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How Does the Centrality of a Traumatic Event Affect One's Emotion Dysregulation?

Jonathan Isaiah Santiago
University of Wisconsin-Milwaukee

HOW DOES THE CENTRALITY OF A TRAUMATIC EVENT AFFECT ONE'S EMOTION DYSREGULATION?

by

Jonathan Santiago

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ABSTRACT

HOW DOES THE CENTRALITY OF AN EVENT AFFECT ONE'S EMOTION DYSREGULATION?

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Jonathan Santiago

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Under the Supervision of Professor Christine Larson

Trauma is common and can result in significant longstanding distress. However, not everyone who goes through traumatic experiences develops stress-related forms of psychopathology. There are a lot of factors that can influence the development of psychopathology and understanding what factors following trauma lead to long-term distress would help identify potential targets for treatment. One of those factors is known as centrality of event which is a trauma focused appraisal of a traumatic event that can influence the amount of stress one experiences following a traumatic event. Centrality of event has been linked with PTSD symptoms, and PTSD has been linked with heightened emotion dysregulation which is another important factor as well and represents the difficulty that one has at regulating and managing their emotional reactions. However, it is not known how centrality of event measured soon after the experience of trauma is related to long-term emotion dysregulation, which may in turn increase risk for PTSD. In order to study this, we recruited 171 adult participants from a local Emergency Department and measured Centrality of Event 3 months post-trauma and emotion dysregulation 6- and 12-months post trauma. We found that greater centrality of event three months after trauma significantly predicted more emotion dysregulation at six- and twelve-months post-trauma, even after accounting for other risk factors such as age, gender, pain, and prior trauma.

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Trauma is extremely common; In fact, in a study done by Norris and colleagues in 1992, they found that about 69% of the individuals reported having a traumatic experience within their lifetime. More recently, Ogle et al. (2013) found that about 90% of individuals (older American men and women) reported having experienced a traumatic event in their life. These findings indicate that the great majority of people will experience at least one traumatic event in their life. However, many trauma survivors are resilient and don't show symptoms of psychological distress, but a substantial minority does develop PTSD (Kilpatrick et al., 2013). In fact, Kilpatrick and colleagues (2013) found that about 8-10% of individuals that experience a traumatic event will go on to develop PTSD. Therefore, it's important to identify significant factors that lead to these different trajectories of resilience and risk; especially poor emotion regulation given its connection with PTSD and other mental illnesses.

One possible factor that leads to different emotion regulation outcomes is how an individual interprets the traumatic event and its effects on them. For instance, a study of traumatic injury patients done by Brasel et al. (2010) found that while objective indices of injury severity were not related to the development of PTSD, the individual's perceived injury severity ratings strongly predicted greater symptom severity six months later. These findings show just how impactful our own perceptions and evaluations of events and situations can be on our health. The way an individual interprets these traumatic events, and their effects is known as their perceived centrality of event (Blix et al., 2013). Centrality refers to the idea that a particular event, particularly a traumatic event, can become central to a person and their identity, and is often seen by the individual as a reference point or turning point in their life

(Berntson and Rubin, 2006). A number of studies have shown that "a high degree of perceived centrality is associated with higher symptom levels of PTSD" (Blix et al., 2013; Brown et al., 2010; Robinaugh and McNally, 2011; Berntson and Rubin, 2006). The construct of centrality of event is theoretically similar to the appraisal theory of emotion, which states that how an individual interprets an event can cause an emotional response (Schmidt et al., 2010). With respect to trauma, perceived centrality represents an appraisal of the traumatic event than can influence likely distress following trauma. This thesis will look at the associations between centrality of event, in the context of appraisal theory, and emotion dysregulation in order to better understand how the centrality of an event can impact one's emotion dysregulation and their risk for psychopathology following trauma.

Centrality of Event

Centrality is the perception that one has regarding a particular event, especially a traumatic event, in relation to their life (Berntson & Rubin, 2006). Specifically, perceived centrality refers to the degree to which an individual sees an event as a turning point or reference point for their life. The degree of perceived centrality for individuals is determined through the Centrality of Event Scale (Berntson & Rubin, 2006). The Centrality of Events Scale is a measure of how central and important one personally views a traumatic event. Berntson & Rubin (2006) developed this questionnaire as they hypothesized that the extent to which a trauma becomes central to one's identity may impact emotional memories and other aspects of emotion dysregulation that may increase risk for PTSD. They suggest that traumatic memories are highly accessible and because of this an individual is likely to overestimate the frequency of such events as well as their likelihood of going through that trauma once more. As a result, this

