al., (2000) found that shame in victims of violent crime independently predicted PTSD symptoms at one and six months post-trauma. To understand why this may be, Andrews et al., (2000) suggested that this may reflect secondary cognitive appraisals. The authors make a distinction between primary emotions which are experienced at the time of the trauma and secondary emotions which arise out of subsequent cognitive appraisal (discussed previously). They suggest that these secondary emotional reactions are likely to have an impact on the later development of PTSD but that these are not made reference to in DSM-IV-TR (APA, 2000) and therefore the diagnostic criteria may have to be amended for DSM-V to include secondary emotional reactions as well as primary ones. The findings of their study are, however, only generalisable to crime-related PTSD symptoms, therefore the role that shame plays within other types of trauma requires exploration. The authors suggest that shame may be less salient for adjustment to traumatic events that were not caused by another person (e.g. natural disaster). Studies have also found that shame-proneness positively correlates with PTSD symptom severity, above and beyond personality attributes such as guilt proneness (Leskela, Dieperink & Thuras, 2002). Such evidence contributes to an emerging view of PTSD as a disorder resulting from a 'disturbance of affect systems' in which shame plays a critical role (Stone, 1992, p. 132).

Southwick, Yehuda and Giller's (1991) study of war veterans found support for the association between self-criticism and PTSD. Their results indicate that veterans diagnosed with PTSD had higher levels of self-criticism than veterans diagnosed with depression only. Additionally, negative beliefs about the self and the world, which are aspects of self-criticism, have been found to predict the persistence of PTSD symptoms (Mayou, Ehlers & Bryant, 2002). In a nationally representative sample of adults who had experienced a traumatic stressor, Cox et al. (2004) found a unique association of self-criticism with PTSD even after controlling for a number of other factors. They highlight the value of examining specific psychological traits in furthering our understanding of PTSD.

A recent study that assessed both shame and self-criticism within a PTSD population found that shame had a significant positive correlation with

self-criticism (Harman & Lee, 2010). The biggest criticism of research in this area is that it tends to be cross-sectional in design and the reliance on correlational analyses does not permit cause-effect conclusions to be derived.

1.3. A Psychoevolutionary Approach to Shame

Although there are a number of theories that seek to explain shame and its origins, Gilbert (1997, 1998) and Gilbert and McGuire (1998) take an evolutionary approach. The evolutionary approach to shame requires recognition that humans have evolved specialised, psychological processing systems to achieve specific biosocial goals that were once developed for regulation of competition, social rank and status behaviour (Gilbert, 1997; Lee, 2005). It is commonly agreed that shame is a painful affect associated with the perception that others will find aspects about the self unattractive and this may result in rejection or some form of put-down (Tangney & Fischer, 1995; Gilbert, 1998). Nathanson (1992) suggests that the evolved function of shame is to moderate positive affect, however Gilbert (1998) argues that all negative affects have the ability to dampen positive affects in order to alert individuals to engage in defensive behaviours. However unlike most other negative affects, shame has specifically developed in the context of evolved social situations where submissive and shame-like behaviour would result in a de-escalation in attack from another and, therefore, it has a protective function (Gilbert, 1998). If this is the case, there should be evidence to suggest that a shamed person will either try to escape from the situation or attempt to adopt submissive displays and behaviours to limit possible attacks. Indeed, shame has been found to be related to negative self perceptions and unfavourable social comparisons (Tangney & Dearing, 2002; Gilbert, Allan, Ball & Bradshaw, 1996). Non-verbal research on shame behaviour has found the occurrence of submissive displays (e.g. gaze avoidance, slumped postures) whose functions, according to Gilbert (1998), are to appeal to others and limit any potential or additional attack.

Lee (2005) makes a useful distinction between the role of shame as a primary and a secondary emotion in the context of a traumatic event. Secondary shame can be seen to occur through cognitive appraisals and attributional processes in the aftermath of a traumatic event (Lee, 2005; Brewin,

Dalgeish, Joseph, 1996). Shame can be associated with PTSD by activating underlying core schemas that were developed in the context of frightening and shaming early experiences, so that, although some traumatic events may not appear shameful to others, they can be intensely shaming to somebody else, based on what that individual has learned to feel shameful of (Lee, 2005). Indeed, Gilbert (1998) links current shaming responses to early emotional responses in negative social situations and argues that these maybe the 'prototypical form of a shame response' (Gilbert, 1998, p. 248; Schore, 1998). He views an infant's distress to this situation as not a learned response but a 'biologically prepared, emotional one' (Gilbert, 1998, p. 249). He goes on to argue that shaming affective experiences may later become associated with cognitive descriptions of the self, but their origins may have occurred before the ability to engage in self-cognitions had been developed, in this way 'they are biologically prepared responses sensitive to associative learning' (Gilbert, 1998, p.249). This view could not be anymore distinct from the views of behaviourism, indeed this theoretical perspective operates on the principle of 'stimulus-response', where all behaviour can be explained without the need to consider internal mental states (Power & Dalgleish, 1997). Earlier operant conditioning theories of emotions posited that emotions put the 'organism into states where different sets of event contingencies define the reinforcers' (Holland & Skinner, 1961, p. 213 as cited in Power & Dalgleish, 1997). More modern theories born out of behavioural roots argue that because mental states are not directly observable, they cannot serve as explanations or independent variables in research, there must always be a context, which gives rise to the event (Hayes, Luoma, Bond, Masuda & Lillis, 2006).

Shame when conceptualised as a primary emotion, occurs at the time of a trauma and this links back into the evolutionary perspective discussed previously. From this perspective, certain events that trigger shame may be innately programmed. In fact, Nathanson (1992) argues that the physiological basis of shame is hard-wired and it triggers a set of evolved consequences. This hardwiring aspect of shame links back into the submissive behaviours shown by individuals who feel socially threatened (Lee, 2005). Given this, the number of trauma related experiences that could trigger such a response is indefinite. For example, Budden (2009) highlights physical assaults, sexual

abuse, combat, and severe accidents can threaten the integrity of the social self, to name but a few. Budden (2009) suggests that social threats can manifest themselves in two main ways '1) the experience of acute domination and subjugation 2) acute violation or erasure of norms, values, and expectations about the world' (p. 1034). He argues that this conceptualisation of shame can account for threats to the social self within 'interpersonal dynamics regulated by hierarchy and power asymmetries as well as collective meanings and goals' (p.1035). Similarly to Gilbert's theories (1997; 1998), Budden (2009) also relates shame to an inner self-to-self evaluation process in which stressful experiences expose the social self and magnifies the dissonance between real self evaluations and idealised self evaluations. Consequently, the self comes to feel dominated and subjugated under the 'weight of internalized ideals' and this may develop into loathing the self through self-contempt (p. 1035).

1.4. Research into Self-Criticism

Research assessing self-criticism has found it to be an important factor in a number of different psychopathologies (Gilbert et al., 2004). Indeed, self-criticism has been found to be associated with a lifetime risk of depression (Murphy, Nierenberg, Monson, Laird, Sobol & Leighton, 2002), social anxiety (Cox, Rector, Bagby, Swinson, Levitt & Joffe, 2000), alcoholism (Gilbert & Miles, 2000) and PTSD (Lee, 2005). How does this pervasive evaluative process develop in the first place? It has been suggested that when children are subjected to threat and neglect they become more threat sensitive, more focused on issues of social power and more likely to internalize a critical style (Gilbert & Irons, 2005). Unrealistic parental expectations are also known to be related to forms of self-devaluation and self-critical feelings and cognitions (Schore, 1998, Gilbert et al., 2004). Thompson and Zuroff (1999) found that maternal coldness and insecure attachment were related to self-criticism and Koestner, Zuroff, and Powers (1991) found that children whose parents were reported to be restrictive and rejecting were more likely to become self-critical.

Self-criticism can be seen as a defensive, threat-regulation strategy (Gilbert, 2009), indeed self-attacking has been found to be used as a safety strategy, linked to efforts to calm potential conflicting situations (Forrest &

Hokanson, 1975). Linked to Gilbert's (2005) social mentalities theory (discussed later), self-criticism can act as a form of internal attack-submit interaction that reinforces inferiority and submissiveness, so that, over time these become 'easily triggered coping styles that reinforce negative self-schemata' (Gilbert & Irons, 2005, p.271). In cognitive therapy, self-critical thoughts have been seen as evaluative, condemning and highly associated with depression (Blatt, Quinlan, Chevron, McDonald & Zuroff, 1982). A study by Hartlage, Arduino and Alloy (1998) indicates that self-criticism could be a trait marker for depression and Gilbert (1992) suggests that self-criticism can act like a form of inner harassment, which is stressful.

Self-criticism in relation to PTSD has been assessed in a nationally representative sample of adults who had experienced a traumatic stressor (Cox et al., 2004). Interestingly, they found the highest odds ratio for all the psychological determinants of PTSD under investigation was obtained for self-criticism in men; self-criticism played a more modest role in women. They suggest that self-criticism in men may tap into a psychopathological process of self blame and guilt that could strongly influence their expression of PTSD. The unique association of self-criticism with PTSD, obtained after controlling for a number of other factors, underscores the value of examining specific psychological traits in furthering our understanding of PTSD (Cox et al., 2004).

1.5. Experiential Avoidance

Ehlers and Clark (2000) suggest that avoidant strategies are maladaptive because they maintain PTSD by three mechanisms: 'Directly producing PTSD symptoms; preventing change in negative appraisals of the trauma and/or sequelae and preventing change in the nature of the trauma memory' (Ehlers & Clark, 2000, p.328). These reactions can play a prominent role in driving avoidance, which disrupts the emotional processing of the traumatic event (Zayfert & Becker, 2007).

The suggestion that victims of trauma engage in experiential avoidance and that this is related to psychological symptomatology has been studied. Marx and Sloan (2002) found that experiential avoidance mediated the relationship between childhood sexual abuse history and distress, they

conclude that child sexual assault experiences are not what cause psychological distress, rather that it is engaging in avoidance following these experiences that results in psychological symptomatology. However, this is a bold assertion considering that the study is retrospective in design and the limited measures of distress used in order to support such a conclusion. Additionally, Tull and Roemer (2003) discovered experiential avoidance accounted for a significant proportion of the variance in PTSD symptomatology. Overall, these studies add to the expanding literature that indicates experiential avoidance has a role in the development and maintenance of psychological symptoms among trauma survivors (Marx & Sloan, 2005). Additionally, an individual who demonstrates experiential avoidance is likely to show higher PTSD symptom severity due to the disruption avoidance has on the emotional processing of the event. According to the Ehlers and Clark (2000) model, trying not to think about an event, thought suppression and avoidance maintain PTSD because they prevent the testing and modifying of negative appraisals and therefore a change in the nature of the memory. The strategy of avoidance interferes with the elaboration of trauma memories and prevents individuals linking the experience to its context in time, space, previous and subsequent information and other autobiographical memories (Ehlers & Clark, 2000) and therefore maintains the PTSD symptoms.

It is important to note that experiential avoidance and PTSD both contain aspects of avoidance and therefore there are limitations when examining these relationships together however, in this current study, the extent of this relationship was tested and was found to be non-significant.

1.6. Self-Compassion, Social Mentalities and Affect Processing Models

Gilbert's approach to compassion is based on an evolutionary model called social mentalities theory (1989, 2000, 2005). This relates to the creation of role-relationships in both animals and humans (e.g. dominate–subordinate, carer-cared for etc.). Different role relationships are created 'via the exchange of different signals, and different social signals activate different brain and physiological systems' (Gilbert & Proctor, 2006, p. 258). These relationships are developed through both external signals from others (e.g. others behaving

with love or hostility) and internal processing signals, which can both elicit similar responses, regardless of where they were generated. For example, Gilbert (2005) discusses the thought-emotion processes involved with self-criticism, which he views as acting like an internal social stimuli which the brain processes as a threat as it would if an external person was being hostile or critical. He explains that this is happening through a self-processing system delivering self-criticism to another part of the self, which then responds to these attacks in an anxious, stress-like or depressive manner (Gilbert & Proctor, 2006). Gilbert (2005) argues that the social mentality is thus activated and a role-relationship response occurs in the form of one part of the self becoming dominant (critical) and the other being subordinate (eliciting negative affect). Over time, Gilbert & Proctor (2006) argue that these pathways can become highly sensitised through a process of conditioning and a retrieval advantage could develop (see Brewin, 2006). For example, the maturation and regulation of the threat system will depend on how often the soothing system is stimulated through, for instance, loving and soothing experiences in childhood. Similarly, the development of the soothing system will be affected by how much the threat system is stimulated.

There is evidence for an internal, self-to-self, dominant-subordinate relationship. Greenberg, Elliot and Foerster (1990) orchestrated a study in which depressed people were asked to role play their inner critical thoughts to an empty chair and then to switch to this chair and respond to their own comments. They found that individuals tended to agree with their own critical thoughts and also began to adopt a submissive position. Further evidence comes from a similar study by Whelton and Greenberg (2005) who found that students high in self-criticism, expressed shamed faces and felt unable to argue against their own attacks, whereas those low in self-criticism found it easy to dismiss their criticisms. The authors concluded that a person's inability to defend themselves from their own attacks resulted in depression (Greenberg, Elliot & Foerster, 1990). This study used a prospective design and employed a large sample size, which gives credibility to the results.

In comparison, compassion is seen as an evolved competency to care for others, so to increase their survival chances. It involves a number of abilities including, the motivation to care for others, the empathy to help understand the

source of distress, the ability to tolerate distress rather than engage in avoidance or controlling of emotions and the ability to be non-critical or judgemental of others. As such, self-compassion encompasses all of these factors except it occurs when one is engaging in self-to-self relating (Gilbert & Proctor, 2006; Gilbert, 2005). Trevarthen and Aitken (2001) found that children have their compassionate system activated via the warmth from interpersonal interactions with a parent through signals such as touch, holding, facial expressions and soft voice.

The two ways of relating to the self, either in a threatening, critical and hostile manners or a warm, compassionate and soothing way, are both linked to what Gilbert (2009) has termed affect-behaviour regulation systems. He believes these are processing systems and biopsychological structures that have evolved in the brain to co-ordinate attention, thoughts, emotions and actions (Gilbert & Tirch, 2009). There are three proposed affect regulating systems in the brain; those that focus on threat and self-preservation, those that are concerned with doing and achieving, and another system that focuses on contentment and feelings of safety (Gilbert, 2009; Depue & Morrone-Strupinsky, 2005).

These systems are dependent on genes but also different experiences which can encourage and strengthen neuronal connections and weaken others (Gilbert & Tirch, 2009). Indeed, most emotional disorders are linked to early experiences that sensitise the threat and positive affect systems which link to emotional memories (Gilbert & Tirch, 2009). Often, people with mental health difficulties are highly threat-focused due to aversive childhood experiences, trauma and genetic dispositions that have over stimulated this system at the expense of the self-soothing affect system (Gilbert, 2001). Neff (2003a, 2003b) found that a lack of self-compassion was associated with increased vulnerability to a number of indicators of psychopathology. Baldwin (2005) found that in the face of setback, failure or conflict, these individuals quickly accessed internal schema of others as hostile and demonstrated well rehearsed, focused self-attacking. Suggesting that their ability to be compassionate to themselves when such challenges occurred was limited (Gilbert & Proctor, 2006). Gilbert et al. (2004) found a strong inverse relationship between self-criticism and participants' abilities to focus on self-reassuring thoughts. It is possible that the

warm and soothing affect system is underdeveloped in self-critical and shame-prone individuals (Gilbert, 2000).

Irons, Gilbert, Baldwin, Baccus and Palmer (2006) found that students who reported unfavourable early parenting found it difficult to be self-reassuring and had increased levels of depressive symptomotology. Gilbert, Baldwin, Irons, Baccus, and Clark (2006) found that self-criticism was associated with difficulties in generating images and feelings of self-compassion and Tugade and Fredrickson (2004) have shown that when resilient individuals engage in stressful events that generate negative affect, their ability to “bounce back” is linked to their ability to generate positive emotions. Furthermore, neuropsychological evidence suggests that the ability to recruit positive emotions in the face of stress appears to be a crucial component of resilience (Davidson et al., 2003). All of this evidence seems to suggest that the way to detoxify the sense of threat, that these processes create, is through increasing compassion, where the ability to generate feelings of self-reassurance and self-soothing is developed.

Can these affect systems really be said to exist? Recent research appears to lend support to these hypothesised affect systems though the use of neuroimaging. Longe et al. (2010) found that when participants were asked to imagine being self-critical and self-reassuring, brain activity occurred in different regions. More specifically, self-critical thinking was linked with the lateral prefrontal cortex and dorsal anterior cingulated regions which are associated with error processing and behavioural inhibition. Self-reassurance was linked to left temporal pole and insula activation, engaging similar regions as those associated with compassion and empathy. The authors suggest that there is emerging evidence for the neural basis of mood disorders, particularly ones that have self-criticism as a central feature (Longe et al., 2010). However, they fail to comment on the implications of their findings, which show activation of the regions associated with compassion.

1.7. Self-Compassion Scale

Neff (2003a, 2003b) has defined and created a Self-Compassion Scale (SCS) that encompasses three components: taking a kind stance towards the self, rather than being judgemental and critical, being mindful, rather than over

identifying with painful experiences and having a sense of common humanity, rather than seeing oneself as separate and isolated from others. Neff (2003b) argues that these aspects of self-compassion are conceptually distinct, however 'they tend to engender one another (p. 225). As a social psychologist, her notion of self-compassion is based on Buddhist conceptualisations of compassion, which is often translated as loving-kindness (Thompson & Waltz, 2008) and although Neff's conceptualisations of self-compassion are slightly different to that of Gilbert, they overlap in many ways. Neff (2003b) also views compassion as a useful emotional regulation strategy that should lead to better mental health outcomes because experiences of 'pain and failure are not perpetuated through harsh self-condemnation' (p. 225). Brown (1997, as cited in Neff, 2003b) suggested that by showing compassion to yourself, you provide the emotional safety needed to see the self clearly, without fear of self-condemnation, increasing a person's ability to more accurately perceive and rectify maladaptive patterns.

Through the development and validation of the SCS, Neff (2003b) found that correlations with self-criticism, social connectedness and emotional intelligence scales were all in the moderate range, suggesting that, although a relationship exists with these constructs, the scales are measuring different things. Importantly, Neff (2003b) also found that self-compassion predicted mental health outcomes independently of self-criticism. In further studies of the SCS, individuals high in self-compassion displayed different emotional patterns, reporting less rumination and thought suppression. Neff (2003b) suggests that this reflects a tendency for compassionate individuals to not become carried away with or suppress their emotions. Interestingly, self-compassion was found to have a significant positive correlation with emotional processing and this finding could be useful in PTSD research where individuals find it difficult to process the emotional content of their traumatic experience. Indeed, high self-compassion has been shown to buffer individuals against feelings of anxiety after experiencing a stressor, even after controlling for the effects of self-esteem (Neff, Kirkpatrick & Rude, 2007).

