

Event Centrality as a Mediator of the Relationship between Shame, Guilt and PTSD Symptoms

Master thesis

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Abstract

The present study aimed to explore PTSD symptoms in the context of moral injury. More specifically, it examined whether shame and guilt are significantly associated with event centrality and PTSD symptoms and whether event centrality mediates the relationship between shame, guilt and PTSD symptoms. Event centrality is defined as the degree to which an event is seen as self-defining, how often one considers and thinks back to it, and also the degree to which it influences their interpretations of past and current experiences. The sample of this study consisted of 336 people with a mean age of 22.3 years. Participants responded to an online survey containing an emotional memory recall task, an event centrality questionnaire and a PTSD symptom questionnaire. The findings indicated a significant positive association between shame and guilt, and that event centrality fully mediated the association between shame and guilt and PTSD symptoms. Conclusions were: negative moral emotions may play a significant role as a mechanism behind PTSD symptoms following experience of PMIEs, although further research is encouraged to clarify this relationship. Subjective peritraumatic experiences should not be underestimated when attempting to predict PTSD symptoms following a PMIE.

Keywords: moral injury, PTSD, shame, guilt, event centrality

Event Centrality as a Mediator of the Relationship between Shame, Guilt and PTSD Symptoms

Some experiences can shake us so much that we may carry remnants of their effects with us for years. Sometimes, these effects may be expressed as symptoms of *post-traumatic stress disorder* (PTSD). PTSD is a complex disorder characterized by the experience of a traumatic event, specified as “exposure to actual or threatened death, serious injury, or sexual violence” (American Psychiatric Association [APA], 2013, p. 271). In PTSD, this event may lead to persistent negative psychological effects that significantly impair functioning. According to the DSM-5, these psychological effects may consist of intrusions such as recurring distressing memories, avoidance of trauma-related stimuli, trauma-related negative changes in mood and cognition and changes in arousal and reactivity, for example, hypervigilance (American Psychological Association, 2013). However, the exact criteria an event must match before it may be considered a traumatic experience capable of causing PTSD has been a historically controversial topic (Friedman, 2013; McNally, 2009). Recent literature has suggested that symptoms of PTSD can also be observed outside of the strict realm of experiences of threatened death, injury or sexual violence, as suggested by the DSM-5. This may pose a challenge for clinicians, as potential posttraumatic symptomatology present in sufferers of ‘milder’ experiences may be ultimately overlooked. Such exceptional cases may be observed in cases where *moral injury* has occurred.

According to the commonly used definition by Litz et al. (2009), moral injury is “the lasting psychological, biological, spiritual, behavioral, and social impact of perpetrating, failing to prevent, or bearing witness to acts that transgress deeply held moral beliefs and expectations” (pp. 697). The act of perpetrating, witnessing or failing to prevent moral transgressions is

considered a *potentially morally injurious event* (PMIE). Moral injury is not an officially recognized disorder, but the term denotes major distress and impairments in functioning that sometimes result from PMIEs (Griffin et al., 2019). However, while all PMIEs involve moral transgressions or moral stress, not all PMIEs lead to moral injury. The individual's appraisal of their experienced PMIE is key in whether or not moral injury develops (Barnes et al., 2019). In practice, there is significant overlap in the occurrence of PTSD and moral injury (Barnes et al., 2019), but a traumatic event is only a PMIE if there were moral injury components present.

As aforementioned, victims of moral injury may sometimes display PTSD symptomatology. A possible link between moral injury and PTSD is that moral guilt incurred after a PMIE may predispose one to suffer more PTSD symptoms by disrupting posttraumatic recovery or facilitating dysfunctional responses (Jinkerson, 2016). For example, an overwhelming sense of shame may make a person prone to engage in self-destructive, rather than constructive, behavior after experiencing trauma. Furthermore, both PTSD and moral injury are related to the avoidance of memories or physical reminders of the past negative event, maladaptive cognitions relating to the event, powerful negative moral emotions, self-blame and social isolation (Currier et al., 2017). Thus, experiencing non-violent and non-life-threatening PMIEs may sometimes lead to similar PTSD symptoms as those following a violent and life-threatening event that would fit "traditional" DSM-5 criteria for trauma. Research among veterans has indicated that moral injury is associated with an increased risk of mental disorders as well as thoughts and attempts of suicide (Wisco et al., 2017). Additionally, moral injury has been linked to various psychiatric symptoms within several populations (Griffin et al., 2019). Therefore, similarly to PTSD, moral injury is associated with a deleterious impact on well-being. What shared characteristics between the two conditions could explain these similarities?