can affect one's emotional state of being by creating unnecessary worry for certain places or people in order to avoid environmental stimuli that they appraise to resemble their trauma (Bernsten and Rubin, 2006). Traumatic memories are also relevant for increasing the perceived centrality of event by shaping one's identity. Bernsten and Rubin (2006) highlighted Fitzgerald's (1988) description of a life story; he defined it as a "set of stories that defines who we are in narrative rather than declarative terms". Those set of stories would most likely consist of salient memories that help to shape how we think which is important since salient memories have been described to form turning points or landmarks within the life story of an individual (Baerger & McAdams, 1999; Pillemer, 1998; 2003; Robinson, 1992; Robinson & Taylor, 1998; Shum, 1998). Therefore, if a traumatic memory is highly accessible and seen as a turning point for one's life, then that vivid memory will be recognized as a central component within the life story of the individual which would impact the way they think, feel, and behave. In addition, integration of the emotional memories can increase one's chances at developing PTSD symptoms (Blix et al., 2013). Therefore, traumatic events as well as how central those events become can impact your emotion regulation, the way you think, and your chances of developing PTSD.

Prior research has demonstrated that viewing a trauma as more central is linked with greater likelihood or severity of PTSD. This can be seen in a study done by Silva et al. in 2016 where they examined event centrality in trauma and PTSD. They found that those with PTSD reported higher centrality of event than those who did not have PTSD (Silva et al., 2016). They also found significant correlations between event centrality and posttraumatic cognitions, symptoms, anxiety, and depression (Silva et al., 2016). In a sample of veterans with PTSD Brown

et al. (2010) found that the correlation between PTSD symptom severity and centrality scores was significant even after controlling for other variables like depression. In addition, they also found a significant correlation for the veterans without PTSD which indicated that trauma centrality was positively correlated with PTSD symptom severity across the sample of veterans in the study (Brown et al., 2010). This result was evident for the veterans who had PTSD and even for those who did not have PTSD. One study that extends those findings was one done by Robinaugh and McNally in 2011 where they looked at women who reported a history of childhood sexual abuse. They also found a positive association between centrality and PTSD (Robinaugh and McNally, 2011). In addition, they also found significant results even after controlling for other variables involved in the study like depression severity, self-esteem, age, intelligence, and dissociation (Robinaugh and McNally, 2011). Thus, these findings underscore how identifying a trauma as central to one's life is associated with experiencing more severe post-trauma psychopathology.

Centrality of Event and Appraisal Theory

Centrality of event is conceptually strongly linked with appraisal theory of emotion, a well-developed and validated model of how emotions may be generated and how they may vary by individual (Roseman and Smith, 2001). The main tenet of appraisal theory is that an individual's evaluation or appraisal of an event can influence how they react to that event, particularly the type and intensity of emotion they experience (Schmidt et al., 2010). With respect to trauma, these appraisals lead to different degrees of perceived centrality since not everyone will view and react the same to a traumatic event. Therefore, appraisals are an extremely important factor that may influence centrality of event and in turn the amount of

stress that one can experience from certain stressful and or traumatic events. This was demonstrated experimentally by Vermeulen et al. in 2018, who attempted to decrease event centrality using cognitive bias modification of appraisals. They found that the participants within the group that went through cognitive bias modification of appraisal training (CBM-App) "reported reduced event centrality compared to those in a non-centrality control condition group" that engaged in other tasks like two writing assignments as well as an implicit association training task. (Vermeulen et al., 2018). In addition, they also stated that "studies suggest that CBM-App training can lower appraisals of event centrality of a distressing autobiographical memory" (Vermeulen et al., 2018). Thus, there is evidence that appraisals of trauma are causally linked to centrality of event.

Appraisal of events, and by extension centrality of event, is associated with emotion regulation and dysregulation. Research in appraisal theory by emotion scientists has repeatedly shown that appraisal is linked with emotion regulation. As summarized by Roseman and Smith, "differences in appraisals can lead to individual and temporal differences in emotional response" and that "emotions are elicited by evaluations of events and situations" (Roseman and Smith, 2001). A number of studies have demonstrated participants' reported appraisal of the importance of an emotion-eliciting event is positively related to emotion intensity and duration (Brans & Verduyn, 2014; Mechelen et al., 2013; Verduyn et al., 2009). Moreover, the duration and intensity of emotion was particularly intensified if the event was appraised as more disadvantageous and as negatively impacting ones' self-image (Brans & Verduyn, 2014). Consistent with these findings, they also found that negative emotions last longer when the event and its consequences are perceived to be incongruent with the individual's values, self-

ideal, and goals (Verduyn et al., 2009; Verduyn et al., 2013). While these studies did not examine emotion regulation per se, one possibility is that more negative appraisals of events resulted in more intense and longer lasting negative emotions due to difficulties with adaptive emotion regulation.

