



Is a Criterion A trauma necessary to elicit posttraumatic stress symptoms?

Jacqueline Howard^{a,b}, Lorenzo Lorenzo-Luaces^a, Colton Lind^a, Prabhvir Lakhan^a, Lauren A. Rutter^{a,*}

^a Department of Psychological and Brain Sciences, Indiana University, Bloomington, IN, USA

^b TRAILS, a Project of Tides Center, Ann Arbor, MI, USA

ARTICLE INFO

Keywords:

PTSD
Criterion A
DSM-5-TR
College students
Life stress

ABSTRACT

Objective: The posttraumatic stress disorder (PTSD) diagnosis has undergone substantial revision since its first appearance in the *DSM-III*. Much of the controversy surrounds the definition of trauma, or Criterion A. Our study sought to evaluate the *DSM-5-TR*'s Criterion A and severity of PTSD symptoms in college students.

Method: Participants were 1500 college students who completed an online questionnaire about mental health symptoms. Responses to the Criterion A assessment were double coded by researchers to determine if the *DSM-5-TR*'s Criterion A was met. Interpersonal agreement between raters was high ($\kappa = .81$). Participants were compared across groups based on their PTSD Criterion A status: (1) DSM-Congruent, (2) DSM-Incongruent, (3) DSM-Ambiguous, and (4) Denied Trauma, using analysis of variance and multiple regression.

Results: Participants who reported a trauma that was coded as Criterion A by researchers had the highest levels of PTSD symptoms, even after controlling for perceived stress, depression, anxiety, and gender ($p < .001$). Comparing across groups, the DSM-Congruent Criterion A group had significantly higher overall PTSS than those in the DSM-Incongruent Criterion A group and also significantly higher hyperarousal symptoms. However, the DSM-Congruent Criterion A group did not differ from the DSM-Ambiguous trauma group on any PTSD symptom cluster.

Conclusions: The lack of significant differences in scores between individuals with DSM-Congruent, DSM-Incongruent, and DSM-Ambiguous traumas provides evidence about the subjective nature of trauma and how college-age individuals interpret their symptoms of PTSD. Clinical implications are discussed.

1. Introduction

The diagnostic criteria of posttraumatic stress disorder (PTSD) have been controversial since its official introduction in the 3rd edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*. Much of the controversy has surrounded the definition of Criterion A, which is the cardinal requirement for receiving a PTSD diagnosis and has changed with each version of the *DSM* (see [Pai et al., 2017](#)). A traumatic event, as defined by the *DSM-5-TR*, involves actual or threatened death, serious injury, or sexual violation that can occur in one or more of the following ways: 1. Directly experiencing the traumatic event(s), 2. Witnessing, in person, the event(s) as it occurred to others, 3. Learning that the traumatic event(s) occurred to a close family member or close friend, and/or 4. Experiencing repeated or extreme exposure to the aversive details or aftermath of traumatic event(s) (e.g., first responders, police officers). What follows a Criterion A trauma are other reactions to trauma(s)

including intrusion symptoms (Criterion B), avoidance symptoms (Criterion C), negative alternations in cognitions and mood (Criterion D), and hyperarousal/hyperreactivity (Criterion E) ([American Psychiatric Association, 2022](#)).

As the *DSM* has been revised, the criteria for a Criterion A trauma have become less subjective and more focused on specific facts of the event (e.g., potential for harm). While the strict definition of Criterion A trauma delineates specific types of events and methods of experiencing them as traumatic, an individual's perception of an event as traumatic also plays an important role in the impact and occurrence of PTSD ([Pai et al., 2017](#)). Many individuals would say that chronic emotional abuse in a relationship is stressful and traumatic, but this does not involve actual or threatened death, serious injury, or sexual violation. Therefore, even someone who had experienced severe verbal and emotional abuse would not be able to receive a PTSD diagnosis on these grounds alone. As a result, we may be missing out on cases of PTSD symptoms that have

* Corresponding author. Department of Psychological and Brain Sciences, Indiana University, 1101 E. 10th St, Bloomington, IN, 47405, USA.
E-mail address: larutter@iu.edu (L.A. Rutter).

been triggered by exposure(s) perceived as traumatic by the person concerned, but that do not fall within the strict *DSM-5-TR* definition. This has wide-reaching effects, particularly when it comes to individuals seeking treatment. Those who have clear symptoms of PTSD but who do not meet a Criterion A trauma may encounter barriers to care in the absence of a diagnosis.