In summary, Leary, Tate, Adams, Allen and Hancock (2007) suggest that a person high in self-compassion can view their difficulties and weaknesses

accurately, yet they are able to react in a kind and compassionate way to themselves rather than with self-criticism and harshness. Thus, it is suggested that self-compassion may act as a protective factor when negative events occur and bring about positive feelings towards the self when life becomes difficult (Leary et al., 2007). These findings offer important insights, however the studies have been largely correlational in design, which limits the conclusions that can be drawn regarding relationships between self-compassion and some of the other constructs that have been discussed (Pauley & McPherson, 2010). Additionally, the use of student samples makes it difficult to generalise to populations that this construct claims to be of most benefit.

In contrast to the view that self-compassion helps to stimulate the soothing affect processing system, some recent research has found that it does not always stimulate the soothing affect system. Recent experimental studies, have found that compassionate feelings can actually stimulate the threat system (Longe et al., 2010). More specifically, a study that assessed compassion focused imagery and stress responses, found that the people who demonstrated a threat-like response were higher in measures of self-criticism and anxious attachment style (Rockliff, Gilbert, McEwan, Lightman & Glover, 2008). The authors suggest that this could be related to a lack of compassionate images with which to draw on, but also propose that compassionate imagery can activate the attachment system, which, rather than being a soothing experience can bring about emotions such as sadness and grief (Longe et al., 2010; Bowlby, 1980). The study's sample of female students and staff, reduces the generalisablity of these results and further research will be necessary using different clinical populations to ensure these findings are reliable and valid.

1.8 Treatment of Trauma

Traditionally, the focus for the treatment of PTSD has been to tackle the key emotion of fear through techniques such as imaginal exposure and reliving (Foa & Kozak, 1986; Foa & Meadows, 1997). However, recent models and research into PTSD have highlighted a variety of additional emotions that individuals exposed to a traumatic event experience (Ehlers & Clark, 2000;

Brewin, Andrews & Rose, 2000; Hathaway, Boals & Banks, 2009). These discoveries have stimulated the development of alternative approaches to traditional exposure based therapy (Grey, Young & Holmes, 2002; Lee, Scragg & Turner, 2001). The increasing recognition of other emotions involved in the experience of trauma such as shame, has lead some researchers to acknowledge that patients who are likely to require extensive verbal and imagery cognitive restructuring, include those who experience shame as a predominant emotion. This suggests that people who present with such emotions require a different type of approach than those who present with the primary emotions of fear, helplessness or horror (Ehlers & Clark, 2000).

1.9. Rationale and Aims

Given the evidence presented, it can be proposed that individuals who later go on to develop PTSD associated with high levels of shame, are likely to have interpreted the trauma in a way that activates a self-critical inner voice. Self-criticism can cause individuals to experience shame which links back to their sense of ongoing current threat and the development or continuation of PTSD symptomatology (Ehlers & Clark, 2000). Shame can also be seen to re-activate the self-critical inner voice and hence individuals are able to constantly re-shame themselves, this also perpetuates a sense of ongoing current threat (Gilbert, 1997; 1998).

Shame can lead to the adoption of unhelpful maladaptive cognitive and behavioural strategies, such as, experiential avoidance, that inhibit or prevent recovery. Self-compassion as a construct may be able to moderate the threat that shame, self-criticism and experiential avoidance create and as a consequence this may then cause a reduction in the levels of PTSD symptoms. More specifically, it is proposed that individuals who demonstrate higher levels of self-compassion will show less shame because their ability to generate positive emotions will be more rehearsed and therefore they will engage less in dominant-subordinate, self-self relationships associated with self-criticism. Hypothetically, they will be less likely to engage in experiential avoidance due to the lower levels of shame and self-criticism experienced, but also because self-compassion proposes that individuals are more likely to adopt a mindful and

accepting stance towards their suffering which will, as a by-product, increase their ability to process the trauma.

The aims of the study were to explore the relationships between shame, self-compassion, experiential avoidance, self-criticism and posttraumatic stress symptom severity in a clinical population who had experienced a traumatic event. The study was also interested to assess if self-compassion could act as a moderator between threat-type processes and PTSD symptoms. Ideally, the findings from this study will provide an understanding into the nature of these relationships. It is hoped that this may raise the profile of constructs such as self-compassion, shame, self-criticism and experiential avoidance and their importance within PTSD symptomatology.

1.10. Location of Services and Inclusion/Exclusion Criteria

The services involved in the study consisted of; the psychological therapies directorate for Nottinghamshire Healthcare, Newcastle CBT centre, Lancashire, Nottingham, Cardiff and Vale traumatic stress services.

The decision to include only participants who met criterion A and E was in an attempt to emulate previous research in this area but also to increase the study's robustness and validity. According to the DSM-IV-TR (APA, 2000), Criterion A helps to distinguish a non traumatic experience from a traumatic one and Criterion E ensures sufficient time has passed (one month) from the impact of the trauma; any less time than this would constitute a diagnosis of Acute Stress Disorder (ASD) rather than PTSD. English literacy was necessary, as the questionnaires were not validated in other languages.

For the exclusion criteria, it was felt that the questionnaires required an average level of intelligence and a level of concentration deemed inappropriate for people who were actively psychotic or who had a learning disability. Both the inclusion and exclusion criteria were primarily implemented through local collaborators' knowledge of participants. As a secondary measure, a number of questions were included within the questionnaire pack to clarify this information further (see Appendix 15).

1.11. Questionnaire Storage

The questionnaires were kept in a separate envelope, so that if participants chose not to be involved they did not have to see the content of the questionnaires. Each piece of paper in the pack had a unique code so to maintain participant anonymity; no personal identifiable information was required. The questionnaire package contained a stamped addressed envelope (S.A.E) which was used to send the completed forms back to the researcher at the University of Nottingham.

1.12. Additional Ethical Information

The main ethical considerations related to the potential for participant distress when completing some of the questionnaires. To deal with this possibility, the information sheet included in the research pack detailed contact information for each local collaborator. All local collaborators had previously agreed to give telephone support to any participants who became distressed as a consequence of partaking in the study. A consent form was not used in this research as informed consent was assumed if participants completed and returned their questionnaires.

1.13. Sample Size Calculations

To test the hypotheses, correlation and hierarchical multiple regression analyses were conducted. For the correlation analyses, the study used a medium effect size (r = .3). Cohen (1992) states that a medium effect size is useful for studies where there is little or no prior research in the area. Sample size was calculated using the Clark-Carter (1997) power table for a Pearson's Product Moment Correlation Coefficient r. Using a one-tailed test, where p = .05, r = .5 and a power of .8, 25 participants would be required. For multiple regression analyses, the general rule of thumb is no less than 50 participants. Harris (1985) suggests that the number of participants should exceed the number of predictors by at least 50. For regression equations using six or more predictors, an absolute minimum of 10 participants per predictor variable is appropriate (VanVoorhis & Morgan, 2007). Given that this study used five predictor variables, the total sample size obtained (n = 62) is adequate to conduct both types of analyses.

1.14. Additional IES-R Information

Briere (2004) found good internal validity for the hyperarousal subscale and previous studies have demonstrated good internal validity for the avoidance and intrusion subscales (Sundin & Horowitz, 2002). The IES-R was chosen because of its availability, its accessibility and its relatively quick administration in comparison to other measures (e.g. The Posttraumatic Stress Diagnostic Scale; Foa, Cashman, Jaycox & Perry, 1997). Additionally, other measures had been designed for a military population (e.g. The PTSD Check List [PCL], Weathers, Litz, Herman, Huska & Keane, 1993) and therefore some of the terms were deemed inappropriate for a non-military clinical population. In a later study assessing the IES-R psychometric properties Creamer, Bell and Failla (2003) found that the construct validity of the IES-R total score correlated reasonably well (.84) with the PCL (Weathers et al., 1993), which has been found to be a valid and reliable measure of PTSD symptoms. Weiss and Marmar (1997) suggest that the mean scores for the subscales and the total score should be used when analysing data obtained from this measure.

1.15. Additional LEC Information

For each potentially traumatic experience, respondents rated their experience on a five-point scale (1 = *happened to me*, 2 = *witnessed it*, 3 = *learned about it*, 4 = *not sure* and 5 = *does not apply*). The LEC was chosen over other measures of traumatic life events because it is widely used measure. It is also the only measure to differentiate between directly experiencing an event and other forms of exposure (i.e. witnessing an event, learning about an event; Gray et al., 2004). It therefore gives participants the opportunity to include more information regarding their experiences of trauma that may have been overlooked if using other measures (Gray et al., 2004). To make the scale more manageable for inclusion in correlation analyses, traumas were categorised into interpersonal, non-interpersonal or both, depending on the type of exposure participants indicated. Any traumas that involved another person (directly) were classed as an interpersonal trauma (e.g. physical assault, sexual assault) and traumas that did not include another person were classed as non-

interpersonal (e.g. natural disaster, transportation accident, work accident), if participants endorsed both types of trauma they were categorised as 'both'.

1.16. Additional ESS Information

The ESS address three core components: an experiential component addressing whether an individual felt shame; a cognitive component addressing concerns about what others think and a behavioural component addressing avoidance and concealment. Specifically, this 25-item questionnaire assesses four areas of characterological shame, three areas of behavioural shame and one area of bodily shame. For each of the eight shame areas covered, there are three related items addressing (1) the experiential component, in the form of a direct question about feeling shame (e.g. 'have you felt ashamed of your personal habits?'), (2) a cognitive component, in the form of a question about concern over others' opinions (e.g. 'have you worried about what other people think of your personal habits?'), and (3) a behavioural component, in the form of a question about concealment or avoidance (e.g. 'have you tried to cover up or conceal any of your personal habits?'). For bodily shame, there is an extra item concerning avoidance of mirrors (in addition to concealing body parts from others). Each item is measured on a four-point scale and participants respond according to how they have felt in the past year. This measure was chosen because there is evidence that it taps into a specific disposition to experience shame rather than assessing a transient and non-specific negative affective state, of which other measures of shame (e.g. TOSCA, Tangney, Wagner & Gramzow, 1989) have been criticised (Andrews, Qian & Valentine, 2002).

1.17. Additional SCS Information

Items are rated on a five-point Likert scale from one (*almost never*) to five (*almost always*). Mean scores were calculated for all six subscales. The total for the three subscales that made up the positive self-compassion scale (self-kindness, mindfulness and common humanity) and the three subscales that made up the negative self-compassion scale (self-judgement, over-identification and isolation) were averaged. It is important to note that self-compassion was found to correlate with measures of self esteem, however Neff (2003b) argues that the correlations are low enough (r = .25 - .62) to indicate

that the two constructs are measuring two different psychological phenomena. The SCS is currently the only scale of its type and therefore widely used.

1.18. Additional AAQ-II Information

Marx and Sloan (2005) used a version of the AAQ-II in their study and found a moderate internal consistency of .69. Higher scores on this measure indicate greater psychological flexibility or a greater willingness to experience unwanted private events in the pursuit of one's values and goals (Hayes et al., 2006); however, this study reversed the scores to make interpretation easier, so that, higher scores indicated greater experiential avoidance. This measure was chosen because it is a general assessment of experiential avoidance, which differentiates it from other measures that only assess specific domains of avoidance (e.g. thought suppression and dissociation). Hayes et al. (2004) argues that the AAQ-II cuts 'across several specific strategies and response domains' (p. 565) and although the items load onto a single factor, they measure a number of conceptually distinct constructs.

1.19. Additional FSCRS Information

Gilbert et al. (2004) found that self-criticism could be separately rated into two sub-factors; one that focuses on inadequate and defeated feelings, labelled 'inadequate self' (p.38) which was found to have a Cronbach's alpha of .90. The second factor focuses more on a sense of disgust and anger with the self which was labelled the 'hated self' (p.39) and obtained a Cronbach's alpha of .86. These two subscales can be combined to create a total score (self-criticism total) The self-reassurance scale is an eight-item, one factor scale labelled 'reassured self' (p.38), it focuses on thoughts of self-reassurance and indicates a positive and warm disposition to the self, this obtained a Cronbach's alpha of .86.

1.20. Additional DASS-21 Information

This is a short form of Lovibond and Lovibond's (1995, as cited in Henry & Crawford, 2005) 42-item self-report measure of depression, anxiety, and stress (DASS). Depression, anxiety and stress are some of the most common disorders to accompany a diagnosis of PTSD (Kessler et al., 1995). The DASS

is a quick and accessible measure that was deemed appropriate for this study given the number of questionnaires participants were required to complete.

1.21. Plan of Analysis

The outcome data collated in this research study is categorical and discrete. The demographic information and additional questions relating to trauma are at a binary and nominal (more than two categories) level and the questionnaire data is at an ordinal level. It is common in social science research for ordinal level data to be used within interval procedures, Jaccard and Wan (1996) found that for procedures that assume interval data with ordinal Likert scale data, the Type I and Type II errors do not seem to be affected dramatically. To illustrate the descriptives of the sample, frequencies and percentages will be used for categorical data; means and standard deviations will be used for ordinal data.

1.22. Assumptions

The assumptions required to conduct a Pearson's Product Moment correlation required the data to be of interval level, to show a linear relationship and to be normally distributed. The level of the data has already been discussed and it met the requirements of interval level data. To test the data for linearity, scatterplots were visually assessed to determine the relationship between the two variables. A relationship that is curved or skewed by outliers would not meet the assumptions of linearity. To test for normal distribution, histograms with normality curves have been produced and a bell curve shape indicates normal distribution. Additional tests of normality included assessing the skewness and kurtosis. This is done by converting the scores into z-scores so that a score of ±1.96 (one standard deviation) is considered to be significantly outside what is expected for a normal distribution (Field, 2009).

The assumptions required to conduct a hierarchical multiple regression include the assumptions discussed above and additional requirements. The first assumptions is multicollinearity, this occurs when independent variables are highly correlated, correlations above .8 can cause logical and statistical problems and need to be addressed (Field, 2009; Pallant, 2001). Singularity is

the next assumption that needs to be addressed, this occurs when one independent variable is actually a combination of other independent variables (Pallant, 2001). This was tested by checking the collinearity diagnostics table labelled 'coefficients'. If this value is near 0 then this suggests the independent variables are demonstrating singularity. The assumption of no outliers needs to be met because cases with extreme values distort the statistics produced by multiple regression analyses (Tabachnick & Fidell, 2007). Outliers were screened for by visually inspecting the residuals scatterplots produced as part of the regression analyses. Outliers were also tested by inspecting the standardised residual column that is produced in the data set. An outlier is defined as a case that has a standardised residual of ±3.3. The standardised residuals produced from the multiple regression analyses did not identify any outliers ±3.3. Homoscedasticity (similar to homogeneity of variance but for ungrouped data) is also an important assumption that needed to be met, it means that the 'variance of the residuals about predicted DV scores is the same for all predicted scores' (Tabachnick & Fidell, 2007, p.125). Homoscedasticity was not found to be a problem in the data used.

1.23. Correlational Analyses

In order to assess and control for the possible significant effects of any demographics on the predictor variables or the DV (PTSD symptom scores), correlational analyses needed to be conducted on both the demographic and questionnaire data. Analyses conducted on demographic information were non-parametric because the level of the data was not interval or ratio. For demographic information that included a number of categories, for example type of trauma (interpersonal, non-interpersonal, both) Spearman's Rho correlations were conducted. For demographic information that was binary, for example gender, point-biserial correlations (r_{pb}) were conducted.

To test hypotheses one and two, a one-tailed Pearson's Product Moment correlation was conducted on the variables that met the necessary assumptions, one-tailed Spearman's Rho correlations were conducted on the measures that did not meet parametric assumptions. For hypothesis three, the

variables that were significantly correlated with the DV were entered into the hierarchical multiple regression.

1.24. Hierarchical Regression

To test hypothesis three, a hierarchical regression was conducted and the variables were entered in steps. All predictor variables were found to be significantly associated with the DV (shame, self-criticism, experiential avoidance and self-compassion) and were included in the second step of the regression. The DASS was found to be the only other measure that significantly correlated with the DV, therefore this was entered into the first step of the model to control for its effects. The adjusted R^2 statistic produced by regression analysis showed how much of the variance in the DV was explained by the predictor variables once the DASS had been controlled for.

The regression model also illustrated the independent contribution of each predictor to the model, this is checked under the beta heading of the output box labelled 'coefficients' (Pallant, 2007). The variable that shows the largest beta value makes the strongest unique contribution to explaining the DV, when all the other variables in the model are controlled for (Pallant, 2007).

1.25. Moderation

In order to test for the moderating effects of self-compassion, the researcher followed the steps described by Baron and Kenny (1986). Initially, this involved centering the variables of interest. Aiken and West (1991) suggest that the predictor variables and moderator should be centred before conducting the moderation analysis. Therefore, the mean was subtracted from each predictor variable, this left the variables with positive and negative values and a mean of 0. Then the predictors were multiplied with the moderator to obtain their interaction term, this was then entered into the regression model in Step 2 after the predictor and moderator had been entered separately in Step 1. A moderation is said to occur when the causal relation between two variables changes as a function of the moderator variable, therefore the statistical analysis must 'test the differential effect of the independent variable on the dependent variable as a function of the moderator' (Baron & Kenny, 1986,

p.1174). Hypothesis four predicted that when PTSD symptom severity was regressed onto the interaction between self-compassion and each of the predictor variables (self-compassion x shame, self-compassion x self-criticism, self-compassion x experiential avoidance), the interaction effects would remain significant when the individual effect of each predictor and the moderator (self-compassion) is controlled for.

1.26. Missing Values

In order to deal with missing data, the researcher followed the steps highlighted in Tabachnick and Fidell, (2007). Firstly, a missing values analysis was conducted in SPSS. This highlighted whether data was missing at random or not and whether the missing data was more or less than 5%. If there is less than 5% missing data then this is less serious and any procedure for dealing with missing values yields similar results (Tabachnick & Fidell, 2007). The questionnaire data contained some missing data, however the missing values analysis revealed that this was less than 5%. Certain demographic information had missing data above 5% and therefore this could not be included in any further analyses (see section 2.1 for further details).

Extended Results

2.1. Missing Data

Missing data was checked using SPSS (2007, Version 16) missing values analysis. This revealed that the pattern of missing data was missing completely at random (Little's MCAR test, $p = .14$, *ns*), overall missing data was less than 5%. Tabachnick and Fidell (2007) state that if less than 5% of data points are missing in a random pattern, then almost any procedure for handling missing values yields similar results. As deletion of full cases was not an option due to the study's sample size and given the problems associated with data replacement methods, it was decided to analyse the data using the pairwise deletion method. This is considered a good option if only a few cases have missing data which is missing at random (Tabachnick & Fidell, 2007). A number of descriptive items had missing data that was above 5% including:

participants' level of education, previous mental health, ongoing legal case and income. As these variables were not fundamental to the study's main aims, it was decided to use them to describe the characteristics of the sample but not in any inferential statistics.