Evidence for this link can be found in a study by Schmidt and colleagues (2010). They found that specific appraisal profiles led to different emotions and ultimately were associated with the use of different strategies for regulating emotions. Firstly, if they were to appraise the event as being important and their ability to cope with it being low, then they would most likely experience anxiety/fear and the more they experienced this emotion as a result of their appraisal of the event, the more likely they were to be very focused on the event, use drugs, and not be able to distance themselves from the event as their emotion regulation strategy (Schmidt et al., 2010). Next, if they were to appraise the event as being important, their ability to cope with it being low, and the event being determined by outside/uncontrollable factors, then they would experience frustration/powerlessness. Furthermore, the more they experienced this emotion as a result of their appraisal of the event; the more likely they were to engage in suppression, distancing, and drugs as their emotion regulation strategy (Schmidt et al., 2010). Finally, if they were to appraise the event as being important, their ability to cope with it being high, and the event not being determined by outside/uncontrollable factors, then they would experience positive emotions and the more they experienced this emotion as a result of their appraisal of the event, the more likely they were to engage in reappraisal and problem-focused strategies to regulate their emotions (Schmidt et al., 2010). These findings

demonstrate just how impactful appraisals can be on one's emotion, as well as highlight how appraisals are an important factor in how one regulates their emotional reaction to an event.

Now that we understand the effects that appraisals can have on emotion and emotion regulation, this can give us insight on how centrality impacts emotion, specifically emotion dysregulation, following a trauma. The construct of centrality of event following trauma is very similar to that of appraisal theory more broadly, as it refers to how an individual evaluates the importance of the traumatic event. Research has been done on this association between centrality and emotion dysregulation before. For instance, a Kerig (2020) reviewed literature examining outcomes following childhood trauma and emphasized the developmental psychopathology concept of multifinality which indicates that not all those who experience a traumatic event will end with the same result. She highlighted that "trauma is in the eye of the beholder" (Kerig, 2020), and emphasized that appraisals are an important factor in determining PTSD outcomes following childhood trauma. Specifically, she stated that "whether individuals perceive events as disorganizing and overwhelming their ability to cope is what determines whether those experiences will result in psychopathology" (Kerig, 2020). This review helps to shed light on the concept of how centrality of events, similar to appraisals, can impact one's emotion regulation after trauma.

Emotion Dysregulation

Emotion dysregulation is a concept that revolves around the maladaptive ways of responding and managing one's emotions (Weiss et al., 2020). For instance, adaptive and more appropriate emotion regulation techniques to respond to and manage one's emotions in a

stressful moment could include breathing, ignoring the stimulus, distracting oneself, and conducting positive appraisals (McLaughlin et al., 2011). Therefore, emotion dysregulation is the difficulty that one can have at executing regulation techniques successfully resulting in more sustained and intense negative emotions. Numerous previous studies show that emotion dysregulation plays a significant role in the development of PTSD and other stress related forms of psychopathology. For instance, Tull et al. (2007) showed that PTSD symptom severity is associated with lack of emotional acceptance, difficulty engaging in goal-directed behavior when upset, lack of emotional clarity, and other aspects of emotion that are characteristic of emotion dysregulation. Similarly, Weiss et al. (2020) also found that PTSD symptoms were associated with difficulties in various facets of emotion dysregulation, such as nonacceptance, impulse control, and goal-directed behavior with the strongest associations coming from the nonacceptance and impulse control facets. Furthermore, Tull et al. (2007) found that individuals exhibiting PTSD symptoms that are indicative of a PTSD diagnosis reported having greater difficulties with emotion regulation than those reporting symptoms at a subthreshold level (Tull et al., 2007). Moreover, some research has demonstrated that emotion dysregulation prospectively predicts PTSD. We can see this within the study done by Pencea et al. (2020) where they found that emotion dysregulation assessed in the Emergency Department immediately after trauma was significantly associated with the probability of developing chronic PTSD symptoms.