Both PTSD and moral injury seem to be associated with powerful negative moral emotions — shame and guilt. These are considered *moral emotions*, as they motivate actions that maintain social order and respect rules (Haidt, 2003). Despite some overlap in their use in common language, the two constructs are unique. Shame may be defined as a negatively-experienced set of thoughts and feelings related to self-judgment, following the perception that one has failed to live up to an actual or theoretical ideal self. Research suggests that shame is associated with a stable global negative self-evaluation, such as perceiving that one is a wholly bad person, and may often lead to avoidance and withdrawal behavior. Meanwhile, guilt is a negative evaluation of a specific act one has done, and is considered to help facilitate relationship maintenance (Tracy & Robins, 2004).

Research has indicated that moral injury is associated with relatively severe levels of negative moral emotions of shame and guilt (Litz & Kerig, 2019). Additionally, in cases of PTSD, research has shown that experiencing shame from an event may significantly predict post-traumatic stress reactions after that event (Andrews et al., 2000; Beck et al., 2011; Feiring & Taska, 2005; Robinaugh & McNally, 2010). Furthermore, shame may also play a role in maintaining PTSD — therapeutic reductions of shame have been found to be temporally associated with PTSD symptom reduction (Øktedalen et al., 2014). Thus, there is seemingly a correlation between the experience of shame, guilt and negative outcomes in both PTSD and moral injury. However, research has not clearly outlined the nature of this link. A promising field of research linking both negative moral emotions and traumatic experiences is that of event centrality.

Certain deeply significant or traumatic events may become central to one's life. *Central events*, also known as self-defining events or memories, are past events that we often consider

and refer to, and can also influence our interpretations of past and current experiences (Boals & Schuettler, 2010). They may mark the start and end of significant life periods (Conway & Pleydell-Pearce, 2000). The memory of these events may affect one's actions and goals and may help one maintain their sense of identity and life narrative (McAdams, Josselson & Lieblich, 2006; Sutin & Robins, 2008). Ideally, perceiving some events as central allows their significance — what they meaningfully imply about the individual or the world — to be better grasped. This may perhaps foster a more coherent life narrative, and sense of self and guide more adaptive behavior. However, if one experiences a traumatic or potentially morally injurious event and they perceive it as self-defining, using it as a lens to view the world and guide future action, this may have undesirable consequences (Boals & Schuettler, 2010). When a highly negative event becomes central, the perception of future positive or neutral events may become disrupted and negatively influenced (Fitzgerald et al., 2016). Additionally, the increased accessibility of central shame-based memories may lead to an increased number and intensity of evocative intrusive memories, also known as 'flashbacks' (Berntsen & Rubin, 2006). Researchers have developed the Centrality of Event Scale (CES), which has indicated good reliability and validity as a measure of event centrality (Berntsen & Rubin, 2006; Gehrt et al., 2018). Indeed, research has shown that the perceived centrality of a traumatic event, as measured by the CES, may be one of the most powerful predictors of future PTSD symptoms (Boals & Ruggero, 2015). However, what determines whether an event becomes central?

The *autobiographical memory model* (AMM) raised by Rubin et al (2008) may offer answers in this regard. According to the AMM, increased accessibility of the memory of a traumatic event makes that event more central. This increased centrality may also be associated with an increase in PTSD symptoms. Research has indicated that one way memory accessibility

may be influenced is by the emotional intensity of the event (Fitzgerald & Broadbridge, 2013; Fitzgerald et al., 2016). Support for a potential association between event centrality and the intensity of emotions is also offered by the field of neuropsychology. According to the *modulation hypothesis*, emotional events are remembered better than neutral events due to an increase in the amygdala's upregulating influence on certain brain structures including the hippocampus (McGaugh et al., 1996). Functional Magnetic Resonance Imaging (fMRI) studies have yielded results that support this hypothesis (Dolcos et al., 2004). These findings suggest that PMIEs may by definition be relatively highly emotional due to the inherent presence of strong negative moral emotions. Therefore, there are indications that memory accessibility may influence perceived event centrality, making PMIEs, being relatively highly emotionally charged, potentially more central than other events. Event centrality may thus potentially mediate the relationship between shame and guilt and PTSD symptoms following a PMIE.