2.2. Outliers

Boxplots were initially produced to visually represent the data set and identify outliers. Box plots identified four outliers on the PTSD symptom measure (IES-R, see Figure 2) and three outliers on the negative self-compassion scale (see Figure 3), no other outliers were identified on any other variables. Where outliers were indicated, completed data questionnaires were re-examined to detect data entry errors. No data entry errors were found; Field (2009) recommends where significant outliers exist, they may be replaced with a score representing the mean plus two standard deviations, therefore outlier cases were replaced with this new value. According to Dancey and Reidy (2007) the scores (in this case) are still recognised as being the lowest in the sample, however, they are now having less of an impact upon the mean and subsequent inferential statistics. When tests are using mean scores, they are concerned with the typical score in a group, extreme scores do not represent a typical score and therefore it is justifiable to bring them more in line with the rest of the group (Dancey & Reidy, 2007).

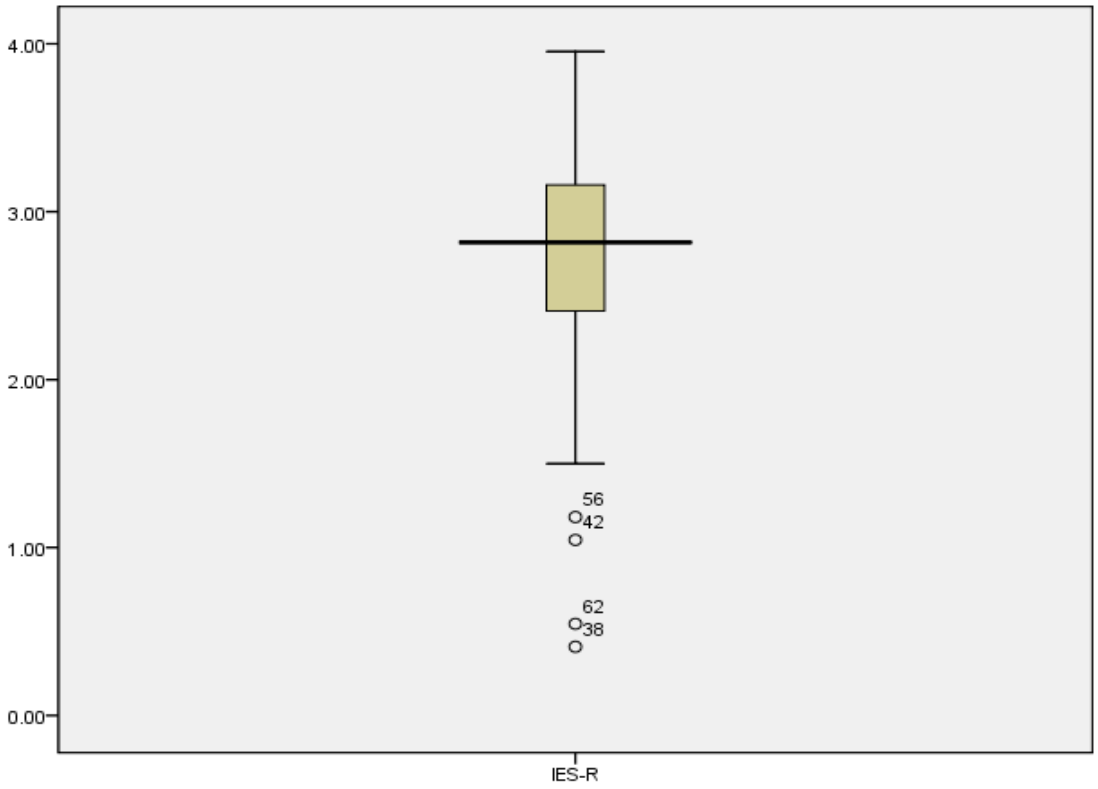

Figure 2. Boxplot representing outliers for the measure IES-R.

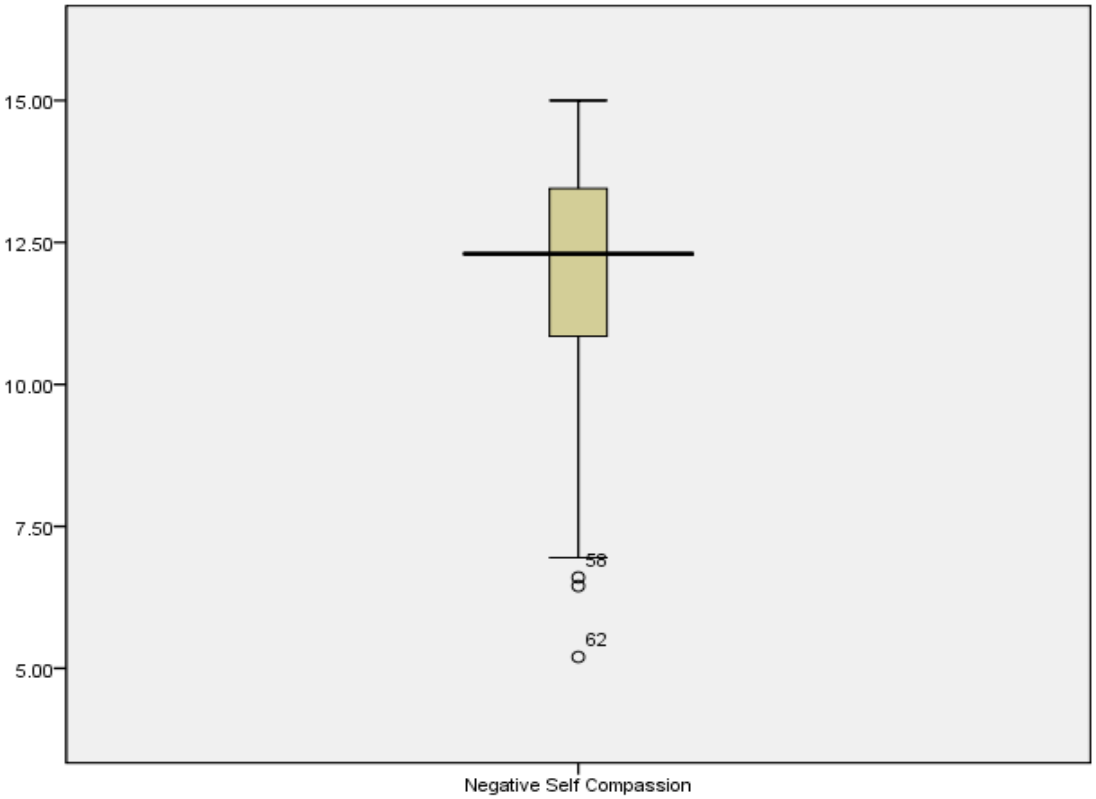

Figure 3. Boxplot representing outliers for measure negative self-compassion.

2.3. Tests of Normality

Parametric tests require that the data meets the assumptions of normal distribution. Normality was initially tested by visually inspecting histograms plotted with a normal curve for each continuous variable.

2.3. (i) Histograms with Normality Curve.

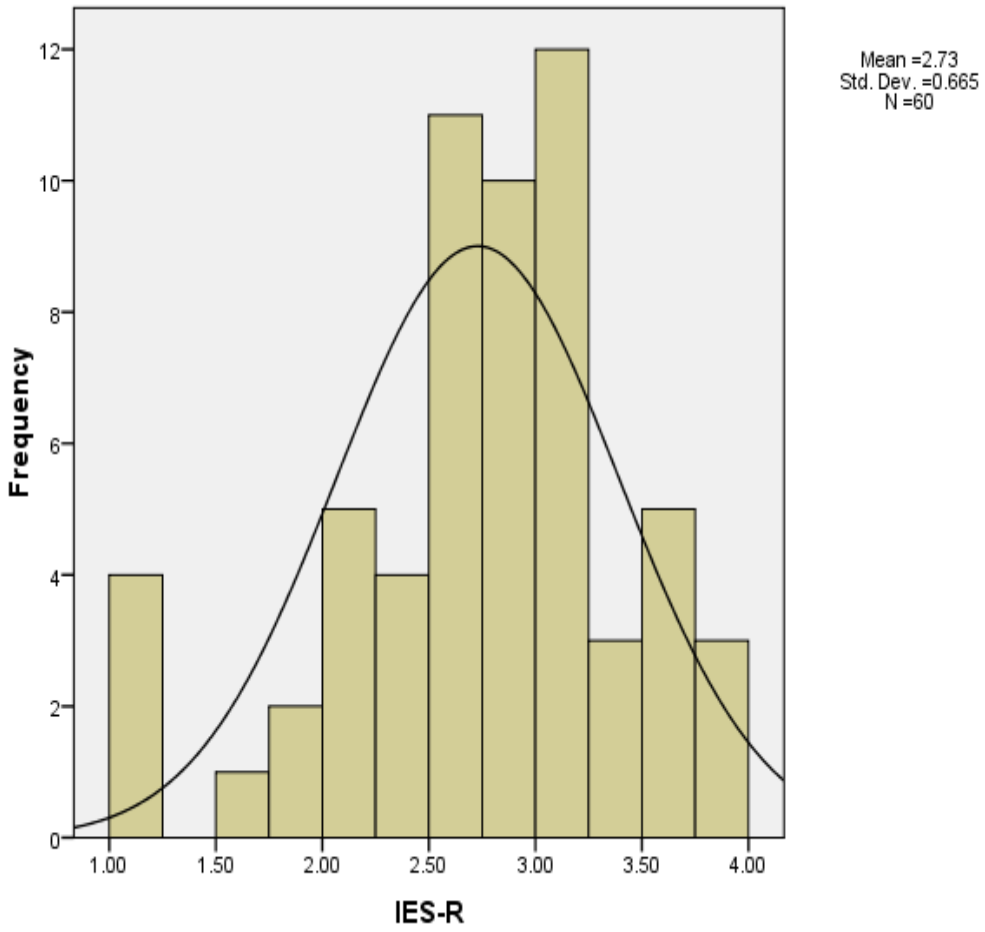

Figure 4. Histogram of the measure IES-R

The distribution in Figure 4 appears to be normal, however, further tests of normality are required before normal distribution can be concluded.

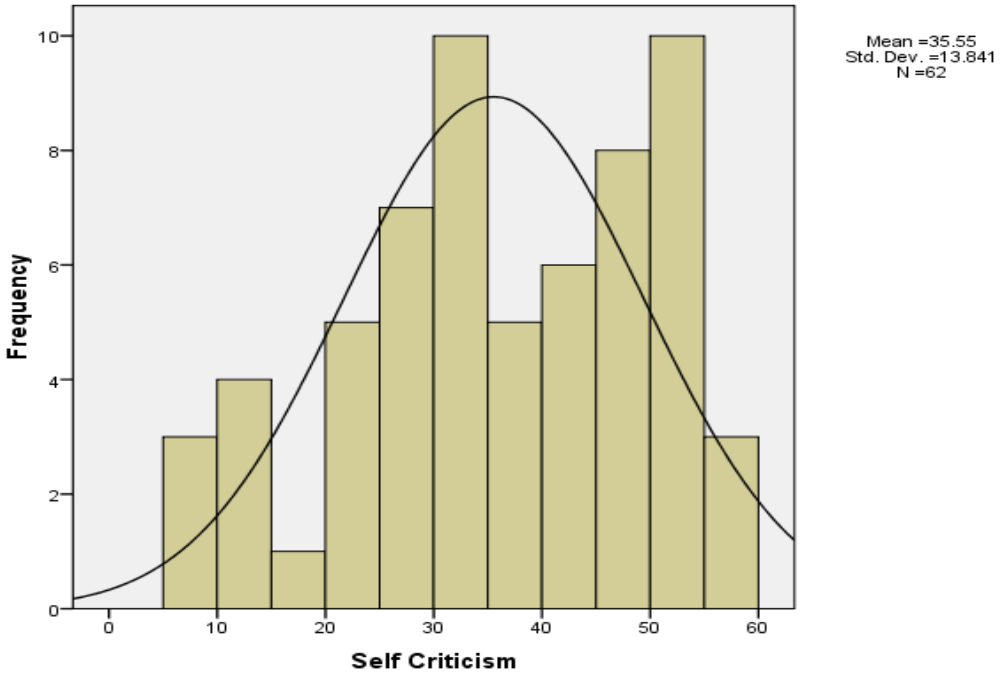

Figure 5. Histogram of the measure self-criticism

The distribution in Figure 5 appears to be normal, however, further tests of normality are required before normal distribution can be concluded.

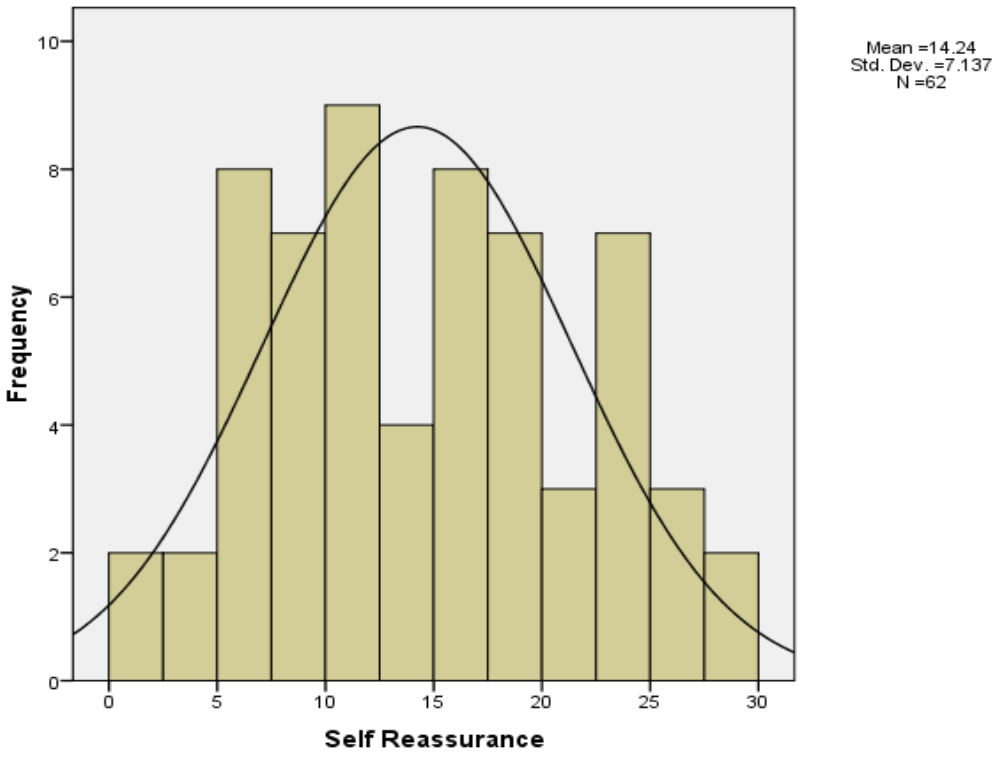

Figure 6. Histogram of the measure self-reassurance

The distribution in Figure 6 appears to be normal, however, further tests of normality are required before normal distribution can be concluded.

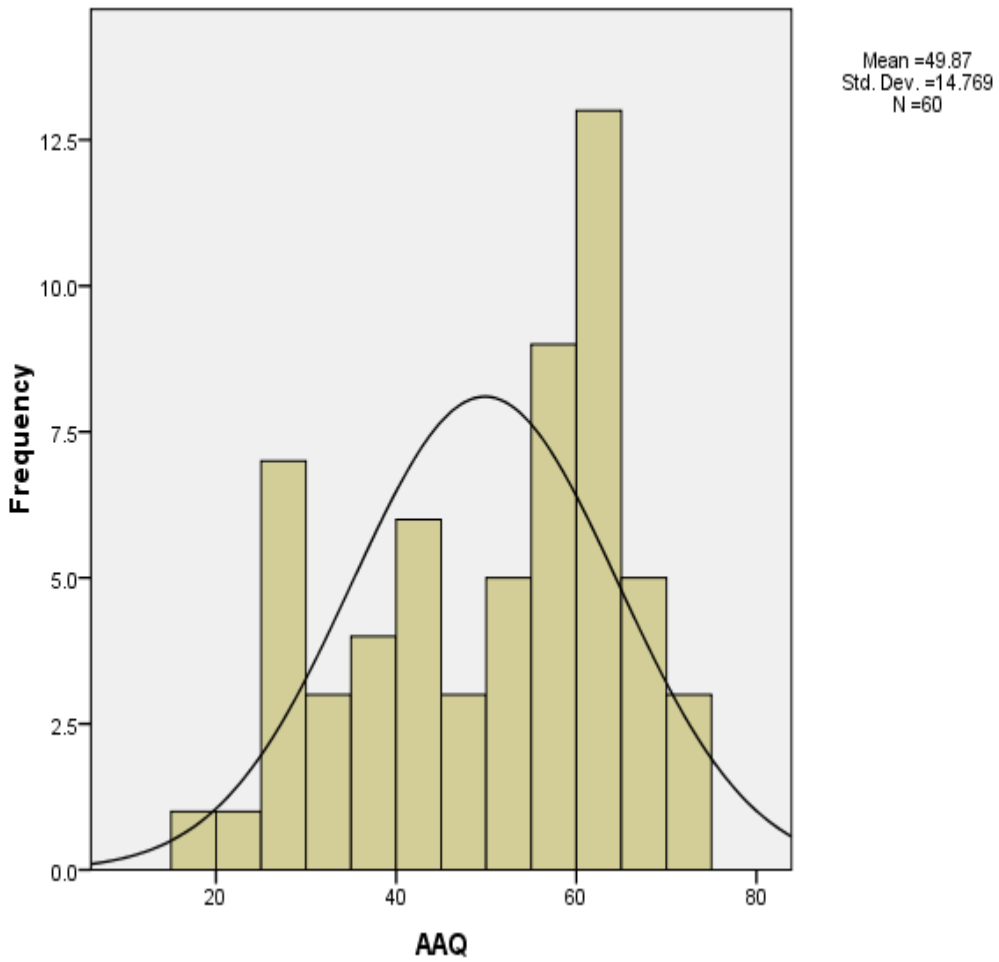

Figure 7. Histogram of the measure AAQ-II

The distribution in Figure 7 appears to be non-normally distributed as the peak of the curve seems flat and there is a slight negative skew. Additional tests of normality will help to determine whether the AAQ-II meets or violates the assumptions of normality.