Prior research has also linked emotion dysregulation to other constructs that are importantly connected to risk for PTSD. For instance, a study done by Powers et al. in 2014 examined whether emotion dysregulation mediated the relationship between peritraumatic

dissociation and PTSD. Peritraumatic dissociation is the tendency for one to dissociate during or soon after a traumatic event (Lensvelt-Mulders et al., 2008) which involves disruptions in memory, identity, and perception of self and environment. Peritraumatic dissociation is one of the most consistent predictors of developing PTSD after a trauma (Powers et al., 2014). PTSD has also been linked with trait negative affect, which is also associated with emotion regulation. Trait negative affect is the stable and pervasive propensity to experience aversive emotions which may include nervousness, anger, guilt, rejection, and sadness (Watson & Clark, 1984). Olatunji and Wolitzky-Taylor (2009) found that higher levels of negative affect intensity were associated with higher levels of PTSD symptoms, even after controlling for the effects of anxiety sensitivity (Olatunji and Wolitzky-Taylor, 2009). This can be seen in a study done by Weiss et al. in 2019 where they looked at emotion found that difficulties regulating positive emotions demonstrated a stronger association to PTSD symptom severity than difficulties regulating negative emotions (Weiss et al., 2019).

Thus, PTSD is strongly associated with emotion dysregulation. Research has also shown that appraisals play an important role in emotion dysregulation in PTSD. For example, a study done by Chukwuorji in 2017 looked at how event centrality and emotion regulation play a role in PTSD symptoms among internally displaced people in Nigeria. They found that cognitive reappraisal was a negative predictor of PTSD symptoms. This indicates that changing and or modifying the way you evaluate an experience decreases your risk of developing PTSD which shows the direct association that appraisals have with emotion regulation and how it can influence your risk for psychopathology. When one fails to reappraise their experience in a more positive light or if one fails to regulate their emotions effectively; this can lead to emotion

dysregulation which can increase your risk for forms of psychopathology like PTSD. Furthermore, this study also found that "event centrality positively predicted PTSD symptoms" (Chukwuorji et al., 2017). Moreover, these data suggest that centrality of event is associated with emotion dysregulation and PTSD cross culturally. The results of this study highlight the links between emotion dysregulation, appraisal, centrality of event and risk for PTSD.

Current Study

This thesis not only aims to better understand how stress can predict psychopathology by looking at this association between centrality and emotion dysregulation, but it also seeks to add to this conversation of research that looks at this specific relationship between the two concepts. I will examine how event centrality due to a traumatic event can affect one's subsequent emotional dysregulation. I hypothesize that a high degree of perceived centrality will result in higher scores for subsequent emotion dysregulation. Furthermore, I will use data from a longitudinal study of acute trauma survivors to examine whether centrality of event predicts subsequent emotion dysregulation.

Method

Participants

The participants were recruited from the Emergency Department at a local hospital and were eligible for the study because they recently experienced a trauma that resulted in injury. The total number of participants screened in the Emergency Department was 969. Overall, 215 individuals met that criteria and were eligible to participate in the study. Eligibility requirements were met if they spoke English, were aged between 18 and 60 years, could

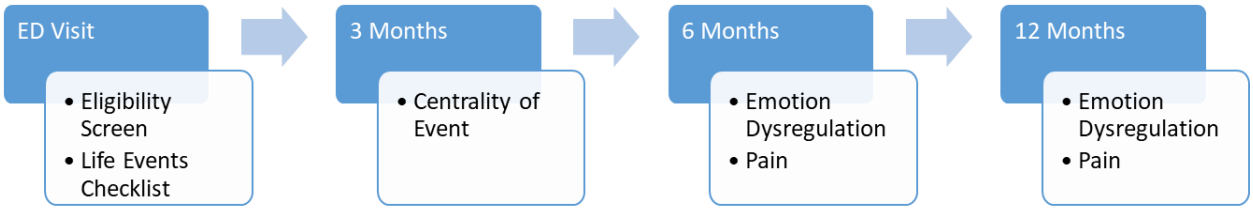
schedule a study visit within the 2 weeks of the index trauma, and had experienced a traumatic injury. Participants were excluded if they had a moderate to severe traumatic brain injury, suffered a spinal cord injury, or had a history of psychotic or manic symptoms. Participants were also excluded if they sustained traumatic injuries due to suicide attempts or self-harm. Of the 215 total participants who met the eligibility requirements, 44 were dropped from analyses because of missing data for the centrality of event or emotion dysregulation scales, resulting in a final sample of 171 participants. Within this final sample, 45.6% were male and 54.4% were female. 88.9% of the participants were not Hispanic or Latino and 9.9% of the participants were Hispanic or Latino. The makeup of the sample in terms of reported racial category was 57.9% Black/African American, 27.5% White, 1.2% Asian/Asian American, and 5.8% more than one race. The average age of the participants was 33.95 (SD=10.87). The mechanism of injury for the majority of the participants was a motor vehicle crash which includes both car and motorcycle accidents at 73.1%. Furthermore, 10.5% experienced an assault/altercation, 1.8% experienced domestic violence, 0.6% experienced a gun shot or stab wound, 3.5% were struck as pedestrians, 3.5% fell, and 6.4% experienced other circumstances. The sample largely was composed of individuals of lower socioeconomic status, as 56.8% of the sample reported having an annual household income of less than $40,000.