To conclude, it may be the case that the relationship between PTSD symptoms and shame and guilt experienced during a PMIE is explained by the increased event centrality inherent to more emotional events. In other words, event centrality may act as a mediator in the relationship between the shame and guilt experienced in PMIEs and PTSD symptoms. However, there is a dearth in the literature about such a mediating role of event centrality. Fitzgerald et al. (2016) found an association between the emotional intensity and significance of an event and PTSD symptoms that was mediated by event centrality. While these findings do suggest that event centrality may mediate PTSD symptoms' relationship with experienced emotions in general, the study placed no particular focus on the emotions of shame and guilt, leaving their role to be explored in future research. Due to their aforementioned established link to PTSD and moral injury (Andrews et al., 2000; Beck et al., 2011; Feiring & Taska, 2005; Litz & Kerig, 2019;

Robinaugh & McNally, 2010), focusing research on the negative moral emotions of shame and guilt, rather than emotions in general, may likely be particularly fruitful. Confirming the existence of a dose-response relationship between the intensity of negative moral emotions and event centrality may help in identifying the individuals with the highest risk of developing PTSD symptoms and aid in prevention or treatment.

The present study aims to contribute to the literature by gathering knowledge about the mechanisms behind the development of PTSD symptoms following exposure to a PMIE. This study places a focus on potentially morally injurious events as such experiences. The goal of this research is to explore the relationship between negative moral emotions experienced in a PMIE, event centrality and PTSD symptoms. To do this, the present analysis will aim to answer the following questions. Is the intensity of shame or guilt experienced in a PMIE associated with event centrality? Furthermore, is the intensity of shame and guilt experienced during a PMIE associated with PTSD symptoms, and does event centrality act as a mediator of that relationship? It is hypothesized that there would be a positive relationship between the degree of shame and guilt experienced during a PMIE and event centrality, due to increased memory accessibility for emotional events (Dolcos et al., 2004; Fitzgerald & Broadbridge, 2013; Fitzgerald et al., 2016, McGaugh et al., 1996). It is also hypothesized that the intensity of shame and guilt experienced during a PMIE will be associated with PTSD symptoms, in line with previous research (Andrews et al., 2000; Beck et al., 2011; Feiring & Taska, 2005; Robinaugh & McNally, 2010, Øktedalen et al., 2014). The last hypothesis is that event centrality will mediate the relationship between the intensity of shame and guilt experienced during a PMIE and PTSD symptoms, as event centrality has been linked with negative outcomes for PTSD and stronger negative emotions are likely

linked with increased event centrality (Dolcos et al., 2004; Fitzgerald & Broadbridge, 2013; Fitzgerald et al., 2016, McGaugh et al., 1996).

Method

Participants

For this study, a sample of 383 Utrecht University students was recruited for a survey, with an average age of 22.3 years. Only subjects that have experienced at least one morally injurious event in their lifetime were able to participate. There were no other selection criteria. After excluding the data of outliers and subjects who had incomplete responses, 336 subjects remained. Participants were provided the contact details of an experienced AQR Centrum '45 clinician they may contact in case of experiencing intense negative emotional reactions from completing the survey. The data of these subjects was used for the present analysis. Participants were informed about the survey procedure through an informed consent form, however, they were not made aware of the hypotheses. Subjects received a debriefing following completion. Additionally, subjects received course credits for participating.

Materials

As a measure of PTSD symptoms, the Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5) (Weathers et al., 2013) was used. This is a commonly used self-report measure of PTSD symptoms in line with the DSM-5 diagnostic criteria. The survey contains 20 items referring to PTSD-related problems and prompts the subject to score each item based on how often they have been bothered by that problem in the past month. Scores are on a 5-point scale, from 0 (*Not at all*) to 4 (*Extremely*). An example item is “Repeated, disturbing dreams of the

stressful experience?” The PCL-5 has displayed strong validity and reliability as a measure of PTSD symptoms (Blevins et al., 2015). The subjects’ total score is their mean score of all 20 items.

As a measure of event centrality, the short version of the Centrality of Event Scale (CES-R) (Berntsen & Rubin, 2006) was used. The survey contains 7 items that explore the centrality of an experienced event. Scores are on a 5-point scale, from 0 (*Strongly disagree*) to 4 (*Strongly agree*). An example item is “I feel that this event has become part of my identity”. The CES-R has displayed strong reliability as a measure of event centrality (Berntsen & Rubin, 2006). The subjects’ total score is their mean score of all 7 items.

As a measure of the degree of shame and guilt experienced during the PMIEs, a memory recall task was used. This is a survey that contains questions regarding the subject’s memory of a morally burdensome experience, including the degree of experienced emotions. Participants were asked to rate on a 7-point scale, from 0 (*Strongly disagree*) to 6 (*Strongly Agree*), the degree of shame and guilt they experienced during the event. Shame and guilt were measured by a single, respective item, for example “I felt shame during this event.”