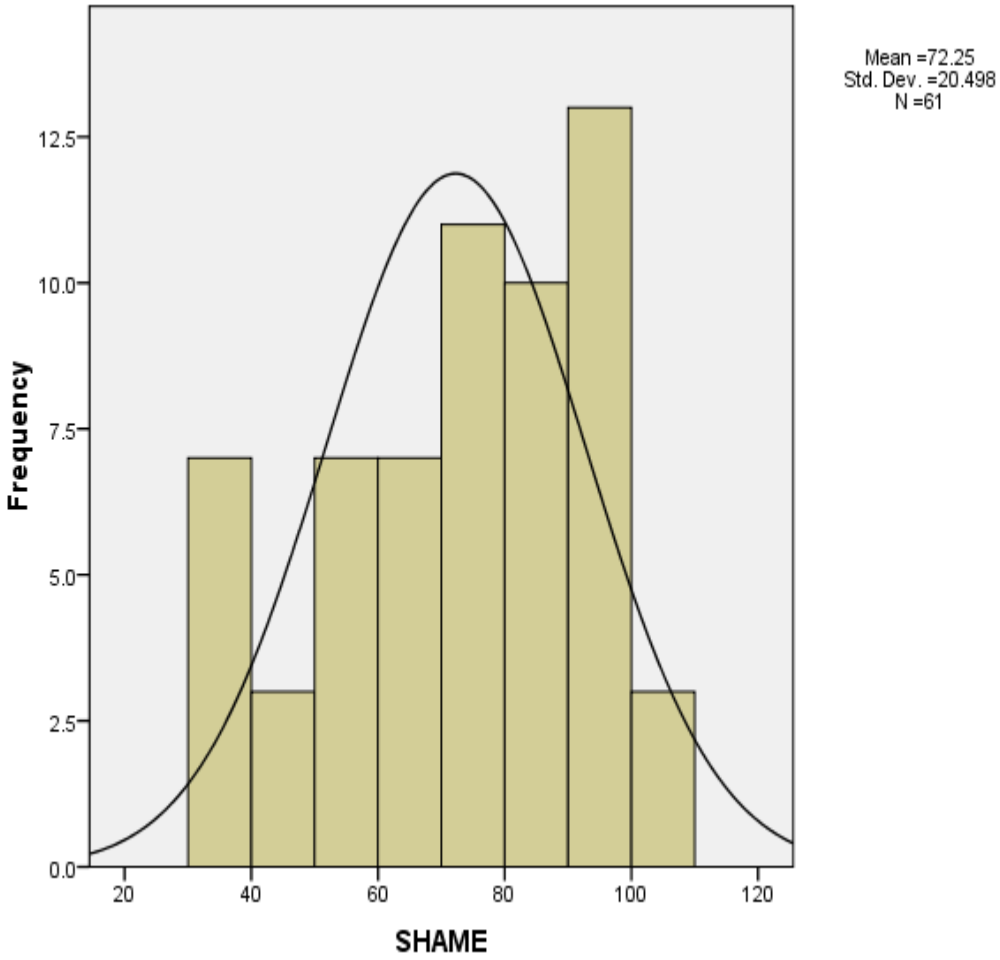

Figure 8. Histogram of the measure shame

The distribution of Figure 8 appears to be symmetrical, however, the curve is peaked indicating positive kurtosis. Additional tests of normality will help to determine whether the shame measure meets or violates the assumptions of normality.

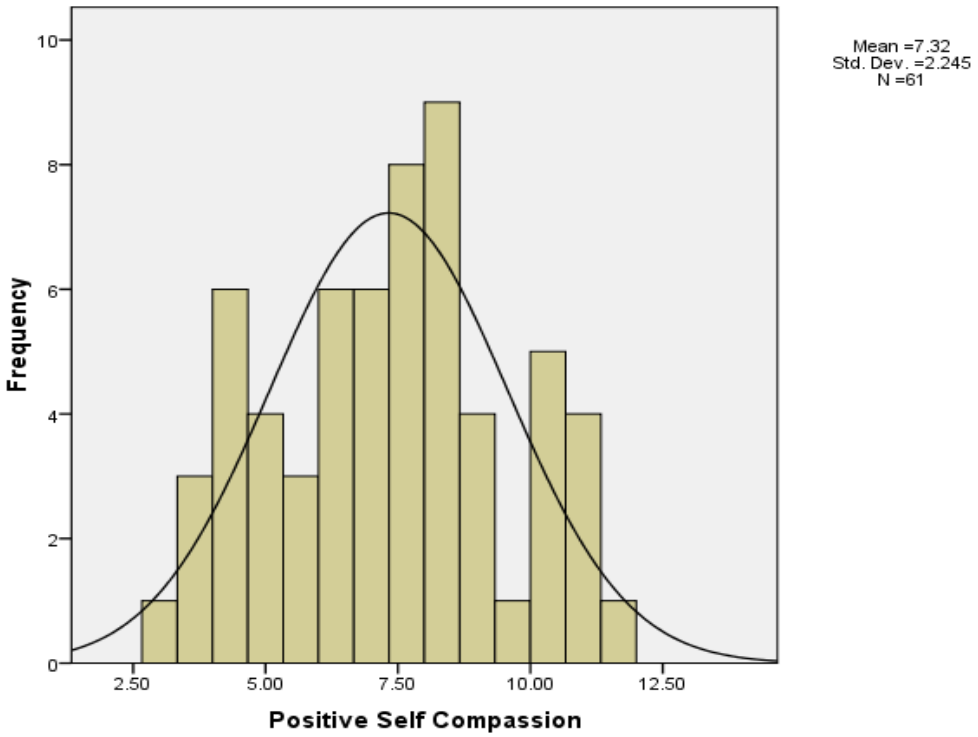

Figure 9. Histogram of the measure positive self-compassion

The distribution in Figure 9 appears to be normal, however, further tests of normality are required before normal distribution can be concluded.

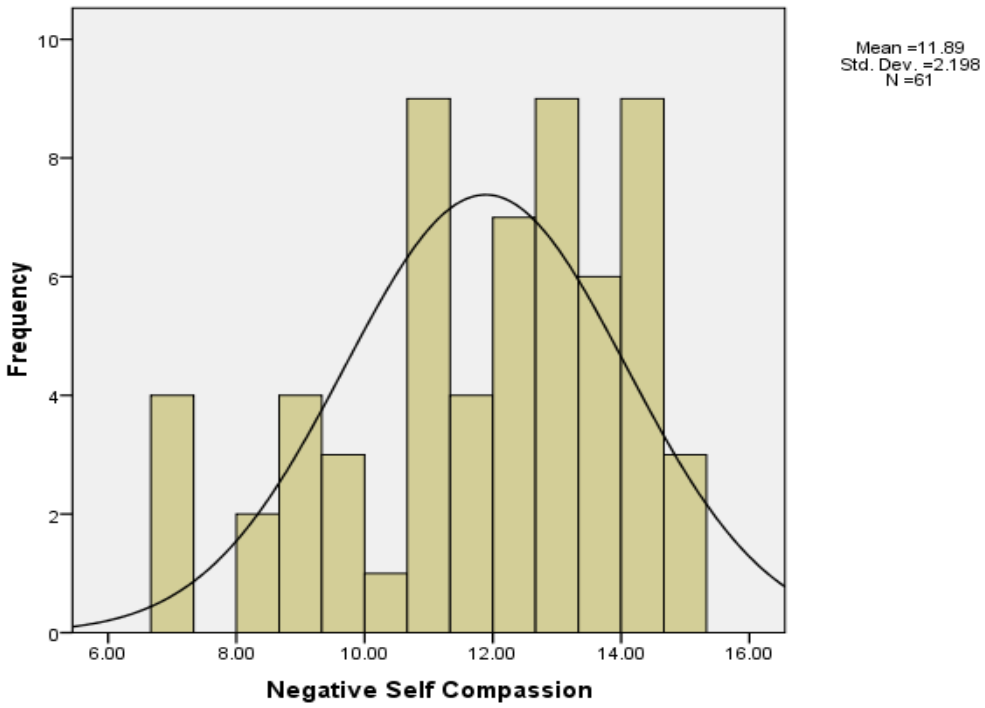

Figure 10. Histogram of the measure negative self-compassion

The distribution in Figure 10 appears slightly negatively skewed, so additional tests of normality are required before normal distribution can be concluded or refuted.

2.3. (ii) The Kolmogorov-Smirnov (K-S) test.

The K-S test will compare the scores in the sample to a normally distributed set of scores with the same mean and standard deviation (Field, 2009). If the test is non-significant, this suggests that the distribution of the sample is not different from a normal distribution. The K-S test is suitable for a sample size above 50 (Field, 2009). Analysing each variable using this test revealed that the percentage on the DASS scores, $D(60) = .031$, $p < .05$ and the AAQ-II scores, $D(60) = .002$, $p < .05$, were both significantly non-normal. All other variables were non-significant.

2.3. (iii) *z*Skewness and *z*Kurtosis.

The final test of normality can be obtained by dividing the values of skewness and kurtosis by their associated standard error to convert these scores into *z*-scores. Anything greater than 1.96 is significant ($p < .05$). This test revealed that for the DASS score, the *z*-score of skewness was 2.21 and the *z*-score for kurtosis was 0.78, for the negative self-compassion score, the *z*-score of skewness was -2.15 and the *z*-score for kurtosis was 0.69. All other *z*skewness and *z*kurtosis scores were within one standard deviation of the mean.

From the tests conducted it was decided to analyse the DASS, the AAQ-II and the negative self-compassion scale using the non-parametric Spearman's Rho correlation due to their non-normal distribution.

2.4. Additional Correlation Assumptions

For the variables that met the assumption of normality, additional assumptions need to be satisfied to determine their suitability for correlation analysis.

2.4. (i) Linearity.

Linearity is assumed when the x-y scattergraph of points for two variables can be better described by a straight line than by any curvilinear function. Linearity was visually inspected by plotting each variable against PTSD symptom scores. The assumption of linearity was assumed because all bivariate relationships were better accounted for by a linear relationship.

2.4. (ii) Homoscedasticity.

In parametric correlations for ungrouped data, it is assumed that the variability in scores for one continuous variable is roughly the same at all values of another continuous variable (Tabachnick & Fidell, 2007). Homoscedasticity is assumed when variables have met the assumptions of normality (Tabachnick & Fidell, 2007), therefore, the relationship between all the measures except the DASS, the AAQ-II and negative self-compassion are assumed to be homoscedastic (Tabachnick & Fidell, 2007). Heteroscedasticity is not fatal to an analysis of ungrouped data, but there is even more predictability if the

heteroscedasticity is accounted for (Tabachnick & Fidell, 2007). The study has accounted for this by analysing the variables that did not meet the assumptions of normality through non parametric correlational analyses.

2.5. Additional Descriptive Statistics

Table 5 shows the descriptive statistics for the subscales of all the measures. Cronbach's alpha levels for all subscales were above the recommended level of .7 (Kline, 2000).

Table 5

Means, Standard Deviations and Cronbach's Alpha Levels for each Subscale

	Mean	*SD*	α
IES-R Avoidance (*n* = 60)	2.38	0.81	.78
IES-R Hyperarousal (*n* = 60)	2.11	0.75	.86
IES-R Intrusion (*n* = 60)	2.94	0.8	.87
DASS Anxiety (*n* = 60)	12.13	6.58	.90
DASS Depression (*n* = 60)	14	6.39	.93
DASS Stress (*n* = 60)	14.52	5.41	.89
Self-reassurance (*n* = 62)	14.24	7.14	.83
ESS Characterological (*n* = 61)	33.97	10.9	.95
ESS Behavioural (*n* = 62)	27.26	7.52	.92
ESS Bodily (*n* = 62)	11.23	4.24	.90
Positive Self-compassion Self-Kindness (*n* = 61)	2.11	0.78	.72
Positive Self-compassion Common Humanity (*n* = 62)	2.55	0.99	.80
Positive Self-compassion Mindfulness (*n* = 61)	2.65	0.86	.73
Negative Self-compassion Self-Judgement (*n* = 62)	3.90	0.94	.87
Negative Self-compassion Isolation (*n* = 61)	4.05	0.84	.77
Negative Self-compassion Over Identification (*n* = 62)	3.81	0.93	.79

2.5. (i) Questionnaire Structure.

Correlational analyses were carried out on the subscales for each measure to assess the questionnaires' structure.

The Impact of Events Scale – Revised (IES-R).

The three subscales of the IES-R (avoidance, hyperarousal and intrusion) were moderately to highly inter-correlated; correlations ranged from .45 to .80. The three subscales were therefore not explored further separately and subsequent analyses used the total IES-R mean score as described in the scoring procedure (Weiss & Marmar, 1997). The sample's mean IES-R score was above the 1.5 cutoff, which has been found to provide the best diagnostic accuracy for PTSD, although the IES-R was not designed to make a categorical diagnosis (Creamer, Bell & Failla, 2003).

The Depression, Anxiety and Stress Scale (DASS).

The three subscales of the DASS (depression, anxiety and stress) were highly inter-correlated; correlations ranged from .75 to .77. The three subscales were therefore not explored further separately and subsequent analyses used the total DASS score. The Cronbach's alpha levels obtained for the subscales were consistent with previous research assessing the psychometric properties of the DASS (.94 for depression, .87 for anxiety and .91 for stress; Antony, Bieling, Cox, Enns & Swinson, 1998). The mean scores observed for each of the subscales place this sample in the extremely severe range for depression and anxiety and in the severe range for stress (Lovibond & Lovibond, 1995).

The Experience of Shame Scale (ESS.)

The three subscales of the ESS (characterological shame, behavioural shame and bodily shame) were moderately to highly inter-correlated; correlations ranged from .59 to .82. The three shame sub-scales were therefore not explored further separately and subsequent analyses used the total shame score. The Cronbach's alphas obtained for the shame total and the subscales are all consistent with previous research that assessed the reliability and validity of the ESS (Andrews, Qian & Valentine, 2002). For this sample, the

shame total and subscale mean scores were all considerably higher than studies utilising undergraduate populations (see Andrews, Qian & Valentine, 2002), however, when compared with a study using participants referred for treatment for PTSD, the scores were almost identical (see Harman & Lee, 2010).

The Forms of Self-Criticising/Attacking and Self-Reassuring Scale (FSCRS).

The self-reassurance component of this scale was moderately correlated with the self-criticism total scores (r = -.47). The Cronbach's alpha obtained for self-reassurance is consistent with previous research assessing the reliability and validity of the measure (Gilbert et al., 2004). Although the self-criticism scale can be broken down into two components of self-criticism termed inadequate self and hated self (Gilbert et al., 2004) it was not part of the study's aims to assess the different forms and functions of self-criticism, therefore, the self-criticism total score was used in all analyses.

The Acceptance and Action Questionnaire (AAQ-II.)

The AAQ-II consistently loads on to one factor representing the construct of experiential avoidance. The Cronbach's alpha level obtained for the AAQ-II in this study was slightly higher than what has been found in previous studies (alpha's ranging from .81 – .87; Bond et al., submitted). Data to compare the AAQ-II to is still limited due to being a new measure, however, in comparison to studies using the original AAQ-II, this study's sample has obtained higher mean scores of avoidance than similar studies assessing avoidance and PTSD symptoms (*Mean* = 36.3; Tull, Jakupcak, Paulson & Gratz, 2007).

The Positive Self-Compassion Scale.

The three subscales that make up the positive self-compassion scale (kindness, common humanity and mindfulness) were moderately inter-correlated ranging from .55 to .63. These scores are slightly lower than the inter-item correlations found in studies assessing the reliability of the scale (see Neff, 2003a), however, they are above .3 which is the acceptable limit for inter-item correlations (Field, 2009). The Cronbach's alpha levels are consistent with

previous research (see Neff, 2003a). The mean for each of the subscales that make up the positive self-compassion scale were lower than the mean scores found in studies utilising an undergraduate population (Neff, 2003b).

The Negative Self-Compassion Scale.

The three subscales that make up the negative self-compassion scale (self judgement, isolation and over identification) were moderately to highly inter-correlated with correlations ranging from .65 to .82. These scores are slightly lower than the inter-item correlations found in studies assessing the reliability of the scale (see Neff, 2003a). The Cronbach's alpha levels are consistent with previous research (see Neff, 2003a). The mean for each of the subscales that make up the negative self-compassion scale were higher than the mean scores found in studies utilising an undergraduate population (Neff, 2003b).

2.6. Additional Correlational Analyses

To determine appropriate control variables previous research was consulted; pertinent descriptive statistics with less than 5% missing data were analysed using either a two-tailed Spearman's Rho correlation or a two-tailed point-biserial correlation depending on the level of data (categorical vs. dichotomised). The descriptive items assessed included: type of trauma (interpersonal, non-interpersonal, both), time elapsed since traumatic event (less than one month, 1-3 months, 3-6 months, 6 months-3 years, 3-5 years and 5 years plus), number of traumas (single/multiple), traumas involving war (*yes/no*), traumas involving sexual assault (yes/no), feeling supported by family and friends (*yes/no*). The relationship between these descriptives and all of the continuous variables were assessed to ascertain if any relationships were statistically significant, which may need controlling for in subsequent analyses (see Table 6). Due to the number of correlations undertaken and to reduce the likelihood of Type I errors, Bonferroni Corrections were applied to the data and the adjusted alpha levels are reported (see section 2.7 for further details).

Table 6

Additional Correlational Analyses

		Type of Trauma	Feel Supported	No. of Traumas	War Trauma	Sex Trauma	Time since Trauma
1	Type of Trauma [a]						
2	Feel Supported	.09					
3	No. of Traumas	.50*	-.10				
4	War Trauma	-.16	.21	-.17			
5	Sex trauma	.19	.27	.32	.17		
6	Time elapsed since trauma [a]	.18	-.15	.17	-.16	.23	
7	IES-R	.07	.21	.18	.03	.35	.06
8	DASS	.11	.13	.24	-.01	.20	.13
9	Self-criticism	.14	.21	.19	.02	.27	.19
10	Self-reassurance	.03	-.02	-.15	.03	-.04	-.12
11	AAQ-II	.21	.29	.12	-.04	.08	.24
12	ESS	.19	.11	.33	.06	.26	.13
13	Positive Self-compassion	-.01	.06	-.07	.05	.08	-.25
14	Negative Self-compassion	.03	.09	.15	.03	.19	.19

[a] Spearman's Rho was used to analyse these variables, all other variables were assessed using point-biserial correlations

*Correlation is significant at the Bonferroni adjusted significance level of $p < .004$ (.05/14; 2-tailed)

Table 6 reveals only one significant relationship between two descriptive measures; number of traumas and the type of trauma. Inspection of bivariate scatter plots reveals a non-linear relationship, therefore this finding is considered spurious. Due to the lack of significant correlations between the descriptive items and the continuous measures, no additional control variables were entered into subsequent analyses.