Procedure

Participants took part in a longitudinal study beginning 2-4 weeks following the traumatic event and continuing longitudinally for up to 24 months. The larger study included MRI scanning, blood draws, and self-report assessments. Here I will focus on several self-report measures. Centrality of event was measured at the three-month assessment and emotion

regulation at six- and twelve-months post-trauma. A schematic of the study timeline and measures can be seen in Figure 1.

Figure 1. Schematic of Study Time Points and Measures Collected



Self-report measures

Centrality of Event. Centrality of event was measured with the Centrality of Events Scale-Short (Berntson & Rubin, 2006). This measure consists of 7 items that ask about the participant's perception of their traumatic event. For example, the measure includes questions like "I feel that this event has become part of my identity" and "this event was a turning point in my life. The scale for each item ranges from 1 to 5, 1 being totally disagreeing with the statement and 5 being totally agreeing with the statement. The Centrality of Event Scale-Short had a Cronbach's alpha of 0.92 indicating that this short version of the CES scale also has high reliability (Berntson & Rubin, 2006). Participants were asked to answer these questions with respect to the acute traumatic experience for which they were enrolled in the study. They completed this measure at the 3-month timepoint.

Emotion Dysregulation scale. The Emotion Dysregulation Scale-Short was used to measure emotion dysregulation. This measure consists of 12 items that asks about aspects of the individuals' emotions and their responses to these emotions. For example, one item is, "It's

often hard for me to calm down when I'm upset" and another is "When I'm upset, I have trouble solving problems". Participants answer these statements on a scale from 1 to 7 with 1 being "not true" and 7 being "very true." The Emotion Dysregulation Scale-Short had an alpha of 0.94 demonstrating that this scale contains internal consistency (Raimondi et al., 2021). This scale was administered at 6 months post-trauma.

Life Events Checklist. Lifetime trauma history will be used as a covariate in the statistical analyses and was measured using the Life Events Checklist (Gray et al., 2004; Weathers, Blake, et al., 2013). This checklist assesses the occurrence of about 17 major life events that an individual may have experienced, witnessed, or learned about happening to someone that is close to them. The total score for the LEC was calculated as a weighted score with experienced events weighted by a factor of three, witnessed events weighted with a factor of two, and events learned about weighted by a factor of 1 (Weis et al., 2021). The Cronbach's alpha for experienced, witnessed, and learned about scores were 0.59, 0.73, and 0.80 respectively (Weis et al., 2021).

Pain Rating. Pain was also used as a covariate in the statistical analyses and was measured with the Visual Analogue Scale for Pain (VAS; Holdgate et al., 2003). Participants rated their pain on a numbered line with zero representing "no pain" and ten being "worst possible pain." Compared to other pain rating scales the VAS has been shown to have strong reliability and validity (Williamson & Hoggart, 2005).

Data Analysis Plan

I hypothesized that emotion dysregulation scores six months and twelve months post-trauma would be higher among participants reporting a high degree of perceived centrality of event for the trauma assessed three months after the trauma. To test this hypothesis, I will conduct a Pearson correlation between Centrality of Event Scale at three months with scores on the Emotion Dysregulation Scale-Short at six- and twelve-months post-trauma. We also conducted two hierarchical linear regressions with Centrality of Event scores as the independent variable and Emotion Dysregulation Scale scores the dependent outcome variable (entered in the second step of the regression), controlling for the following covariates entered in the first step of the regression model: age, gender, pain (at six and 12 months), lifetime trauma exposure measured with the Life Events Checklist. We did not control for injury severity as scores on the Injury Severity Scale were very low with little variability (Mean = 1.02, SD = 2.59, on a scale of 0-18) (Brasel et al., 2010).

Results

Table 1 presents descriptive statistics for all study variables.