Procedure

The study was approved by the ethics committee of Utrecht University (file number 22-0133). The design of the study was non-experimental. The online survey was advertised on the research platform of Utrecht University. Participants are presented with an information letter about the survey, after which they may sign up and proceed to the informed consent form and begin the survey. There were no time restrictions for completing the survey and participants were able to exit the survey at any point. Pausing was not possible. Participants were first asked to fill

out demographic questions, followed by a memory recall test, where they were asked to recall a morally injurious memory. Afterwards, participants completed the CES and PCL-5, as well as a memory emotionality rating — rating the degree of experienced emotions during the event memory, including the degree of experienced shame and guilt. Upon completion, participants received a debriefing of the study.

Data Preparation and Analysis

The dependent variable of this study, referring to PTSD symptoms, is quantitative and continuous and will be operationalized as the subjects' total score on the PCL-5. The first and second independent variables, referring to the rating of experienced shame and guilt during the PMIE, are also quantitative and continuous. These will be operationalized as the subject's score on the shame and guilt components of the memory recall task, respectively. The third independent variable refers to event centrality and will also be investigated as a mediator. This is also quantitative and continuous and will be operationalized as the subject's total score on the CES.

Firstly, to preliminarily view the relationship between the variables, a correlation was computed between shame ratings, guilt ratings, CES scores and PCL scores. The results indicated all variables are significantly correlated, as shown in Table 2. Afterwards, to explore if the association between variables is explained by a mediator, two regression analyses were carried out within IBM SPSS Statistics for Windows (version 26) through the use of the PROCESS macro, model 4. In both analyses, the subjects' total score on the PCL-5 was the dependent variable. In the first analysis, the independent variable was the subjects' shame rating.

In the second analysis, the independent variable was the subjects' guilt rating. In both analyses, the mediator variable was set as the subjects' total score on the CES.

Results

The dataset analyzed consisted of 336 responses ($N = 336$). Demographic information of participants may be found in Table 1. Information about the correlation between variables may be found in Table 2. Tests for homoscedasticity, multicollinearity and approximate normality were satisfactory. As shown in Table 3, the regression model of shame ratings as an independent variable and CES as an outcome variable was significant and explained roughly 8% of the variance in CES scores. The regression model including shame ratings as an independent variable, CES as a mediator and PCL as an outcome variable was also significant and explained roughly 26.5% of the variance in PCL scores. As shown in Table 4, CES scores had a significant effect on PCL scores and shame ratings had a significant effect on CES scores. There was no significant direct effect of shame ratings on PCL scores, however there was a significant indirect effect, mediated by CES scores. As shown in Table 5, the regression model of guilt ratings as an independent variable and CES as an outcome variable was significant and explained roughly 4% of the variance in CES scores. The regression model including guilt ratings as an independent variable, CES as a mediator and PCL as an outcome variable was significant and explained roughly 26.9% of the variance in PCL scores. As shown in Table 6, CES scores were again significantly associated with PCL scores and guilt ratings were significantly associated with CES scores. Additionally, there was no significant direct effect of guilt ratings on PCL scores, however there was a significant indirect effect, mediated by CES scores.

Discussion

The present study aimed to contribute to the literature by gathering knowledge about the mechanisms behind the development of PTSD symptoms following exposure to a potentially morally injurious event (PMIE). The study focused on exploring the relationship between shame and guilt experienced in a PMIE, event centrality and PTSD symptoms. The specific questions examined were whether the intensity of shame or guilt experienced in a PMIE is associated with event centrality, whether the intensity of experienced shame and guilt during a PMIE is associated with PTSD symptoms, and whether event centrality acts as a mediator in this relationship. The findings indicated that shame and guilt ratings were significantly positively associated with event centrality. Additionally, there was no significant direct effect of shame and guilt on PTSD symptoms, however, there was a significant indirect positive effect of shame and guilt on PTSD symptoms, mediated by event centrality. Thus, event centrality fully mediated the relationship between shame and guilt and PTSD symptoms. It is important to note that the present findings were correlational and thus non-experimental. Therefore, caution should be undertaken when making any interpretations about causality in the relationships of the factors.

The findings that event centrality was significantly positively associated with PTSD symptoms were in line with the present hypothesis and with past research (Boals & Ruggero, 2015). This indicates that PMIEs that are perceived as more central are more likely to be associated with PTSD symptoms following the event. A potential explanation for this relationship may be that the increased accessibility of central PMIEs might lead to an increased number and intensity of flashbacks, a common symptom of PTSD (Berntsen & Rubin, 2006). An alternative explanation is that experiencing a central event may affect one's life narrative, and

changes in life narratives have been found to also be associated with changes in PTSD symptoms (Bryant, 2011; Hembree & Foa, 2010).