2.7. Bonferroni Correction

This statistical technique is used to address the problem of multiple comparisons. A high number of comparisons can inflate familywise error rates and increase the chance of making a Type I error (Field, 2009). The Bonferroni correction adjusts the level of significance so that all comparisons remain at the .05 level. This is achieved by dividing the alpha level by the number of tests conducted and setting this as the criterion for significance (Field, 2009).

2.8. Additional Correlations

The correlations between the DASS and the other predictor variables appear to be relatively high (r = .55 - .77). This suggests that the DASS, in this sample, may be tapping into a more general measure of distress, which shares a large amount of variance with the other predictor variables (see journal results for further discussion).

The correlations found between the predictor variables, the negative self-compassion scale and the positive self-compassion scale provide support for the decision to split the positive and negative aspects of the scale instead of having a total self-compassion score. Both scales correlate with the other (positive and negative) variables in a way that is consistent with the view that positive feelings of compassion and lack of compassion or threat like feelings towards the self are two independent dimensions of affect (Watson et al., 1995). Research has consistently demonstrated that constructs that tap negative affect and positive affect are not opposite poles on a single dimension but are largely independent (Gilbert, Allan, Brough, Melley & Miles, 2002) Additionally, the negative correlation between the two scales (which was below .7) supports the view that they should not be seen as a unitary concept (Longe et al., 2010).

2.9. Hierarchical Multiple Regression

The main aim of a regression analysis is to investigate the relationship between a DV and several predictor variables (Tabachnick & Fidell, 2007). Multiple regression enables researchers to assess how well a set of variables are able to predict a particular outcome, so this is appropriate to test hypothesis three, i.e. how well are shame, experiential avoidance, self-criticism and self-compassion able to predict the variance in PTSD symptom severity. In addition to this, multiple regression enables the investigation of variables to predict an outcome once the effects of another variable are controlled for (Pallant, 2001). Hierarchical multiple regression is one of a number of multiple regression analyses, this particular type enables independent variables to be entered into the equation in the order dictated by the researcher based on theoretical grounds (Pallant, 2001). Therefore, this type of regression is the most appropriate from of regression to investigate the hypotheses in the current study.

2.9.1. Assumptions.

Hierarchical multiple regression has a number of assumptions that it requires the data to meet before findings can be generalised beyond the sample (Field, 2009).

2.9.1.(i) *Multicollinearity.*

Multicollinearity occurs when there is a strong correlation between the predictors in a regression model. This can cause increases in the standard errors of the *b* coefficients, making them less reliable, it also makes it more difficult to assess the individual importance of each predictor (Field, 2009). Pallant (2001) argues correlations above .09 indicate multicollinearity, whereas Field (2009) suggests correlations above .08 should be treated with caution. The highest correlation between the predictors was between the DASS and the ESS (r = .77), which is below .08. In addition to checking the correlation matrix, the regression model produces collinearity diagnostics known as the variance inflation factor (VIF) and the tolerance statistic which can be used to check multicollinearity. VIF tolerances near the value of 10 and tolerance values

below .01 indicate problems (Field, 2009). From the regression output presented in Table 3, the associated VIF and tolerance levels are within the limits described above.

2.9.1.(ii) *Outliers.*

Outliers have a big influence on the regression analysis therefore they need to be assessed; dealing with outliers helps the regression line to reflect the average scores, not scores vastly different from the rest (Dancey & Reidy, 2007). Outliers can be assessed by inspecting the standardised residuals that SPSS produces in the data set. Because the residuals are standardised they are similar to *z*-scores and Field (2009) suggests that 95% of the sample should fall within one standard deviation (-1.96 and 1.96) and 99% of the sample should fall within two standard deviations (-2.58 and 2.58). Field (2009) also states that residuals with a value greater than 3.29 are problematic. From the residuals produced in this regression analysis, two cases have residuals above 1 *SD* and one case is above 2 *SD*. This suggests the data is within the acceptable limits and we can conclude the sample conforms to what would be expected of an accurate model.

Outliers can also be detected through inspecting the Mahalanbolis distances produced. To identify cases that are outliers, the critical chi-square value needs to be determined using the number of independent variables as the degrees of freedom (Pallant, 2001). According to the table produced in Tabachnick & Fidell (2007), the critical value for a model with six independent variables at the alpha level of .001 is 22.46. An inspection of the data set reveals that no cases are above this value.

2.9.1.(iii) *Normality, Linearity and Homoscedasticity*

These assumptions refer to aspects of the distribution of scores and the nature of the underlying relationships between the variables (Pallant, 2001). Examination of residuals scatterplots enables the testing of each assumption between predicted DV scores and errors of prediction. Figure 11 presents the residuals plot produced.

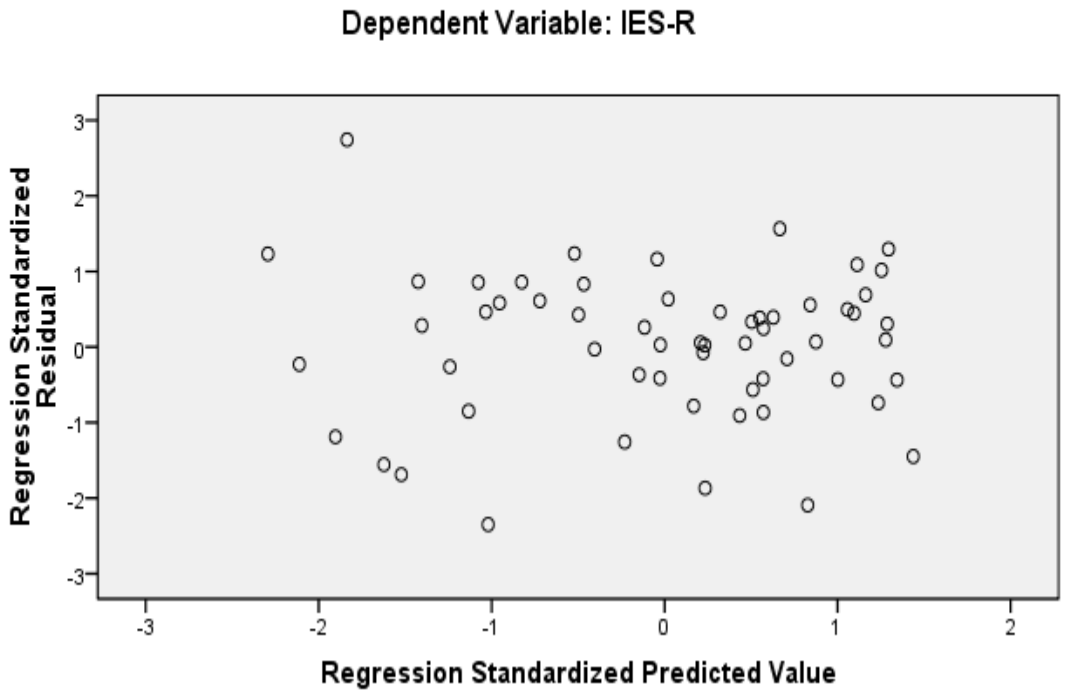

Figure 11. Plot of predicted values of the DV against residuals

If all assumptions are met, the residuals will be nearly rectangular in distribution with a concentration of scores along the center (Tabachnick & Fidell, 2007). From Figure 11, the assumption of normality is assumed because there is a concentration of scores about the 0 point (Pallant, 2001); the points also appear randomly and evenly dispersed throughout the plot (Field, 2009). Linearity is also assumed because there does not appear to be a curved trend in the data. The assumption of homoscedasticity means the *SD* of errors of prediction is approximately equal for all predicted DV scores (Tabachnick & Fidell, 2007). The scatterplot does not show a funnel shape, this would appear if scores were becoming more spread out across the graph, therefore the assumption of homoscedasticity is also assumed. Figure 12 and 13 show the

histogram and normal probability plot for the residuals, supporting the assumption of normality.

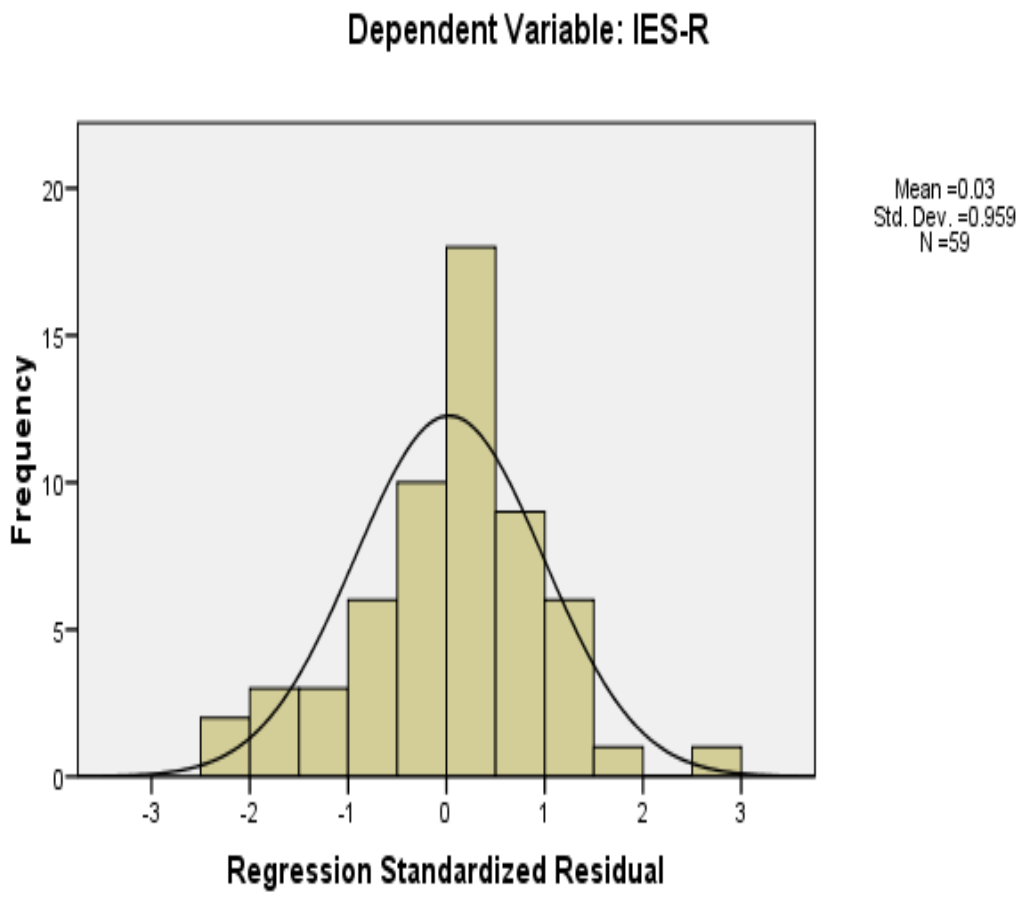

Figure 12. Histogram showing normally distributed residuals

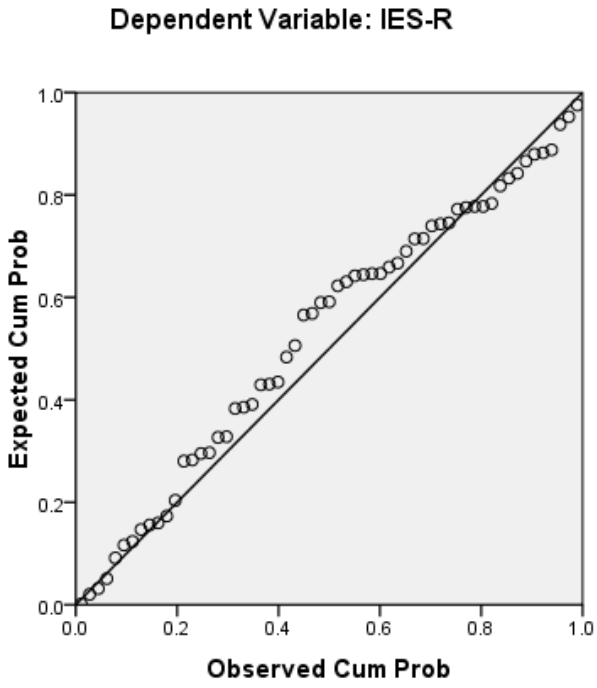

Figure 13. P-P plot showing normally distributed residuals

There are no distributional assumptions about the predictor variables other than their relationship with the DV, which has already been tested. However, a prediction equation often is enhanced if the predictors are normally distributed, primarily because linearity between the IV and DV is enhanced (Tabachnick & Fidell, 2007). Given this, inspection of the partial regression plots produced for each predictor variable on the DV demonstrated that the assumptions for linearity and homoscedasticity had been met.

2.10. Explorative Regression Analysis

It was decided to assess the variance of the predictor variables with the DASS entered into the second step of the model (see Table 7). This would allow for a clearer assessment of how well the predictor variables accounted for the variance in PTSD symptom severity.

Table 7

Additional Regression Analysis

Model		sr^2	*B*	SE *B*	β	*t*	95% CI
Step 1	(Constant)		1.30	0.42		3.10	0.46, 2.13
	Self-Criticism	0.28	0.21	0.01	.44	3.30*	0.01, 0.03
	AAQ-II	0.05	0.00	0.01	.06	0.60	-0.01, 0.01
	ESS	0.21	0.01	0.00	.32	2.47**	0.00, 0.02
	Pos Self Compassion	-0.08	-0.02	0.03	.10	-0.92	-0.09, 0.03
Step 2	(Constant)		1.28	0.40		3.23	0.49, 2.08
	Self-Criticism	0.18	0.02	0.01	.31	2.25**	0.00, 0.03
	AAQ-II	0.02	0.00	0.01	.02	0.19	-0.01, 0.01
	ESS	0.11	0.01	0.00	.18	1.32	-0.00, 0.01
	Pos Self Compassion	-0.04	-0.02	0.03	-.05	-0.55	-0.07, 0.04
	DASS	0.21	0.01	0.00	.37	2.61**	0.00, 0.01

Note. CI = Confidence interval

R^2 = .61 for step 1, R^2 = .65 for step 2, ΔR^2 = .04 for step 2

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

All assumptions for the regression model were explored and met. This regression model as a whole accounted for 65% of the variation in PTSD symptom scores. Shame, self-criticism, experiential avoidance and positive self-compassion accounted for 61% of the variance (step 1) and the addition of the DASS (step 2) accounted for an additional 4% of the variation above that explained by the predictors alone. In step 1, the change in the amount of variance that can be explained by the predictors gives rise to an *F*-ratio of 21.08, which is significant ($F(4, 54)$ $p < .01$, $f^2 = .11$).

Table 7 highlights the amount of variance explained by the predictors when the DASS is not initially included as a control variable. This shows that without the DASS entered in step 1, the measures are highly predictive of PTSD symptom scores. Given the previous regression (Table 3) showed the predictors accounted for 8% of the variance in PTSD symptom scores after controlling for the DASS, the argument that the DASS may be obscuring the effects of the predictor variables due to its shared variance with the predictors and the DV appears credible. Although, multicollinearity diagnostics were not significant, this regression model may be considered more theoretically useful when the DASS is not controlled for. It is potentially more interesting as a research finding to predict symptoms from trait/dispositional variables rather than a parallel measure of the same construct (i.e. distress state).

2.11. Moderation

A moderator is a variable that alters the direction or strength of a relation between a predictor and an outcome variable (Baron & Kenny, 1986). A moderation analysis is appropriate to test hypothesis four because it is hypothesised that the effect of shame, self-criticism and experiential avoidance on PTSD symptom scores will depend on the level of self-compassion. For this study the moderator (self-compassion) is deemed to have a buffering interaction where the moderator weakens the effect of the predictor variables (Frazier, Tix & Barron, 2004). Hierarchical multiple regression is the preferred statistical method for examining moderator effects and for continuous data Aiken & West (1991) suggest centering the predictor and moderator variables. This is done by subtracting the mean from each variable to produce a set of negative and

positive values that have a mean of 0. Centering reduces the problems associated with multicollinearity among the variables in the regression equation (Frazier, Tix & Barron, 2004). Following centering, product terms are created by multiplying together the predictor and moderator variables, this represents the interaction between the two variables (Frazier, Tix & Barron, 2004). Variables are entered into the regression in specified steps, starting with the centered variables in the first step and then the newly created interaction variable entered into the second step. Interpretation of the results should be done by reporting the unstandardised (*B)* rather than standardised regression (β) coefficients, as when interaction terms are included in the analysis, the β coefficients are not properly standardised and therefore are not interpretable (Aiken & West, 1991).

2.12. Additional Moderation Analyses

Table 8 and 9 highlight the results of the moderation analyses between shame, experiential avoidance and PTSD symptom scores.

Table 8

Regression of IES-R Scores on the Interaction between Shame and Self-compassion

Model		*B*	SE *B*	β	*t*	95% CI
Step 1	(Constant)	2.76	0.07		41.59	2.62, 2.89
	Pos Self-compassion	-0.06	0.03	-.19	-1.85	-0.12, 0.01
	Shame	0.02	0.00	.61	5.71*	0.01, 0.03
Step 2	Pos Self-compassion					
	X Shame	0.00	0.00	.10	1.01	-0.00, 0.01

Note. CI = Confidence interval

R^2 = .52 for step 1, R^2 = .52 for step 2, ΔR^2 change = .01 for step 2

* $p < .001$

Table 8 reveals the interaction between shame and self-compassion is non-significant ($F(1, 56) = 1.02$ $p = .32$, $f^2 = .02$).

Table 9

Regression of IES-R Scores on the Interaction Between Experiential Avoidance and Self-compassion

Model		*B*	SE *B*	β	*t*	95% CI
Step 1	(Constant)	2.73	0.09		32.12	2.56, 2.90
	Pos Self-compassion	-0.06	0.04	-.21	-1.53	-0.14, 0.02
	Avoidance	0.02	0.01	.38	2.74**	0.01, 0.03
Step 2	Pos Self-compassion					
	X Avoidance	0.00	0.00	.01	.05	-0.01, 0.01

Note. CI = Confidence interval

R^2 = .26 for step 1, R^2 = .26 for step 2, ΔR^2 change = .00 for step 2

** $p < .01$

Table 9 shows the interaction between shame and self-compassion is non-significant ($F(1, 55) = .003$ $p = .96$, $f^2 = 0$). Therefore, the hypothesis that shame and experiential avoidance are moderated by self-compassion is not supported.

2.13. Regression Plots

In order to plot interactions, the regression of PTSD symptom scores (*Y)* was plotted on two values of self-criticism (*X*) and two values of self-compassion (*Z*). The two values of *X* and *Z* were chosen as 1 SD below the variable mean (low) and 1 SD above the mean (high; Aiken & West, 1991). The numerical result of this equation corresponds to the graphical results displayed in Figure 1.