Table 1

Descriptive statistics of study measures

Measure	M	SD	Range
Centrality of event scale short	17. 3099	8.81061	7-35
Emotion dysregulation scale short (6 months)	32. 8070	19.22906	12-84
Emotion dysregulation scale short (12 months)	32.7355	19.38546	12-83
Life events checklist	31.9825	16.81612	0-78
Pain scale rating (6 months)	2.92	3.014	0-10
Pain scale rating (12 months)	2.82	3.149	0-10

Note: N for 3- and 6-month measures = 171, for 12-month measures = 121

Correlations between measures and covariates

Correlations are presented in Table 2.

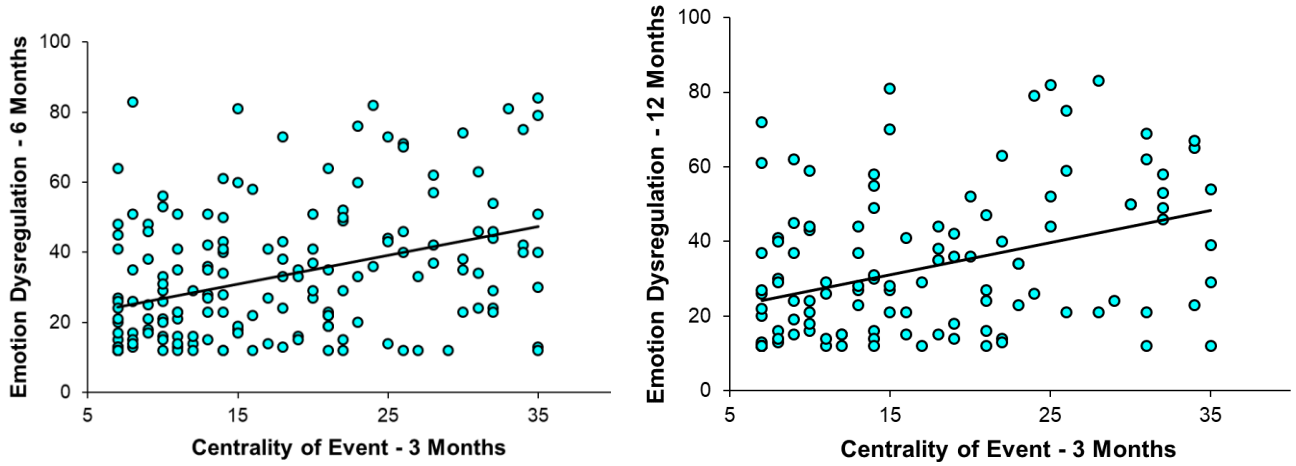
Centrality of event and emotion dysregulation correlations. To test my primary hypothesis, I calculated Pearson's correlations between centrality of event scores at 3 months post trauma with emotion dysregulation scores at 6- and 12-months post-trauma. As I hypothesized, centrality of event at the 3-month mark and emotion dysregulation at the 6-month mark were significantly positively correlated, r(171) = 0.379, p = <.001. Centrality of event at the 3-month mark and emotion dysregulation at the 12-month mark were also significantly correlated with a positive relationship, r(121) = 0.387, p = <.001. Emotion dysregulation at the 6 and 12-month marks were positively correlated with one another, r(121) = 0.615, p = <.001. Scatterplots depicting this relationship can be seen in Figure 2.

Table 2. Correlations Between Study Measures.

	1	2	3	4	5	6	7
1. Centrality of Event (3 Mo)	-	.38**	.39**	.05	.19*	.23*	-.12
2. Emotion Dysregulation (6 Mo)	-	-	.62**	.08	.25*	.10	-.22*
3. Emotion Dysregulation (12 Mo)	-	-	-	.09	.18	.27*	-.11
4. Life Events Checklist	-	-	-	-	.12	-.07	-.01
5. Self-reported pain (6 Mo)	-	-	-	-	-	.61**	.26**
6. Self-reported pain (12 Mo)	-	-	-	-	-	-	.14
7. Age	-	-	-	-	-	-	-

Note. Two-tailed Pearson correlations are reported; correlation with gender is a point-biserial correlation. *p < .01; **p < .001

Figure 2. Scatterplot of Correlations between Centrality of Event and Emotion Dysregulation Scores



Relationship of centrality of event and emotion dysregulation with covariates. See Table 2 for correlations between all variables. Weighted LEC scores were not significantly correlated with the Centrality of Event scale at the 3-month mark, r(171) = 0.046, p = 0.551, or with the Emotion Dysregulation scale at the 6-month, r(171) = 0.083, p = 0.281, or 12-month mark, r(121) = 0.091, p = 0.319.