The findings that shame and guilt were significantly positively associated with event centrality were also in line with the present hypothesis. A possible explanation for this is that events that induce higher levels of shame and guilt are more likely to be perceived as central. Possible mechanisms behind this may be that more emotional events may become central as a result of increased accessibility (Fitzgerald & Broadbridge, 2013; Fitzgerald et al., 2016; Rubin et al., 2008) or increased hippocampal activity during the encoding of the event in memory (McGaugh et al., 1996, Dolcos et al., 2004). A possible alternative explanation of the present findings is one of reverse directionality. Perhaps it is not that events containing more intense emotions become more central, but rather that perceiving an event as central might make it more likely for a person to accurately recall or perhaps even overestimate their experienced emotions at the time of the event. This might occur as a result of increased mental repetition or rehearsal of that event, for example. Lastly, as aforementioned, guilt and shame explained roughly 4% and 8% of the variance in CES scores respectively. This can be seen as a relatively small effect size, indicating that, while nonetheless significant, the intensity of shame and guilt are far from being the main predictors of event centrality.

The findings that event centrality mediated shame and guilt ratings on PCL scores were in line with the hypothesis of the study. As event centrality fully mediated the relationship in the present findings, a possible explanation is that, in practice, shame and guilt may only influence PTSD symptoms through their effect on event centrality. A possible alternative explanation, as the present study was non-experimental, is that event centrality does not mediate the relationship. For example, it may be that more challenging PMIEs — which are potentially inherently capable

of causing more PTSD symptoms — may also inherently lead to increased event centrality and negative moral emotions, without the presence of a causal relationship between the latter two factors.

The present study is the first to examine the relationship between shame and guilt, event centrality and PTSD symptoms following a PMIE. The results of the study, as well as studies such as that of Øktedalen et al. (2014) — which indicated that a reduction of shame was temporally associated with a reduction of PTSD symptoms — highlight the potential role of moral injury in the development of PTSD symptoms. These findings contribute to our knowledge of the mechanisms behind the development of PTSD symptoms following the experience of PMIEs and have implications for practical application. For example, the established link between shame, guilt and event centrality and PTSD supports the potential utility of targeting the emotions of shame and guilt in treating PTSD. Perhaps placing a significant focus on treating shame and guilt in psychotherapy may yield improved reductions in PTSD symptoms. Research has already led to the development of a novel, although promising treatment focusing on ‘moral trauma’ (De La Rie et al., 2021). Furthermore, the findings indicated that high levels of shame or guilt following a PMIE may, through their effect on event centrality, predict the development of PTSD symptoms in the future. Therefore, if a person experiences intense shame or guilt from an event, they might benefit significantly from measures aimed to prevent PTSD symptoms. Overall, publically spreading the information that events causing high levels of shame or guilt may lead to outcomes as severe as PTSD symptoms may be beneficial for the well-being of our society. This may lead to additional considerations or policy changes within concerned parties where shame or guilt or PMIEs in general tend to occur more frequently.

Limitations of the present study include that the participant sample were all students from the same Dutch university, as this was unfortunately the only sample population available that had filled out the relevant questionnaires. This may have negative consequences for the external validity of the findings, as there may be significant similarities within the sample group limiting the natural variance of PMIE experiences found in the general population. Another limitation is that there were no means to control for peritraumatic dissociation, a set of reactions that may occur at the time of trauma, such as derealization and emotional numbness (Thompson-Hollands et al., 2017). As dissociation is associated with both increased PTSD symptoms (Lensvelt-Mulders et al., 2008) and emotional numbness, its potential occurrence in participants may confound the present findings.

Future research in the field of negative moral emotions in the context of PTSD may benefit from controlling for peritraumatic dissociation, so that the individual contribution of shame and guilt to centrality or PTSD symptoms may be better isolated. Additionally, it may be useful to specifically investigate PTSD symptoms in samples of people who have experienced moral injury, however through experiences that specifically do not match DSM-5 criteria for trauma. This would help isolate and measure the individual impact of the experienced moral injury and would aid in the pursuit to attain a more nuanced understanding of what should constitute a traumatic experience capable of causing PTSD, a controversial ongoing discussion (Friedman, 2013; McNally, 2009). Broadening our understanding of this topic is important, as certain stressors that do not quite match DSM-5 criteria of a traumatic experience, but are nonetheless capable of causing psychological trauma, may be relatively overlooked. This may be harmful, as certain patients who have experienced “non-traditional” PTSD-symptom-inducing

experiences may not get to benefit from trauma-focused treatment that could only follow a PTSD diagnosis.