Extended Discussion

3.1. Additional Correlations

In addition to the positive correlations found between the threat based predictors and PTSD symptom severity, significant positive correlations were found between the independent variables themselves; shame, self-criticism, experiential avoidance, negative self-compassion and the DASS. The correlations between these measures and the DASS shall be discussed in section 3.3. The highest of these correlations was between shame and self-criticism (r = .74), followed closely by the correlation between shame and negative self-compassion (r = .69). Previous studies using a PTSD population have found similarly high correlations between shame and self-criticism (r = .82, Harman & Lee, 2010). They also found that shame was an independent predictor of self-criticism after controlling for the effects of depression and PTSD symptom severity. They argue that this demonstrates the important role shame may play in maintaining the sense of ongoing current threat central to PTSD. However, the extremely high correlations found in their study (i.e. above .08) suggest that these two constructs may be demonstrating multicollinearity which can inflate the size of the error terms and weaken the analysis (Tabachnick & Fidell, 2007). This said, self-criticism is often found to be associated with shame proneness and may increase vulnerability to psychological disorders (Gilbert & Miles, 2000; Gilbert & Irons, 2005). Indeed, even after controlling for the effects of depression and other risk factors Cox et al. (2004) found self-criticism to be significantly associated with presence of PTSD, emphasising the value of examining specific psychological traits in furthering our understanding of PTSD.

The highest correlations for experiential avoidance were with self-criticism (*r=.54),* PTSD scores (*r*=.51) and self-compassion (*r=-.50)* and shame (*r*=.47). Significant negative correlations between self-compassion and avoidance have been found previously in a PTSD population (Thompson & Waltz, 2008). Indeed, self-compassion could be seen as congruent with the principles of experiential acceptance, so that accepting private experiences, painful or otherwise, by not trying to alter their form or the context in which they occur (Hayes et al., 1996) can be seen to be very similar to the descriptions of self-compassion, including being open to our own suffering and being aware of painful feelings without over identifying with them (Neff, 2003a).

These correlations also show that PTSD symptoms are associated with avoidance and avoidance is positively correlated with self-criticism and shame. A way to conceptualise these associations could be that reminders of a trauma (internal or external) generate a self-critical and shameful response, this is aversive and so experiential avoidance may initially provide a way of coping with these distressing experiences. However, over time, learned associations of threat to particular thoughts and feelings can develop into a general inability to cope with negative events (Kashdan, Morina & Priebe, 2009). Avoiding exposure to these feared internal events increases anticipatory anxiety for situations in which these experiences may arise (Tull & Roemer, 2003). Hayes et al. (2006) see this as a classically conditioned response, so that, an individual starts to become anxious about being anxious, instigating an avoidant response which ultimately interferes with exposure to trauma related stimuli, thus maintaining PTSD symptomatology (Ehlers & Clark, 2000). This study cannot hypothesise about any given causal pathway, however, as more than half of the study's participants had experienced their traumas over 5 years ago it is difficult to say what processes would have been occurring closer to the time of the index event; future research should seek to study participants whose traumatic experience was more recent, thereby reducing the amount of time that learned associations have to develop and become pathological responses to negative experiences.

Hypothesis two highlights the negative relationship between self-compassion, shame and self-criticism. This relationship was also found

between self-reassurance, shame and self-criticism. Additionally, measures of self-compassion and self-reassurance were found to be positively correlated (r=.64), this is not surprising given the fact that the latter measure is designed to focus on thoughts of self-reassurance and indicates a positive and warm disposition to the self (Gilbert et al., 2004), which certainly has similarities with the self-compassion scale.

From an evolutionary perspective, both measures can be seen to tap into the soothing, warm and positive affect system that Gilbert (2005, 2009) describes. This system, as discussed previously, is said to develop by maturational stimulation through warm and caring interpersonal interactions. How one learns to relate to oneself is dependent on how others have related to you, and in this way interpersonal theorists argue that 'self-criticism and self-reassurance are linked to learnt interpersonal scripts' (Gilbert et al., 2006, p. 184). If one is able to call upon positive implicit memories and supportive schemas of self and others, which links into this soothing system, this may serve to regulate emotional reactions (Gilbert et al., 2006). Tugade and Fredrickson (2004) have found that generating positive emotions in stressful situations is linked to resilience and an ability to "bounce back" (p. 320). It appears that the ease and degree to which individuals can activate these warm or critical schemas is central to the subsequent emotional and social responses to distressing events (Gilbert et al., 2006). Mayou, Ehlers & Bryant (2002) have found that negative beliefs about the self and the world predict the persistence of PTSD symptoms.

Given this analysis, it is possible that some individuals who demonstrate high self-criticism following a traumatic experience, may have an over-stimulated threat affect system and a weakened positive, soothing affect system (Gilbert et al, 2006), which alongside other risk factors may serve to increase the development of PTSD. This hypothesised proposition suggests that the activation of self-critical processes during and after a trauma may serve as a risk factor for developing PTSD and that prior to a trauma, these processes may lead to individual vulnerabilities that makes coping with aversive events more difficult. It is possible that those who can access their soothing affect systems may not go on to develop emotional, behavioural and social responses that lead

to the development of PTSD. However, this would also need testing through a prospective study that assessed levels of self-reassurance and self-compassion near the time of a trauma and then their subsequent relationship with self-criticism, shame and experiential avoidance over time.

Many authors would disagree with the tentative explanations and theoretical arguments made in this current study. Some would argue that fundamental risk factors such as rumination and dissociation have been overlooked. Although, some researchers would see rumination as a very similar process to self-criticism and some would see dissociation as an extreme version of experiential avoidance (Hayes et al., 2006). Indeed Hayes et al. (2006) would argue that experiential avoidance is the most important factor within the development of PTSD and many other psychopathologies because of its functional process and implications for treatment. It is acknowledged that this study is limited by its design and focus on several interrelated concepts whose causal pathways cannot be distinguished, however, the ideas presented are designed to stimulate critical discussion about the processes underlying constructs that may serve to increase or reduce the development of PTSD symptoms.

3.2. Additional Regression Results

Although the initial regression model (Table 3) appears to suggest that the predictor variables only explain a small amount of the variance, conceptual and statistical overlap with the DASS may have underplayed the importance of these factors. Therefore, a second regression was conducted (see Table 7) with the DASS entered into the second step. The predictors were entered into step 1 without controlling for the DASS and this model explained 61% of the variance in PTSD symptom scores. The implications of controlling for the DASS in the regression model have been discussed previously, so the current emphasis is on the conclusions that can be drawn from this second model.

Although the inclusion of all the predictors produced a model that accounted for a high proportion of the variance in the DV, self-criticism and shame were the only significant individual predictors when all others were held constant. Self-compassion and experiential avoidance were not significant

predictors; furthermore, experiential avoidance was the least predictive of all the variables. This appears to suggest that, self-criticism and shame are more important risk factors within PTSD symptomatology than self-compassion or experiential avoidance. Previous research has identified the important role of shame and self-criticism within a PTSD population (Harman & Lee, 2010; Southwick, Yehuda & Giller, 1991; Andrews et al., 2000). An evolutionary perspective (Gilbert, 2000b, 2005, 2009) views shame as evolving through dominant-subordinate relationships in social situations, however, it also suggests that we can engage in a dominant-subordinate self-self relationship which manifests itself in the form of a self-critical inner voice. This self-critical process has been explored and found to create a shame like response within the individual (Tangney & Dearing, 2002; Gilbert et al., 1996; Gilbert et al., 2004). This continual dialogue of critical comments and feelings of shame are hypothesised mechanisms that maintain the ongoing threat within PTSD (Lee, 2005). Although we cannot comment on whether shame leads to self-criticism or vice versa, this study does enable us to be more confident that these processes are highly relevant in a traumatised population and therefore may be worthwhile treatment targets.

These findings can be set amidst current contexts that conceptualise PTSD as a response to trauma that is not part of a normative process but due to an individual's vulnerability to developing this disorder (Yehuda & McFarland, 1995). Whilst self-criticism and shame can be seen to support the vulnerability argument, it is unclear whether these factors point to a specific predisposition to PTSD or a more general predisposition to mental illness triggered by stress and adversity (Yehuda & McFarland, 1995).

The non-significant findings in relation to experiential avoidance were unexpected, indeed, it has been confidently argued that PSTD symptomatology may be the 'by-product of the experiential avoidance process (Marx & Slaon, 2005). This does not seem to be the case in the current study; it is possible that because the measure used to assess experiential avoidance was fairly new in construction and it had been condensed from previous versions, this may have impacted its ability to detect experiential avoidance in this sample. It is also possible that when shame and self-criticism are taken into account, experiential

avoidance is not as important as previous research would suggest. This suggestion is hard to assess because no other studies have investigated these risk factors in one model previously, therefore further research would be required to demonstrate whether this finding is consistent across similar populations. There is also an argument that in order to measure this construct, individuals need to have awareness that the behaviours they engage in are actually avoidant. Hayes et al. (1996) persuasively argues that experiential avoidance is built into language and therefore, is partly inherent in the human condition. He notes that it is often fused with thoughts that support the adoption of avoidant strategies and therefore, self-knowledge that one engages in these behaviours can be difficult and 'actively resisted' (p. 1155).

3.3. Correlations between DASS and Predictors

As well as demonstrating high correlations with PTSD symptoms, the DASS also showed high positive correlations with shame, self-criticism, experiential avoidance, negative self-compassion and negative correlations with self-reassurance and self-compassion. In an attempt to understand these correlations beyond the level of item overlap, research into broad mood factors has proved interesting. Watson, Clark and Carey (1988) have dedicated years of research to understanding and explaining how the symptoms of anxiety and depression (stress not included) are underpinned by two general mood-based personality factors, positive affectivity (PA) and negative affectivity (NA). They argue that in relation to self-report mood measures, positive affect and negative affect are the two central dimensions (Watson, Clark & Tellegen, 1984). They provide convincing evidence that positive and negative affects are distinctive dimensions that can be represented as independent and orthogonal. To understand these dimensions further, the authors conceptualise them at the trait level as 'stable individual differences of general affective tone' (p. 347). NA is seen to be a pervasive predisposition to experience negative emotions that influences thoughts, self-concept and views of the world (Watson, Clark & Tellegen, 1984). PA is a predisposition 'conducive to positive emotional experience', a sense of well-being, competence and 'effective interpersonal engagement' (p. 347). Using factor analysis, Watson, Clark and Carey (1988) found depression and anxiety loaded onto both factors, however anxiety loaded

more strongly on the NA factor and depression loaded more onto the factor representing low PA. Using this research, the high correlations between the DASS and the other measures used in this study maybe more theoretically understandable. It could be argued that all the measures correlating positively with the DASS (shame, self-criticism, negative self-compassion and experiential avoidance) would all broadly relate to aspects of NA. With the opposite being true for those measures that negatively correlated with the DASS (self-reassurance and self-compassion), these would be thought to be broadly related to aspects of PA. Due to the DASS being used as a total measure of distress, it is difficult to know what correlations would remain significant if the scale had separated the measures of depression, anxiety and stress. Indeed, the findings from this study could be explored further in relation to these ideas to determine if any one mood disorder is implicated more than the other. This would enable more specific discussions regarding co-morbidity in traumatised individuals.

3.4. Non-significant Moderation Analyses

Contrary to hypothesis four, self-compassion did not moderate the relationship between shame on PTSD symptom scores or experiential avoidance on PTSD symptoms scores. It is difficult to discuss these findings in the context of previous research as these moderation analyses (to the author's knowledge) have not been conducted before. Although the argument that individuals higher in self-compassion will show lower shame and experiential avoidance is supported by the significant negative correlations found, when this interaction was assessed at the level of PTSD symptom change, there was a non-significant effect. One possible explanation could be that self-compassion does not function as a moderator at the level of affect or behaviour because it may not be the affect or behaviour itself that causes threat. Instead, it may be the interpretation and negative evaluations of the affective state and the subsequent behaviour that stimulates the threat system, which then leads to the sense of current ongoing threat found in PTSD (Ehlers & Clark, 2000). In this way, the finding that self-compassion moderated the relationship between self-criticism and PTSD symptoms appears more theoretically sound because the link between threat and modulation of that threat through self-compassion is

functionally more coherent. Indeed, Hayes et al. (1996) note that human emotions are subject to appraisals labels, they argue that it is the evaluative and descriptive labels rather than the emotional state itself that is connected to a variety of experiences, such as, memories, thoughts and social comparisons. 'The evaluative connotation of emotional labels alters the function of private experiences that are so labelled' (p. 1155).

3.5. Future Research

Future research has been highlighted throughout, however building on the finding that self-compassion moderates PTSD symptoms at the level of low self-criticism, future research could seek to understand what processes give rise to such a finding. For example, it is hypothesised that highly self-critical people aren't able to make use of self-compassion in the way that less self-critical individuals are. This study proposes that, high self-criticism is an individual vulnerability developed through early experiences which increase the likelihood of developing PTSD following a traumatic stressor. The suggestion that high self-criticism is developed through particular early experiences is consistent with previous research that has found associations with; unrealistic parental expectations (Schore, 1998, Gilbert et al., 2004), maternal coldness and insecure attachment style (Thompson & Zuroff, 1999), restrictive and rejecting parents (Koestener, Zuroff & Powers, 1991), as well as more obvious experiences of hostility, neglect and abuse (Gilbert, 2005; Gilbert & Proctor, 2006).

Future research could assess the relevance of these experiences in two populations, those who have experienced a trauma and gone on to develop PTSD and those who have not. This sort of study would be able to determine if significant differences exist between PTSD and non-PTSD groups in terms of levels of self-criticism, self-compassion and different types of early experiences. This could provide support for the individual vulnerability argument or it may bring the focus back to peritraumatic responses and post-trauma sequelae. Although this type of research is practically difficult, the value of assessing individuals who exhibit different levels of PTSD symptomtatology is important. Potentially, the processes that individuals with much lower PTSD symptoms

engage in may hold the key to understanding what makes people more or less vulnerable to the development of PTSD. Additionally, to control for the effects of different traumatic experiences, it would be important to match these groups on the basis of trauma exposure and the time at which those traumas occurred, this would allow for more robust research arguments.

Another idea for future research would involve measuring the same concepts as those measured in this current study but using a prospective design. One of the problems with this current study is that the direction of causation cannot be established. This study was not able to ascertain if self-criticism causes shame which leads to experiential avoidance (and subsequent current threat leading to PTSD) or whether individuals with PTSD who feel shame then become more self-critical and subsequently engage in experiential avoidance. If these factors were measured immediately post-trauma and these individuals were followed up to see who developed the highest PTSD symptoms, it would be possible to ascertain more clearly which risk factors were most prevalent in the development of PTSD.

3.6. Research Strengths

The strengths of this research have been the assessment of risk factors that have not been studied together before within this type of population. As such, the research is able to contribute to the scientific knowledge base with different ideas and findings. A particular strength has been the significant finding that self-compassion moderates the relationship between low self-criticism and PTSD symptom severity. This both supports and contradicts previous research and highlights an interesting finding that was not expected. Whilst the tentative nature of this result is acknowledged, the potential implications suggest that further research would be of value, and if the results are upheld this could change the current conceptualisations of the processes through which self-compassion works. The study also has managed to obtain results from a clinical sample and other research in this area has concentrated on using undergraduates. This suggests that these results can be generalised to a similar clinical population, which increases the study's ecological validity.

3.7. Research Limitations

There were a number of limitations to this research that require discussion. Firstly, the sample size collected was the absolute minimum needed to conduct correlational and multiple regression analyses. This may highlight a number of problems with the way the study was designed to collect its data. The majority of participants were sent a research pack through the post from the service where they were awaiting psychological treatment. It is likely that a number of participants would not have been expecting such a lengthy (up to one hour completion time) questionnaire pack and may have had different emotional reactions when filling it out. The fact that only 62 participants out of 262 returned their packs suggests that the majority of people did not want to be involved in such a study. It raises the question regarding the type of people that took the time to complete and return the questionnaires, the study may have, unbeknowingly, created a certain subgroup of people just by their involvement in the study. It is unknown to what extent this sample is representative of traumatised individuals, indeed the study found higher scores on a number of measures, which differentiates it from other similar studies using a PTSD population. A more successful method of collection appeared to occur when local collaborators asked individuals if they would like to be involved in the study after they had attended the service for an initial appointment; although there was no way to tell whether a participant had received their pack through the post or had been given it at their service, local collaborators reported a better uptake using this latter method. Therefore, it may have been a better method of collection if all local collaborators had given the packs out by hand, however, not all collaborators had the time or resources in which to carry this out. It is possible that better response rates would have been achieved if the study had offered an incentive for completing the questionnaires (e.g. monetary vouchers),or if the study had sent reminder letters to participants, however due to potential ethical issues, the researcher's budget and time restrictions, neither were possible.

Another limitation was the use of the Life Events Checklist to assess the different traumas participants had been exposed to. Whilst this was a lengthy list of potential traumas, it did not distinguish which was the most recent trauma

and which traumas had occurred in childhood. It was also impossible to determine if participants had ticked multiple traumas when they related to one overall experience, for example, participants could have ticked a number of boxes in relation to an assault e.g. physical assault and sexual assault, however, it was impossible to determine if this was part of the same experience or if there had been multiple experiences at different time points. This information would have been useful, particularly the distinction between traumas in childhood and traumas in adulthood, as it could be hypothesised that higher rates of psychopathology are likely to occur from traumas experienced in childhood. Indeed, separating sexual abuse in childhood from sexual assault in adulthood is likely to have important implications for the measures studied, particularly shame. Talbot, Talbot and Tu (2004), examined the relationship between shame-proneness and dissociation in a population of hospitalised women with and without histories of childhood abuse. Greater shame-proneness was associated with higher levels of dissociation, especially among women who had experienced sexual trauma early in their development.

These types of problems could be resolved if the study was designed to just assess certain types of traumas; given the heterogeneous sample of trauma survivors in this study, stronger findings may be found to exist in specific trauma groups more than others.

The limitations of the high inter-correlations between the measures has already been discussed, however, other statistical difficulties occurred during the analysis stage. Some of the measures did not show normal distribution curves and some measures had outliers that were statistically changed to enable further analysis to take place. There are always benefits and consequences to employing statistical methods to correct the data. The rationale for correcting outliers was justified because extreme scores do not represent a typical score, and tests that utilise the mean are concerned with the typical score in a group (Dancey & Reidy, 2007). It is accepted that this is a contentious area; however, the benefits of dealing with outliers using statistical procedures generally outweighs the potential difficulties that can arise by not correcting them (Field, 2009). Although some measures were non-normally

distributed, use of non-parametric analyses was used to overcome these issues, although this will have impacted any results that were found.