The pain rating scale at the 6-month mark was correlated with the Centrality of Event scale at the 3-month mark, r(171) = 0.190, p = 0.013, and with the Emotion Dysregulation scale at the 6-month mark, r(171) = 0.248, p = 0.001. The pain rating scale at the 12-month mark was also correlated with scores on the Centrality of event scale at the 3-month mark, r(171) = 0.229, p = 0.011, and Emotion Dysregulation scale scores at the 12-month mark, r(121) = 0.273, p = 0.002.

Age and the Centrality of Event scale scores were not significantly correlated, r(171) = -0.119, p = 0.121. Age was negatively correlated with emotion dysregulation scores at the 6-

month mark, r(171) = -0.216, p = 0.004, but not the 12-month mark, r(121) = -0.107, p = 0.243.

Regression analyses examining relationship between centrality of event and emotion dysregulation scores, accounting for covariates. Two linear regressions were run, with Centrality of Event at 3 months predicting Emotion Dysregulation Scale scores at 6 months and 12 months post-trauma, respectively. In step on of each regression, the covariates (age, gender, Life Events Checklist, pain rating) was entered. Centrality of event scores were added to the model in step 2. Results show that while age and pain were significantly correlated with emotion dysregulation, Centrality of Event still accounted for a significant portion of variance in Emotion Dysregulation Scale scores. Statistics are presented in Tables 3 and 4.

Table 3. Centrality of Event as a Predictor of Emotion Dysregulation 6 Months Post-trauma, Controlling for Covariates.

Step	Predictor	*b*	*SE*	*β*	*p*	*95% C.I.*
1	Constant	41.41	5.45	-	<.001	30.67, 52.17
	Age	-.54	.13	-.30	<.001	-.79, -.28
	Gender	3.45	2.75	.09	.21	-1.99, 8.88
	Life Events Checklist	0.6	.08	.05	.53	-.11, .21
	Pain	2.06	.48	.32	<.001	-1.12, 2.99
2	Constant	29.39	5.96	-	<.001	17.62, 41.16
	Age	-.44	.13	-.25	<.001	-.69, -.19
	Gender	2.033	2.64	.05	.44	-3.20, 7.27
	Life Events Checklist	.05	.08	.04	.57	-.11, .20
	Pain	1.61	.47	.25	<.001	.69, 2.54
	Centrality of Event	.54	.16	.29	<.001	.33, .95

Note. Dependent variable: Emotion Dysregulation Scale scores at 6-month follow-up assessment; R^2 in step 1 = .16 (ΔF (4, 166) = 7.65, $p < .001$); ΔR^2 in step 2 = .08 (ΔF (1,164) = 17.04, $p < .001$).

Table 4. Centrality of Event as a Predictor of Emotion Dysregulation 12 Months Post-trauma, Controlling for Covariates.

Step	Predictor	*b*	*SE*	*β*	*p*	*95% C.I.*
1	Constant	29.2	7.07	-	<.001	15.2, 43.2
	Age	-.27	.16	-.15	.09	-.58, .04
	Gender	5.26	3.41	.14	.13	-1.5, 12.02
	Life Events Checklist	.15	.11	.12	.18	-.07, .37
	Pain	1.88	.54	.31	<.001	.81, 2.95
2	Constant	16.9	7.51	-	.03	2.02, 31.78
	Age	-.19	.15	-.10	.22	-.48, .11
	Gender	4.00	3.26	.10	.22	-2.46, 10.46
	Life Events Checklist	.14	.11	.11	.20	-.07, .35
	Pain	1.40	.53	.23	.01	.35, 2.46
	Centrality of Event	.70	.19	.32	<.001	.32, 1.08

Note. Dependent variable: Emotion Dysregulation Scale scores at 6-month follow-up assessment; R^2 in step 1 = .13 (ΔF (4, 116) = 4.14, p = .004); ΔR^2 in step 2 = .09 (ΔF (1,115) = 13.37, p < .001).

Discussion

The aim of the study was to see if higher degrees of perceived centrality predicted higher subsequent emotion dysregulation scores. Furthermore, through this study we would also be able to further understand how attributions about stress plays a role in predicting risk factors for psychopathology, particularly with respect to experiencing a trauma. We found that our hypothesis was supported. The centrality of event scale at the 3-month mark was significantly correlated with both the 6 and 12-month emotion dysregulation scales, such that

higher centrality of event was associated with greater subsequent emotion dysregulation. This indicates that how trauma survivors perceive the importance and impact of their trauma is related to difficulties regulating emotions months later.