Our understanding of PTSD has evolved significantly over the last few years. However, we have still not attained a full understanding of the mechanisms behind the development of PTSD symptoms following a PMIE. The present study contributes to the literature by further consolidating the importance of event centrality for PTSD. Furthermore, the findings indicated that the experience of negative moral emotions may play a significant role in predicting PTSD symptoms, although further research is needed to clarify this relationship. Ultimately, the results highlight that, in predicting the development of PTSD symptoms, the importance of individual subjective experience — rather than the objective facts of a traumatic or morally injurious event — should not be dismissed or underestimated.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>
- Andrews, B., Brewin, C. R., Rose, S., & Kirk, M. (2000). Predicting PTSD symptoms in victims of violent crime: The role of shame, anger, and childhood abuse. *Journal of Abnormal Psychology, 109*(1), 69–73. <https://doi.org/10.1037/0021-843x.109.1.69>
- Barnes, H. A., Hurley, R. A., & Taber, K. H. (2019). Moral Injury and PTSD: Often Co-Occurring Yet Mechanistically Different. *The Journal of Neuropsychiatry and Clinical Neurosciences, 31*(2), A4-103. <https://doi.org/10.1176/appi.neuropsych.19020036>
- Beck, J. G., McNiff, J., Clapp, J. D., Olsen, S. A., Avery, M. L., & Hagedwood, J. H. (2011). Exploring Negative Emotion in Women Experiencing Intimate Partner Violence: Shame, Guilt, and PTSD. *Behavior Therapy, 42*(4), 740–750. <https://doi.org/10.1016/j.beth.2011.04.001>
- Berntsen, D., & Rubin, D. C. (2006). The Centrality of Event Scale: A Measure of Integrating a Trauma into One's Identity and its Relation to Post-Traumatic Stress Disorder

Symptoms. *Behaviour Research and Therapy*, 44(2), 219–231.

<https://doi.org/10.1016/j.brat.2005.01.009>

Blevins, C. A., Weathers, F. W., Davis, M. T., Witte, T. K., & Domino, J. L. (2015). The Posttraumatic Stress Disorder Checklist for *DSM-5* (PCL-5): Development and Initial Psychometric Evaluation. *Journal of Traumatic Stress*, 28(6), 489–498.

<https://doi.org/10.1002/jts.22059>

Boals, A., & Ruggero, C. (2015). Event centrality prospectively predicts PTSD symptoms.

Anxiety, Stress, & Coping, 29(5), 533–541.

<https://doi.org/10.1080/10615806.2015.1080822>

Boals, A., & Schuettler, D. (2010). A double-edged sword: Event centrality, PTSD and posttraumatic growth. *Applied Cognitive Psychology*, 25(5), 817–822.

<https://doi.org/10.1002/acp.1753>

Bryant, R. A. (2011). Psychological interventions for trauma exposure and PTSD. In D. J. Stein, M. J. Friedman, & C. Blanco (Eds.), *Post-traumatic stress disorder* (pp. 171–202). Wiley Blackwell. <https://doi.org/10.1002/9781119998471.ch5>

Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review*, 107(2), 261–288.

<https://doi.org/10.1037/0033-295x.107.2.261>

Currier, J. M., Farnsworth, J. K., Drescher, K. D., McDermott, R. C., Sims, B. M., & Albright, D. L. (2017). Development and evaluation of the Expressions of Moral Injury Scale—Military Version. *Clinical Psychology & Psychotherapy*, 25, 474–488.

<https://doi.org/10.1002/cpp.2170>

De La Rie, S. M., Van Sint Fiet, A., Bos, J. B. A., Mooren, N., Smid, G. E., & Gersons, B. P. R. (2021). Brief Eclectic Psychotherapy for Moral Trauma (BEP-MT): treatment protocol description and a case study. *European Journal of Psychotraumatology*, 12(1).

<https://doi.org/10.1080/20008198.2021.1929026>

Dolcos, F., LaBar, K. S., & Cabeza, R. (2004). Interaction between the Amygdala and the Medial Temporal Lobe Memory System Predicts Better Memory for Emotional Events. *Neuron*, 42(5), 855–863. [https://doi.org/10.1016/s0896-6273\(04\)00289-2](https://doi.org/10.1016/s0896-6273(04)00289-2)

Feiring, C., & Taska, L. S. (2005). The Persistence of Shame Following Sexual Abuse: A Longitudinal Look at Risk and Recovery. *Child Maltreatment*, 10(4), 337–349.