3.8. Critical Reflection

This study has attempted to amalgamate a number of broad psychological theories to understand how individual differences in hypothesised trait risk factors may increase vulnerability to the development of PTSD. This research process has been challenging and at times it has been difficult to integrate the theories and the research into a coherent narrative. While evolutionary psychology tries to provide an understanding of how innate processes, moulded by developmental experiences, can lead to risk factors such as shame and self-criticism and protective factors such as self-compassion, these ideas are only just starting to be applied in the context of PTSD. Applying these evolutionary ideas to PTSD meant bringing together a mass of literature that has already identified numerous potential risk factors that may play a part in the development of PTSD. However, the reason behind studying these particular risk factors (shame, self-criticism and experiential avoidance) was due to the theoretical link between processes that may stimulate or be stimulated by, the threat affect system and the theoretical and clinical research that is emerging to suggest that these threat based processes may be modulated by the self-soothing affect system as measured by assessing levels of self-compassion. Therefore, self-compassion was conceptualised to be functionally linked to these risk factors through a coherent body of literature that, until now, had not been assessed in a traumatised population. The emphasis on an individual trait that may help to moderate the effects of risk factors on PTSD symptoms was the most interesting aspect of this research, which differentiated it from other research that had been conducted. However, the difficulty the author found bringing together the different research strands calls for a broader conceptualisation of these processes; potentially through the creation of a meta-theory that is able to link these elements based on a manageable number of common processes and functions.

Inherent within the process of assessing individual vulnerabilities is the underlying suggestion that PTSD is not an inevitable consequence of trauma and challenges the view that certain types of trauma lead to a universal response. However, as is the consequence of retrospective designs, the vulnerabilities that exist before the trauma are unknown and to a large extent have to be inferred. Therefore, some authors caution against building a vulnerability model, due to the wide variations in outcomes that can be obtained depending on the design of the study, different populations and a variety of traumas.

Another critical reflection relates to the debate between evolutionary theories and behavioural theories, this became a challenge for the author whilst assessing the literature for the risk factors included in the study. Gilbert's evolutionary model posits that internal processes (such as self-criticism) can be the cause of a number of different emotional and behavioural responses. His understanding of self-criticism utilises interpersonal script theories, evolved mechanisms in the brain and the process of development and maturation. This is in stark contrast with some behavioural theories that refute the claim that internal processes can act as independent variables. Indeed, Hayes et al., (2006) argue that concepts such as cognitive schemas, cognitions at the level of material causality, and developmental patterns, are simply focused on dependent variables without specifying the contextual events that alter them. By not providing an independent variable, which can be manipulated, the study of direct causation that pragmatic clinicians require could be hindered. These complex debates have added to the challenging nature of this study, particularly as the different causal pathways that have been posited will satisfy readers who believe independent variables can be internal processes, but might leave other readers, such as those with behavioural inclinations wondering what the independent variable is throughout this research. This said, the study being correlational in nature does not seek to find an ultimate causal argument; indeed, it cannot, and therefore these debates serve to expand the author's critical awareness of the potential debates that this research may provoke.

From a personal perspective, this research process has enabled the author to enhance their knowledge of research statistics and has allowed the

researcher to consider the value of a particular epistemological approach with which this research was undertook (see epistemology section 3.9). Participating in a logico-deductive process, whereby knowledge is progressed through the prediction and testing of relevant hypotheses has, at times, been difficult and often felt reductionist. For example, applying certain techniques such as Bonferroni corrections to account for the possibility of Type I errors means that potential useful information is not analysed and there are many who would argue that this type of corrections often increase the likelihood of making a Type II error (Perneger, 1998). Additionally, due to missing data, much of the descriptive information collected could not be analysed; this felt wasteful, because potential interesting information, that may have added to the understanding of these risk factors, could not be assessed.

The author was drawn to this research because of an interest in trauma and an interest in compassion based treatments. Emerging research into the beneficial effects of developing self-compassion in clinical populations suffering from depression and borderline personality disorder (Gilbert & Proctor, 2006) and the potential for self-compassion to reduce self-critical processes and shame lead to a consideration of how these processes may be operating within a traumatised population. From conducting this research, the author has learnt that research is never easy and that you are bound by the constraints of the study's design. An important learning step within this process was the realisation that authors must not make their results sound any more than they actually are and hypotheses beyond what the data shows is mere conjecture. An eagerness to know all the answers at once reflects the author's inexperience in conducting research projects such as this. Given this reflection,the author would like the chance to conduct prospective research in this area in the future, because this type of design allows for a clearer understanding of risk factors and makes theoretical discussions more robust.

3.9. Epistemology

This research project assumes a positivist methodological orientation. Inherent to this stance are assumptions regarding the nature of reality and the existence and pursuit of knowledge. In general, positivism posits that a material

world exists, independent of the observer, and this world is knowable via rational and objective inquiry (McGrath & Johnson, 2003). The way this knowledge accumulates is through the 'systematic, controlled, empirical and critical investigation of hypothetical propositions about the presumed relationship among natural phenomena' (Behr, 1988, p.5). By applying the scientific method of experimentation through observation, manipulation and measurement, positivists believe that one can therefore infer the natural laws of the world.

Throughout the research process, the researcher takes a stance of 'hypothetical realism' where the inquiry and interpretation of the variables of interest will help to answer an underlying reality in 'progressively more accurate approximations' (McGrath & Johnson, p.36, 2003). However, the instruments used to measure these variables (questionnaires) are constrained by their design i.e. validity, reliability and interpretation; therefore, the possibility of inaccurate assessment is held in mind.

The analysis of the results collected were subject to inferential statistics and significance testing, findings that met the threshold for significance and those that did not, have been interpreted; however, employing a correlational research design prevents drawing directional conclusions. Knowledge gained from the significant findings will be treated as valid to the extent that all of the assumptions for the analysis are upheld (McGrath & Johnson, 2003). Within the positivist tradition, beliefs about an underlying knowledge have been made, because, statistical assumptions were upheld, and findings were significant; this knowledge can now be considered generalisable (Gliner & Morgan, 2000).

3.10. Implications for Clinical Practice

There are some tentative conclusions that can be drawn from the results of this study that have implications for clinical practice. Firstly, the finding that self-compassion only moderated PTSD symptoms at the level of low-self criticism is important. With the increase in compassion-based practices that are being used to directly target self-critical processes, this finding could mean that for those who are highly self-critical, increasing levels of self-compassion may not impact their distressing symptoms in the way that it is conceptualised to do

so. Whilst the idea that highly self-critical individuals may not have the capacity to make use of self-compassion, there is other research that suggests self-compassion for these individuals can be threatening. Indeed, Rockliff et al. (2008) found that highly self-critical individuals demonstrated a biological threat-like response when they were asked to focus on compassion-based imagery. Interestingly, these individuals were also found to score highest on measures of anxious attachment style. Indeed, as has been discussed previously, threatening early experiences are heavily implicated in the development of self-criticism and anxious attachment styles could certainly be said to develop from difficult early experiences with an individual's main caregivers (Bowlby, 1980). It is possible then that experiences of self-compassion stimulate the attachment system, which, rather than being experienced as soothing, activated feelings of sadness and grief (Longe et al., 2010), potentially from thwarted efforts to engage in meaningful attachments. Whilst this study was not inducing the experience of self-compassion, the finding that self-compassion was only effective at the level of low self-criticism suggests it may link into these other, non-soothing processes, and clinically, it would be important for clinicians to be aware of this, in order to prepare for the potential of eliciting distress rather than a self-soothing response.

Additionally, this study adds to the growing consensus that emotions other than those stated in the DSM-IV-TR (APA, 2000) including fear, helplessness and horror, are apparent for individuals who have experienced a trauma. Indeed, the finding that shame was highly relevant in this study is consistent with previous research (Andrews et al., 2000; Andrews, Brewin & Rose, 2000). This has implications for treatment because, traditionally, PTSD has been treated by focusing exclusively on reducing the primary emotion of fear associated with the trauma. Whilst the use of imaginal exposure has been found to be an effective treatment for PTSD (Foa & Meadows, 1997), other studies have found that only approximately 50% of participants who engage in exposure based interventions have clinically meaningful symptom reduction (Bradley, Greene, Russ, Dutra & Westen, 2005). This highlights the clinical importance of assessing an individual's primary emotional reactions before engaging in a particular form of treatment. Indeed, one would imagine

engaging in exposure based therapies when shame is the primary emotion would be detrimental. In support of this view, Lee, Scragg and Turner (2001) highlight that imaginal exposure, conducted without taking into account the role of shame, may serve to worsen an individual's post-trauma reactions. This current study suggests that clinicians may need to become more aware of the behaviours that shame gives rise to, such as lack of eye contact, slumped posture and memory difficulties, as these can lead to spirals of shame (Kaufman, 1996) which will interfere with the therapeutic goal of processing the trauma (Lee, Scragg & Turner, 2001).

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Appendices

Appendix 1

Journal of Traumatic Stress Guidelines

Author Guidelines

Instructions to Contributors

1. The *Journal of Traumatic Stress* accepts submission of manuscripts online at:

http://mc.manuscriptcentral.com/jots

Information about how to create an account or submit a manuscript may be found online in the "Get Help Now" menu. Personal assistance also is available by calling 434-817-2040, x167.

2. Three paper formats are accepted. All word counts should include references, tables, and figures. *Regular articles* (no longer than 6,000 words) are theoretical articles, full research studies, and reviews. Purely descriptive articles are rarely accepted. In special circumstances, the editors will consider longer manuscripts (up to 7,500 words)that describe complex studies. Authors are requested to seek special consideration prior to submitting manuscripts longer than 6,000 words. *Brief reports* (2,500 words) are for pilot studies or uncontrolled trials of an intervention, case studies that cover a new area, preliminary data on a new problem or population, condensed findings from a study that does not merit a full article, or methodologically oriented papers that replicate findings in new populations or report preliminary data on new instruments. *Commentaries* (1,000 words or less) cover responses to previously published articles or, occasionally, essays on a professional or scientific topic of general interest. Response commentaries, submitted no later than 8 weeks after the original article is published (12 weeks if outside the U.S.), must be content-directed and use tactful language. The original author is given the opportunity to respond to accepted commentaries.

3. The *Journal* follows the style recommendations of the 2001 *Publication Manual of the American Psychological Association* (APA; Fifth Edition), with exceptions indicated below. Contributors should refer to this publication when preparing a manuscript for submission. Manuscripts should use nonsexist language. Type double-spaced on one side of 8.5 X 11 inch or A4 white paper using 1-inch margins on all sides and a font no smaller than 12-point.

4. The *Journal* uses a policy of **unmasked review** . Author identities are known to reviewers; reviewer identities are not known to authors or other reviewers. During the submission process, authors may request that specific individuals not be selected as reviewers; the names of preferred reviewers also may be provided. Authors may request blind review by contacting jots@dartmouth.edu prior to submission in order to provide justification and obtain further instructions.

5. The title page should include the title of the article, author's name (no degrees), author's affiliation, acknowledgments, and suggested running head. The affiliation should comprise the department, institution (usually university or company), city and state (or nation) and should be typed as a footnote to the author's name. The suggested running head should be less than 80 characters (including spaces) and should comprise the article title or an abbreviated version thereof. Also include the *word count* , the complete mailing address, telephone and fax numbers, and e-mail address for the corresponding author during the review process, and, if different, a name and address to appear in the article footnotes for correspondence after publication.

6. An abstract is to be provided and must be included in the main manuscript file, no longer than 120 words.

7. Statement of ethical standards: All work submitted to the *Journal of Traumatic Stress* must conform to applicable governmental regulations and discipline-appropriate ethical standards. Responsibility for meeting these requirements rests with all authors. Human and animal research studies typically require approval by an institutional research committee that has been established to protect the welfare of human or animal subjects. Data collection as part of clinical services or for program evaluation purposes generally does not require approval by an institutional research committee. However, analysis and presentation of such data outside the program setting may qualify as research (i.e., an effort to produce generalizable knowledge) and require approval by an institutional committee. Those who submit manuscripts to the Journal of Traumatic Stress based on data from these sources are encouraged to consult with a representative of the applicable institutional committee to determine if approval is needed. Presentations that report on a particular person (e.g., a clinical case) also usually require written permission from that person to allow public disclosure for educational purposes, and involve alteration or withholding of information that might directly or indirectly reveal identity and breach confidentiality.

8. Reports of randomized clinical trials should include a flow diagram and a completed CONSORT checklist (available at http://consort-statement.org/Downloads/download.htm). The checklist should be designated as a "Supplementary file not for review" during the online submission process. As of 2007, the *Journal of Traumatic Stress* now follows CONSORT Guidelines for the reporting of randomized clinical trials. Please visit http://consort-statement.org for information about

the consort standards and to download necessary forms.

9. Through 2010, format references in APA style (Fifth Edition) and list them alphabetically at the end of the text. Refer to them in the text by name and year in parentheses. In the text, all authors' names must be given for the first citation (unless six or more authors), while the first author's name, followed by et al., should be used in subsequent citations.

Journal Article
Friedrich, W.N., Urquiza, A.J., & Beilke, R.L. (1986). Behavior problems in sexually abused young children. Journal of Pediatric Psychology, 11, 47-57.

Book
Kelly, J.A. (1983). Treating child-abusive families: Intervention based on skills-training principles. New York: Plenum Press.

Book Chapter
Feindler, E.L., & Fremouw, W.J. (1983). Stress inoculation training for adolescent anger problems. In D. Meichenbaum & M.W. Jaremko (Eds.), Stress reduction and prevention (pp. 451-485). New York: Plenum Press.

10. Tables and figures should be formatted in APA style (Fifth Edition). *Count each full-page table or figure as 200 words and each half-page table or figure as 100 words.* Tables should be numbered (with Arabic numerals) and referred to by number in the text. Each table should be typed on a separate page. Only black and white tables and figures will be accepted (no color). Figures should be in Word, TIFF, or EPS format.

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and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication.

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Appendix 2

Characteristics of Sample

Description of sample: N(%) or Means (standard deviations)

Variable		Sample (*N* =62)
Location	Lancashire	3 (4.8%)
	Newcastle	13 (21%)
	Nottingham	3 (4.8%)
	Nottingham Trauma	6 (9.7%)
	Cardiff	37 (59.7%)
Age (in years)	Mean (SD)	38.6 (11.05)
	Range	20-64
Gender	Female	32 (51.6%)
	Male	30 (48.4%)
Previous Therapy	Yes	31 (50%)
	No	28 (45.2%)
	Missing	3 (4.8%)
Ethnicity	White	58 (93.5%)
	Mixed Race	2 (3.2%)
	Black	2 (3.2%)
Religion identified	Missing	10 (16.1%)

	Yes	33 (53.2%)
	No	19 (30.6%)
Feel Supported by Family/Friends	Missing	3 (4.8%)
	Yes	45 (72.6%)
	No	14 (22.6%)
Previous Mental Health	Missing	16 (25.8%)
	Yes	25 (40.3%)
	No	21 (33.9%)
Involved in Legal Case	Missing	4 (6.5%)
	Yes	26 (41.9%)
	No	32 (51.6%)
How Many Traumas	Single Trauma	10 (16.1%)
	Multiple Trauma	52 (83.9%)
Type of Trauma	Interpersonal	13 (21%)
	Non-interpersonal	10 (16.1%)
	Both	39 (62.9%)
Direct combat	Yes	8 (12.9%)
	No	54 (87.1%)
Direct sexual assault	Yes	29 (46.8%)
	No	33 (53.2%)

Duration of Problems	1-3 Months	2 (3.2%)
	More than 3 Months	58 (93.5%)
Delayed/Not delayed	Less than 6 months	38 (61.3%)
	6 months or more	24 (38.7%)
Time Elapsed Since Traumatic Event	1-3 Months	3 (4.8%)
	3-6 Months	4 (6.5%)
	6 Months-3 Years	14 (22.6%)
	3-5 Years	9 (14.5%)
	5 Years +	32 (51.6%)
Injured Self	Yes	50 (80.6%)
Other Physically Injured	Yes	26 (41.9%)
Fear for own Life	Yes	54 (87.1%)
Fear for Others Life	Yes	32 (51.6%)
Feel Intense Fear	Yes	53 (85.5%)
Feel Helpless	Yes	58 (93.5%)
Feel Horror	Yes	56 (90.3%)

Appendix 3

Participants' Reported Traumas

Traumas Reported by Sample: N(%)

Trauma	Direct/Indirect	Sample (*N* = 62)
Natural Disaster	Happened to me	6 (9.7%)
	Witnessed it	3 (4.8%)
Fire/Explosion	Happened to me	12 (19.4%)
	Witnessed it	6 (9.7%)
Transportation Accident	Happened to me	33 (53.2%)
	Witnessed it	2 (3.2%)
Serious Accident	Happened to me	22 (35.5%)
	Witnessed it	4 (6.5%)
Toxic Substance	Happened to me	7 (11.3%)
	Learned About it	4 (6.5%)
Physical Assault	Happened to me	44 (71%)
	Witnessed it	1 (1.6%)
Assault with Weapon	Happened to me	30 (48.4%)
	Witnessed it	4 (6.5%)

Sexual Assault	Happened to me	25 (40.3%)
	Witnessed it	1 (1.6%)
Unwanted Sexual Experience	Happened to me	22 (35.5%)
War Exposure	Happened to me	8 (12.9%)
	Witnessed it	2 (3.2%)
Captivity	Happened to me	8 (12.9%)
	Witnessed it	2 (3.2%)
Life Threatening Illness	Happened to me	17 (27.4%)
	Witnessed it	5 (8.1%)
Human Suffering	Happened to me	6 (9.7%)
	Witnessed it	8 (12.9%)
Violent Death	Witnessed it	12 (19.4%)
Unexpected Death of Someone	Happened to me	3 (4.8%)
	Witnessed it	13 (21%)
Serious Injury/Harm to Other	Happened to me	4 (6.5%)
	Witnessed it	12 (19.4%)

Other Stressful Experience	Happened to me	24 (38.7%)

Appendix 4

Generic Invitation Letter

Identifier_____

Re: Research into factors associated with trauma

My name is '*Local Collaborator name'*. I am a '*Designation'* for *'specific trust'*. The service has recently become involved in a research project that aims to study posttraumatic stress in individuals who are identified as being part of the service but who are not currently receiving treatment yet. It is hoped that the results of the study may help to improve future trauma therapy.

I am writing to invite you to take part in this research project that involves the completion of a set of questionnaires that have been found to be related to posttraumatic stress.

The main researcher for this project is Angela Cooper and she is a trainee Clinical Psychologist at Nottingham University. She will be conducting this research as part of her Doctoral thesis, her contact details are below.

If you are interested and would like to participate in the study please read the information sheet provided. This details all the important information that you might wish to know about the study, what you need to do with your questionnaires once completed and what will happen with your results. Once you have read the information sheet you can decide if you would like to participate or not.

You do not have to be involved in this study if you do not wish to be, this will not affect any of your future treatment with the service.