My finding that centrality of event predicts subsequent emotion dysregulation is consistent with previous findings. Previous studies demonstrated that centrality of event was linked with increased likelihood for experiencing PTSD when examined in studies of chronic PTSD (Berntson & Rubin, 2006; Brown et al., 2010; Silva et al., 2016). Moreover, Stevens et al. (2021) found that centrality of event was associated with increased severity of PTSD symptoms in the first year following trauma. My findings underscore that higher centrality of event soon after trauma is linked with increased emotion dysregulation and stress up to nine months later. Given the link between emotion regulation and PTSD this suggests that emotion dysregulation may be a mechanism linking centrality of event and greater risk for more severe PTSD (Pencea et al., 2020; Tull et al., 2007; Weiss et al., 2020). Overall, my findings show that not only are centrality of event and emotion dysregulation correlated with one another, but also that centrality can have a ripple effect of trauma. Centrality of event may be a cognitive attribution that disrupts emotion regulation, which in turn can be a driving factor in developing PTSD (Chukwourji et al., 2017; Silva et al., 2016; Weiss et al., 2019).

The implications for these findings are that regulation of emotions is extremely important, especially in response to triggers or stressors that have connections to prior trauma. In addition, attributions about an event are an important construct that can play a major role in influencing the amount of stress symptoms one experiences, which may also affect risk for subsequent mental health conditions. This finding points to possibilities for clinical

interventions that address centrality of event, or how the traumatic event is interpreted. Since centrality of event represents attributions about the importance of the trauma, cognitive reframing techniques, such as those used in cognitive-behavioral therapy (CBT) may be helpful. Cognitive reframing may help trauma survivors alter how they perceive the impact of the trauma on their lives, such that it is viewed as less significant, and less of a turning point in their lives (Smith et al., 2007). In turn, this may lead to lower distress related to the trauma. Furthermore, acceptance and commitment therapy may also be beneficial in moving on from the trauma, even if it is perceived as a significant event. Acceptance and commitment therapy can help individuals to accept and move on from their traumatic moments of the past by engaging in tasks such as cognitive defusion, willingness, values, and commitment which may help with their emotion dysregulation since this can help to reduce the degree of their centrality (Hayes & Pierson, 2005). Cognitive defusion helps you to be aware of the actual process of your thinking so you are better able to reflect objectively, and problem solve effectively before taking any action and Willingness is the deliberate embrace of difficult thoughts, feelings, bodily sensations, and the like (Hayes & Pierson, 2005). Both cognitive defusion and willingness may serve to help an individual move forward from a trauma, even if it has a high degree of perceived centrality.

In addition, as our data indicates that greater centrality of event soon after trauma predicts greater symptom severity later, this suggests a potential opportunity for early intervention. Thus far, it has been difficult to identify acute post-trauma predictors of risk for chronic distress and posttraumatic stress symptoms following trauma. We found that centrality of event is a robust predictor of long-term emotion dysregulation. And since centrality of event

may be readily targeted by empirically supported therapies such as CBT and ACT, centrality may be a useful marker of those in need of early intervention. Beyond cognitive reframing and acceptance, other therapeutic approaches that have been shown to reduce distress may also be appropriate, such as stress-management training and mindfulness (Normann et al., 2016; Scarpa & Reyes, 2011).

The strengths of this study are that this was a prospective longitudinal study, which allows us to show that centrality of event predicted subsequent emotion dysregulation post trauma. The limitations of this study are that we did not have a measure of psychopathology outcomes, therefore, we cannot say that emotion dysregulation was directly linked to PTSD, depression, or other outcomes. Furthermore, this study was limited to individuals who experienced a traumatic injury and thus may not be generalizable to other kinds of trauma. Future research could explore cultural and societal factors that could amplify or minimize centrality of event, and thus act as maladaptive or protective factors for the development of emotion dysregulation and trauma-related psychopathology.

In conclusion, this work demonstrates that attributions about the importance or centrality of a trauma predict increased emotion dysregulation months later. This suggests a possible mechanism via which increased centrality of event is linked with greater likelihood of experiencing PTSD. Directly addressing the attributions that lead to higher centrality of event through psychological intervention such as CBT and acceptance and commitment therapy may lead to reframing of the importance of the event, and thus better emotion regulation and decreased risk for PTSD.

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