<https://doi.org/10.1177/1077559505276686>

Fitzgerald, J. M., & Broadbridge, C. L. (2013). Latent constructs of the Autobiographical Memory Questionnaire: A recollection-belief model of autobiographical experience.

Memory, 21(2), 230–248. <https://doi.org/10.1080/09658211.2012.725736>

Fitzgerald, J. M., Berntsen, D., & Broadbridge, C. L. (2016). The Influences of Event Centrality in Memory Models of PTSD. *Applied Cognitive Psychology*, 30(1), 10–21.

<https://doi.org/10.1002/acp.3160>

Friedman, M. J. (2013). Finalizing PTSD in *DSM-5* : Getting Here From There and Where to Go Next. *Journal of Traumatic Stress*, 26(5), 548–556. <https://doi.org/10.1002/jts.21840>

Gehrt, T. B., Berntsen, D., Hoyle, R. H., & Rubin, D. C. (2018). Psychological and clinical correlates of the Centrality of Event Scale: A systematic review. *Clinical Psychology Review*, 65, 57–80. <https://doi.org/10.1016/j.cpr.2018.07.006>

Griffin, B. J., Purcell, N., Burkman, K., Litz, B. T., Bryan, C. J., Schmitz, M., Villierme, C., Walsh, J., & Maguen, S. (2019). Moral Injury: An Integrative Review. *Journal of Traumatic Stress*, 32(3), 350–362. <https://doi.org/10.1002/jts.22362>

Haidt, J. (2003). The moral emotions. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 852–870). Oxford University Press.

<https://doi.org/10.1017/s0033291703231871>

Hembree, E. A. & Foa, E. B. (2010). Cognitive behavioral therapies for PTSD. In G. M. Rosen & C. B. Frueh (Eds.), *Clinician's Guide to Posttraumatic Stress Disorder* (pp. 177-203).

John Wiley & Sons. <https://doi.org/10.1002/9781118269961.ch8>

Lensvelt-Mulders, G. J. L. M., Van Der Hart, O., Van Ochten, J. M., Van Son, M. J. M., Steele, K., & Breeman, L. D. (2008). Relations among peritraumatic dissociation and posttraumatic stress: A meta-analysis. *Clinical Psychology Review, 28*(7), 1138–1151. <https://doi.org/10.1016/j.cpr.2008.03.006>

Øktedalen, T., Hoffart, A., & Langkaas, T. F. (2014). Trauma-related shame and guilt as time-varying predictors of posttraumatic stress disorder symptoms during imagery exposure and imagery rescripting—A randomized controlled trial. *Psychotherapy Research, 25*(5), 518–532. <https://doi.org/10.1080/10503307.2014.917217>

Thompson-Hollands, J., Jun, J. J., & Sloan, D. M. (2017). The Association Between Peritraumatic Dissociation and PTSD Symptoms: The Mediating Role of Negative Beliefs About the Self. *Journal of Traumatic Stress, 30*(2), 190–194. <https://doi.org/10.1002/jts.22179>

Tracy, J. L., & Robins, R. W. (2004). Putting the Self Into Self-Conscious Emotions: A Theoretical Model. *Psychological Inquiry, 15*(2), 103–125. https://doi.org/10.1207/s15327965pli1502_01

Litz, B. T., Stein, N., Delaney, E., Lebowitz, L., Nash, W. P., Silva, C., & Maguen, S. (2009). Moral injury and moral repair in war veterans: A preliminary model and intervention

strategy. *Clinical Psychology Review*, 29(8), 695–706.

<https://doi.org/10.1016/j.cpr.2009.07.003>

Litz, B. T., & Kerig, P. K. (2019). Introduction to the Special Issue on Moral Injury: Conceptual Challenges, Methodological Issues, and Clinical Applications. *Journal of Traumatic Stress*, 32(3), 341–349. <https://doi.org/10.1002/jts.22405>

McAdams, D. P., Josselson, R., & Lieblich A. (Eds.), (2006). *Identity and story: Creating self in narrative*. American Psychological Association eBooks. <https://doi.org/10.1037/11414-000>

McNally, R. J. (2009). Can we fix PTSD in DSM-V? *Depression and Anxiety*, 26(7), 597–600. <https://doi.org/10.1002/da.20586>

Rubin, D. C., Berntsen, D., & Bohni, M. K. (2008). A memory-based model of posttraumatic stress disorder: Evaluating basic assumptions underlying the PTSD diagnosis. *Psychological Review*, 115(4), 985–1011. <https://doi.org/10.1037/a0013397>