Should you have any questions please feel free to contact me using the details below.

Thank you for taking the time to read this letter.

Yours sincerely,

Angela Cooper
Trainee Clinical Psychologist

Local Collaborator **Principal Investigator**

LC Address & contact details University of Nottingham,
International House,
Jubilee campus,
Wollaton Road,
NG8 1BB.

Appendix 5

Generic Information Sheet

The University of Nottingham

Participant Information Sheet

Study to assess if shame, self criticism, avoidance and self compassion are associated with and predictors of posttraumatic symptom severity

You are invited to take part in a research study. However, before you decide to take part you need to know why the research is being done and what it would involve for you. Please read the following information carefully and if you are unsure about anything in this information sheet please contact the 'Local Collaborator' whose contact details at the end of the sheet.

What is the purpose of the study?

The study is looking to see if there is a relationship between feelings of shame, being self critical, engaging in avoidance strategies and posttraumatic stress symptoms. We are also hoping to assess whether being compassionate towards ourselves can help protect us from developing more severe posttraumatic stress symptoms. We are hoping to build our understanding of posttraumatic stress symptoms so to improve how we treat people who suffer with these symptoms.

Why have I been invited?

You have been invited to take part in this study because you are currently waiting to receive treatment from this service. We are only including people who are on a waitlist. A total of 300 people will be asked to take part in this study. Taking part in this study will not change your position on the waitlist.

What will I have to do if I take part?

If you agree to take part in this study you will be asked to complete the seven questionnaires that are in the Stamped Addressed Envelope in your pack. These questionnaires should take no longer than 90 minutes to complete. One of the questionnaires is a demographic questionnaire that asks for information such as your age, gender, employment status etc. You do not have to give any personal information that you do not want to. **When you have completed the questionnaires put them in the Stamped Addressed Envelope provided.** They will be sent to Angela Cooper the Principal Investigator for the study.

Do I have to take part?

No. Taking part is completely voluntary. If you would prefer not to take part you do not have to give a reason. It will not affect your future treatment in any way. All we ask is that you post your blank questionnaires back using the stamped addressed envelope provided. If you do take part but later change your mind, you can withdraw your results by contacting the Local Collaborator using the

details at the end of this information sheet. You have until June 1st 2010 if you want to withdraw your results. If you feel you might want to withdraw your results, please retain this sheet as it has your unique code at the top of each page. You will need to inform the Local Collaborator of your code so they can have your results withdrawn - this is the only way we can identify the information you give us.

Are there any possible benefits?

Taking part in this study may not benefit you directly, however, the aim of the study is to gain more information about what factors are associated with trauma and your answers could help us to identify these factors which may improve therapy services in the future.

What are the possible risks of taking part?

There is the possibility that you may become upset by some of the questions as they will be asking you to think about your experience of trauma. If you do become upset and want to talk to someone, you can contact the Local Collaborator using the details at the bottom of this information sheet.

What if there is a problem?

If you have a concern about any aspect of this study, you should ask to speak to the Local Collaborator who will do their best to answer your questions [service specific contact number]. If you remain unhappy and wish to complain formally, you can do this by [Service specific NHS Complaints Procedure and/or PALS]. Details can be obtained from [Local NHS details]

How will my information be kept confidential?

Any information that you provide will remain strictly confidential. The study will not collect any personal identifiable information and you will only be identified through the unique identifier code at the top of each page. Your details will be kept in a locked filing cabinet at all times. Your information will be available to the team and to the Principal Investigator who is conducting the study.

What will happen to the results of the research study

The information we gather as part of this study will be written up as a report and form part of a doctoral education programme, the results might be published. We will make sure that you are not identifiable in any of these reports. If you wish to receive a summary of these results you can contact the Local Collaborator on the details given below and they will arrange for a summary to be sent to you, this will not be available until January 2011

Who is organising and funding the research?

This research is being organised and funded by the University of Nottingham

Who has reviewed the study?

All research in the NHS is looked at by an independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by Research Ethics Committee.

Further Information and Contact Details

If you have further questions about the study or wish to request a summary of the results please use the contact details below.

Local Collaborator: *Site Specific*
Address: *Site Specific*
Telephone no: *Site Specific*

Principal Investigator: Angela Cooper
Address: University of Nottingham,
Jubilee Campus,
Wollaton Road,
NG8 1BB
Email: lwxac5@nottingham.ac.uk

For complaints please put your concerns in writing to:

Service Specific Address

Appendix 6

Impact of Event Scale – Revised (IES-R)

Identifier_____

The Impact of Event Scale - Revised

Below is a list of difficulties people sometimes have after stressful life events. Please read each item and then indicate how distressing each difficulty has been for you DURING THE PAST SEVEN DAYS. With respect to ……..(Please state trauma), how much were you distressed or bothered by these difficulties?

	Not at all	A little bit	Moderately	Quite a bit	Extremely
Any reminder brought back feelings about it	0	1	2	3	4
I had trouble staying asleep	0	1	2	3	4
Other things kept making me think about it	0	1	2	3	4
I felt irritable and angry	0	1	2	3	4
I avoided letting myself get upset when I thought about it or was reminded of it	0	1	2	3	4
I thought about it when I didn't mean to	0	1	2	3	4
I felt as if it hadn't happened or wasn't real	0	1	2	3	4
I stayed away from reminders about it	0	1	2	3	4
Pictures about it popped into my mind	0	1	2	3	4
I was jumpy and easily startled	0	1	2	3	4
I tried not to think about it	0	1	2	3	4

Please turn over…

I was aware that I still had a lot of feelings about it, but I didn't deal with them	0	1	2	3	4
My feelings about it were kind of numb	0	1	2	3	4
I found myself acting or feeling as though I was back at that time	0	1	2	3	4
I had trouble falling asleep	0	1	2	3	4
I had waves of strong feelings about it	0	1	2	3	4
I tried to remove it from my memory	0	1	2	3	4
I had trouble concentrating	0	1	2	3	4
Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart	0	1	2	3	4
I had dreams about it	0	1	2	3	4
I felt watchful or on-guard	0	1	2	3	4
I tried not to talk about it	0	1	2	3	4

Appendix 7

Experience of Shame Scale (ESS)

Identifier_____

Experience of Shame Scale

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

	Not at all (1)	A Little (2)	Moderately (3)	Very Much (4)
1. Have you felt ashamed of any of your personal habits?				
2. Have you worried about what other people think of any of your personal habits?				
3. Have you tried to cover up or conceal any of your personal habits?				
4. Have you felt ashamed of your manner with others?				
5. Have you worried about what other people think of your manner with others?				
6. Have you avoided people because of your manner?				
7. Have you felt ashamed of the sort of person you are?				
8. Have you worried about what other people think of the sort of person you are?				
9. Have you tried to conceal from others the sort of person you are?				
10. Have you felt ashamed of your ability to do things?				
11. Have you worried about what other people think of your ability to do things?				

12. Have you avoided people because of your inability to do things?				
13. Do you feel ashamed when you do something wrong?				
14. Have you worried about what other people think of you when you do something wrong?				
15. Have you tried to cover up or conceal things you felt ashamed of having done?				
16. Have you felt ashamed when you said something stupid?				
17. Have you worried about what other people think of you when you said something stupid?				
18. Have you avoided contact with anyone who knew you said something stupid?				
19. Have you felt ashamed when you failed at something which was important to you?				
20. Have you worried about what other people think of you when you fail?				
21. Have you avoided people who have seen you fail?				
22. Have you felt ashamed of your body or any part of it?				
23. Have you worried about what other people think of your appearance?				

24. Have you avoided looking at yourself in the mirror?				
25. Have you wanted to hide or conceal your body or any part of it?				

Appendix 8

Self-Criticism and Self-Reassurance Scale (FSCRS)

Identifier_____

SELF CRITICISM

When things go wrong in our lives or don't work out as we hoped, and we feel we could have done better, we sometimes have *negative and self-critical thoughts and feelings*. These may take the form of feeling worthless, useless or inferior etc. However, people can also try to be supportive of themselves. Below are series of thoughts and feelings that people sometimes have. Read each statement carefully and circle the number that best describes how much each statement is true for you.

Please use the scale below.

Not at all like me	A little bit like me	Moderately like me	Quite a bit like me	Extremely like me
0	**1**	**2**	**3**	**4**

When things go wrong for me:

1.	I am easily disappointed with myself.	0	1	2	3	4
2.	There is a part of me that puts me down.	0	1	2	3	4
3.	I am able to remind myself of positive things about myself.	0	1	2	3	4
4.	I find it difficult to control my anger and frustration at myself.	0	1	2	3	4
5.	I find it easy to forgive myself.	0	1	2	3	4
6.	There is a part of me that feels I am not good enough.	0	1	2	3	4
7.	I feel beaten down by my own self-critical thoughts.	0	1	2	3	4
8.	I still like being me.	0	1	2	3	4
9.	I have become so angry with myself that I want to hurt or injure myself.	0	1	2	3	4
10.	I have a sense of disgust with myself.	0	1	2	3	4
11.	I can still feel lovable and acceptable.	0	1	2	3	4
12.	I stop caring about myself.	0	1	2	3	4
13.	I find it easy to like myself.	0	1	2	3	4
14.	I remember and dwell on my failings.	0	1	2	3	4
15.	I call myself names.	0	1	2	3	4
16.	I am gentle and supportive with myself.	0	1	2	3	4
17.	I can't accept failures and setbacks without feeling inadequate.	0	1	2	3	4
18.	I think I deserve my self-criticism.	0	1	2	3	4
19.	I am able to care and look after myself.	0	1	2	3	4
20.	There is a part of me that wants to get rid of the bits I don't like.	0	1	2	3	4
21.	I encourage myself for the future.	0	1	2	3	4
22.	I do not like being me.	0	1	2	3	4

Appendix 9

The Acceptance and Action Questionnaire-II (AAQ-II)

Identifier_____

AAQ-II

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

1	2	3	4	5	6	7
never true	**very seldom true**	**seldom true**	**sometimes true**	**frequently true**	**almost always true**	**always true**

1. Its OK if I remember something unpleasant.	1	2	3	4	5	6	7
2. My painful experiences and memories make it difficult for me to live a life that I would value.	1	2	3	4	5	6	7
3. I'm afraid of my feelings.	1	2	3	4	5	6	7
4. I worry about not being able to control my worries and feelings.	1	2	3	4	5	6	7
5. My painful memories prevent me from having a fulfilling life.	1	2	3	4	5	6	7
6. I am in control of my life.	1	2	3	4	5	6	7
7. Emotions cause problems in my life.	1	2	3	4	5	6	7
8. It seems like most people are handling their lives better than I am.	1	2	3	4	5	6	7
9. Worries get in the way of my success.	1	2	3	4	5	6	7
10. My thoughts and feelings do not get in the way of how I want to live my life.	1	2	3	4	5	6	7

Appendix 10

The Self-Compassion Scale (SCS)

Identifier_____

Self-Compassion Scale

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

Almost Never **Almost always**
1_____2_____3_____4_____5

_____ 1. I'm disapproving and judgmental about my own flaws and inadequacies.

_____ 2. When I'm feeling down I tend to obsess and fixate on everything that's wrong.

_____ 3. When things are going badly for me, I see the difficulties as part of life that everyone goes through.

_____ 4. When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world.

_____ 5. I try to be loving towards myself when I'm feeling emotional pain.

_____ 6. When I fail at something important to me I become consumed by feelings of inadequacy.

_____ 7. When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am.

_____ 8. When times are really difficult, I tend to be tough on myself.

_____ 9. When something upsets me I try to keep my emotions in balance.

_____ 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.

_____ 11. I'm intolerant and impatient towards those aspects of my personality I don't like.

_____ 12. When I'm going through a very hard time, I give myself the caring and tenderness I need.

_____ 13. When I'm feeling down, I tend to feel like most other people are probably happier than I am.

Please turn over…

_____ 14. When something painful happens I try to take a balanced view of the situation.

_____ 15. I try to see my failings as part of the human condition.

_____ 16. When I see aspects of myself that I don't like, I get down on myself.

_____ 17. When I fail at something important to me I try to keep things in perspective.

_____ 18. When I'm really struggling, I tend to feel like other people must be having an easier time of it.

_____ 19. I'm kind to myself when I'm experiencing suffering.

_____ 20. When something upsets me I get carried away with my feelings.

_____ 21. I can be a bit cold-hearted towards myself when I'm experiencing suffering.

_____ 22. When I'm feeling down I try to approach my feelings with curiosity and openness.

_____ 23. I'm tolerant of my own flaws and inadequacies.

_____ 24. When something painful happens I tend to blow the incident out of proportion.

_____ 25. When I fail at something that's important to me, I tend to feel alone in my failure.

_____ 26. I try to be understanding and patient towards those aspects of my personality I don't like.

Appendix 11

The Life Events Checklist (LEC)

Identifier_____

Life Events Checklist

Listed below are a number of difficult or stressful things that sometimes happen to people. For each event, tick one or more of the boxes to the right to indicate that: (a) It *happened to you* personally, (b) you *witnessed it* happen to someone else, (c) you *learned about it* happening to someone close to you, (d) you're *not sure* if it applies to you, or (e) it *doesn't apply* to you. Mark *only one* item for any single stressful event you have experienced. For events that might fit more than one item description, choose the one that fits best. Be sure to consider your *entire life* (growing up, as well as adulthood) as you go through the list of events.

Event	Happened to me	Witnessed it	Learned about it	Not sure	Doesn't Apply
1. Natural disaster (for example, flood, hurricane, tornado, earthquake)					
2. Fire or explosion					
3. Transportation accident (for example, car accident, boat accident, train wreck, plane crash)					
4. Serious accident at work, home, or during recreational activity					
5. Exposure to toxic substance (for example, dangerous chemicals, radiation)					
6. Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)					
7. Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)					
8. Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)					
9. Other unwanted or uncomfortable sexual experience					
10. Combat or exposure to a war-zone (in the military or as a civilian)					
11. Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)					
12. Life-threatening illness or injury				**Please turn over…**	

13. Severe human suffering					
14. Sudden, violent death (for example, homicide, suicide)	N/A				
15. Sudden, unexpected death of someone close to you	N/A				
16. Serious injury, harm, or death caused to someone else	*(Check here if you were directly involved)*				
17. Any other stressful event or experience					

Appendix 12

The Depression, Anxiety and Stress Scales 21

(DASS-21)

Identifier_____

DAS S 21

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (eg, in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

Appendix 13

Generic Demographic Questionnaire

Demographic Questionnaire

Please fill in as much information as you can. If you feel uncomfortable with any of the information you are being asked to give then please leave blank.

Age:

Religion (please specify) :

Gender: Male / Female *(please circle)*

Do you suffer from any disabilities (Please specify):

Have you previously been in therapy for help with your current problems?

YES / NO *(please circle)*

Ethnic origin: *(please circle)*

White - British / Irish / Other white

Mixed - White-Caribbean / White-Black African / White-Asian / Other mixed

Asian - Indian / Pakistani / Bangladeshi /Other

Black - Caribbean / African / Other

Other - Chinese / Other ethnic group

Educational Attainment: *(please circle)*

GCSE NVQ

A-level Degree

Other (please specify)……

Do you feel supported by your family & friends?

YES / NO *(please circle)*

Have you previously suffered any mental health difficulties (please specify):

Relationship Status: *(please circle)*

Married / Civil partnership Single

Widowed Divorced Separated

Are you involved in a current legal case relating to your traumatic experience?

YES / NO *(please circle)*

Accommodation status: *(please circle)*

Owner-occupier

Local authority tenant

Private landlord tenant

Housing association tenant

Shared ownership scheme

Supported accommodation

Living permanently with family / friends

Staying as a guest with family/friends

Mobile (ie, traveller) Living in a refuge

Other (please specify) ……

Employment Status: *(please circle)*

Employed Full Time Employed Part Time

Unemployed Looking after home/family

Permanently sick/disabled Student

Retired Other ……..

Preferred Language (please specify) :

Nationality (please specify) :

Household Income: *(please circle)*

0 - 10,000 11,000 - 20,000

21,000 - 30,000 31,000 - 40,000 41,000+

Identifier_____

Appendix 14

Criterion A and E of DSM-IV-TR

Criterion A and E for PTSD (adapted from DSM-IV-TR, APA, 2000)

Criterion A: Stressor

The person has been exposed to a traumatic event in which both of the following have been present:

(1) The person has experienced, witnessed, or been confronted with an event or events that involve actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others.

(2) The person's response involved intense fear, helplessness, or horror.

Criterion E: Duration

Duration of the disturbance (PTSD symptoms) is more than one month.

Appendix 15

Additional Trauma Questions

Additional Trauma Questions

Please circle the answers that apply to you.

1. How long have you been experiencing problems related to your trauma?

Less than 1 month **1 - 3 months** **More than 3 months**

2. How long after the traumatic event did these problems begin?

Less than 6 months **6 or more months**

3. How long ago did the traumatic event happen?

Less than 1 month **1 to 3 months** **3 to 6 months**

6 Months to 3 years **3 to 5 years** **More than 5 years**

4. During the trauma were you physically injured ? **Yes** **No**

5. During the trauma was someone else physically injured? **Yes** **No**

6. Did you fear for your life? **Yes** **No**

7. Did you fear for someone else's life? **Yes** **No**

8. Did you feel intense fear? **Yes** **No**

9. Did you feel helpless? **Yes** **No**

10. Did you feel horror? **Yes** **No**

Appendix 16

Ethics Favourable Opinion Letter

Nottingham Research Ethics Committee 1
1 Standard Court
Park Row
Nottingham
NG1 6GN

Telephone: 0115 8839368
Facsimile: 0115 9123300

02 September 2009

Miss Angela Cooper
12 Hough Close
Chesterfield
S40 2FJ

Dear Miss Cooper,

Full title of study: **Are shame, self criticism, experiential avoidance and self compassion associated with and predictors of PTSD symptom severity.**
REC reference number: **09/H0403/69**
Protocol number: **1.0**

Thank you for your email of 28 August 2009. I can confirm the REC has received the documents listed below as evidence of compliance with the approval conditions detailed in our letter dated 11 August 2009. Please note these documents are for information only and have not been reviewed by the committee.

Documents received

The documents received were as follows:

Document	*Version*	*Date*
Certificate of Insurance		28 July 2009
Letter of invitation to participant	2.0	13 July 2009
Participant Information Sheet	2.0	13 July 2009
Questionnaire: Demographic	2.0	13 July 2009

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

09/H0403/69	**Please quote this number on all correspondence**

Yours sincerely,

Miss Susie Cornick-Willis
Administrative Officer

E-mail: susie.cornick-willis@nottspct.nhs.uk

Copy to: *Professor Nadina Lincoln - University of Nottingham*
R&D office for NHS care organisation at lead site - NHCT
Mr P Cartledge - University of Nottingham