Robinaugh, D. J., & McNally, R. J. (2010). Autobiographical memory for shame or guilt provoking events: Association with psychological symptoms. *Behaviour Research and Therapy*, 48(7), 646–652. <https://doi.org/10.1016/j.brat.2010.03.017>

Sutin, A. R., & Robins, R. W. (2008). Going Forward by Drawing From the Past: Personal Strivings, Personally Meaningful Memories, and Personality Traits. *Journal of Personality*, 76(3), 631–664. <https://doi.org/10.1111/j.1467-6494.2008.00499.x>

Weathers, F.W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013). *The PTSD Checklist for DSM-5 (PCL-5)*. Retrieved from the National Center for PTSD website: <http://www.ptsd.va.gov>

Wisco, B. E., Marx, B. P., May, L. B. S. C., Martini, B., Krystal, J. H., Southwick, S. M., & Pietrzak, R. H. (2017). Moral injury in U.S. combat veterans: Results from the national health and resilience in veterans study. *Depression and Anxiety*, 34(4), 340–347. <https://doi.org/10.1002/da.22614>

Table 1*Demographic Characteristics of Participants*

Characteristic	<i>N</i>	%
Gender		
Male	90	26.8
Female	241	71.7
Other	5	1.5
Age		
18-20	73	21.7
21-25	242	72.1
26-30	17	5
31+	4	1.2
Nationality		
Dutch	332	98.8
Other	4	1.2
Total	336	100

Table 2*Correlations Between Variables*

		CES score	Shame rating	Guilt rating	PCL score
Total average score CES	Pearson Correlation	1	.288**	.198**	.513**
	Sig. (2-tailed)		.000	.000	.000
	N	336	336	336	336
Shame rating	Pearson Correlation	.288**	d1	.577**	.187**
	Sig. (2-tailed)	.000		.000	.001
	N	336	336	336	336
Guilt rating	Pearson Correlation	.198**	.577**	1	.175**
	Sig. (2-tailed)	.000	.000		.001
	N	336	336	336	336
PCL score	Pearson Correlation	.513**	.187**	.175**	1
	Sig. (2-tailed)	.000	.001	.001	
	N	336	336	336	336

Note: **. Correlation is significant at the 0.01 level (2-tailed).

Table 3*Guilt and Event Centrality Model Summary*

Outcome variable	<i>R</i>	<i>R</i> ²	<i>MSE</i>	<i>F</i>	<i>df1</i>	<i>df2</i>	<i>p</i>
CES	.1984	.0394	.968	13.6814	1.000	334.000	<.001
PCL	.5188	.2692	.4529	61.324	2.000	333.000	<.001

Table 4*Mediation Analysis Results*

	Paths	<i>b</i>	β	<i>SE</i>	<i>t</i>	<i>p</i>	<i>BootSE</i>	<i>Boot</i> <i>LLCI</i>	<i>Boot</i> <i>ULCI</i>
Path a	X -> M	.1065	.1984	.0288	3.6988	<.001			
Path b	M -> Y	.3902	.4983	.0374	10.426	<.001			
Path c	X -> Y	.0320	.0761	.0201	1.5922	.1123			
Indirect effect	X -> M -> Y	.0416					.0127	.0176	.0677
Stand. indirect effect	X -> M -> Y		.0989				.0292	.0425	.1569

Note: X represents Guilt ratings, M represents CES score, Y represents PCL score

Table 5*Shame and Event Centrality Model Summary*

Outcome variable	<i>R</i>	<i>R</i> ²	<i>MSE</i>	<i>F</i>	<i>df</i> ₁	<i>df</i> ₂	<i>p</i>
CES	.2879	.0829	.9241	30.1972	1.000	334.000	<.001
PCL	.5151	.2653	.4552	60.1296	2.000	333.000	<.001

Table 6*Mediation Analysis Results*

	Paths	<i>b</i>	β	<i>SE</i>	<i>t</i>	<i>p</i>	<i>BootSE</i>	<i>Boot</i> <i>LLCI</i>	<i>Boot</i> <i>ULCI</i>
Path a	X -> M	.1482	.2879	.0270	5.4952	<.001			
Path b	M -> Y	.3923	.501	.0384	10.2142	<.001			
Path c	X -> Y	.0174	.0432	.0198	.881	.3789			
Indirect effect	X -> M -> Y	.0581					.0124	.0348	.0837
Stand. indirect effect	X -> M -> Y		.1443				.0298	.0871	.2047

Note: X represents Shame ratings, M represents CES score, Y represents PCL score