Additionally, prior work has shown that posttraumatic stress symptoms (PTSS) like hyperarousal and hypervigilance can arise from “non-traumatic” events. Robinson and Larson (2010) conducted a study of PTSD symptomatology in undergraduates and showed that experiences outside of Criterion A can produce PTSS. Previous research has also shown that individuals who reported negative life events not consistent with Criterion A showed equal posttraumatic symptomatology to those who experienced a traumatic life event (Gold et al., 2005; Mol et al., 2005). Larsen and Berenbaum (2018) determined that while the *DSM-5* is an improvement upon the *DSM-IV*, it is not highly predictive of who develops PTSS. Of note, self-reported fear for one’s own life was removed from the *DSM-5* on the grounds that it was not discriminating and appealed to subjectivity.

In the current study we assessed Criterion A and PTSS alongside questionnaires about related mental health symptoms (depression, anxiety, stress), and asked the primary question: is a Criterion A trauma necessary to elicit posttraumatic stress symptoms? While this has been studied before, we use a large sample, researcher-coded Criterion A trauma (described below), and the updated *DSM-5-TR* PTSD criteria. We predicted that Criterion A would not be necessary to produce PTSS, consistent with prior research (Gold et al., 2005; Hyland et al., 2021; Larsen and Berenbaum, 2018; Larsen and Pacella, 2016; Mol et al., 2005; Pai et al., 2017). We had three primary hypotheses. First, that individuals who were coded as having experienced a Criterion A trauma (DSM-Congruent) would have higher PTSS scores than individuals who denied experiencing a trauma. Second, as an exploratory hypothesis, we examined whether reporting a trauma that was coded as not Criterion A (DSM-Incongruent) or Ambiguous (DSM-Ambiguous) impacted PTSS. We expected there would be differences between the groups. Last, as a confirmatory hypothesis based on existing literature, we expected that PTSS, as measured by the National Stressful Events Survey PTSD Short Scale (NSESSS, Kilpatrick et al., 2013), and comorbid symptoms of anxiety, depression, and stress would be positively correlated, regardless of Criterion A status. While the relationships between PTSS and other internalizing symptoms are well-established (e.g., Flory and Yehuda, 2015), the NSESSS is a more novel measure recommended by the APA for research, which motivated testing this hypothesis.

2. Method

2.1. Recruitment and procedure

The study was approved by the Indiana University IRB (2002549202). Participants were recruited through the online Psychology Experiment Sign-Up System. Participants could choose from a large list of experiments of which the current study (“Social Media and Mental Health”) was one. The study length was approximately 20 min. Our inclusion criteria consisted of passing reCAPTCHA, and answering “Yes” to the question, “I will provide my best answers.” All study measures were self-report instruments administered online. After completing the study online, participants were debriefed with a paragraph explaining the purpose of the study, as well as a list of scores for certain measures in the study. Data for the current study were collected between September 2020 and September 2021.

2.2. Participants

Participants were 1500 university students at a large Midwestern university who participated in exchange for course credit. The average age was 19.10 ($SD = 1.93$, range 17–63). The majority of the sample was

female ($n = 1104$, 73.60%; Male: $n = 348$, 23.20%; Other: $n = 10$, 0.70%; Prefer not to answer: $n = 37$, 2.50%). Most of the sample identified as White ($n = 1071$, 71.40%), followed by Asian ($n = 167$, 11.13%), Black or African American ($n = 114$, 7.60%), Hispanic or Latinx ($n = 79$, 5.27%), Other ($n = 28$, 1.87%), American Indian or Alaska Native ($n = 2$, 0.13%) Native Hawaiian or Pacific Islander ($n = 2$, 0.13%), and Prefer not to say ($n = 37$, 2.50%).

2.3. Measures

PTSD Checklist for DSM-5 with Criterion A (PCL-5). The PCL-5 (Weathers et al., 2013) is the gold-standard self-report measure for assessment of trauma and PTSD symptoms based on the *DSM-5* diagnostic criteria (Blevins et al., 2015; Bovin et al., 2016; Wortmann et al., 2016). We used the Criterion A section of the PCL-5 to screen for and assess exposure to Criterion A traumas. We assessed PTSS severity with the severity measure described below.

Severity Measure for Posttraumatic Stress Symptoms—Adult. This measure is also called the National Stressful Events Survey PTSD Short Scale (NSESSS; APA, 2013) and is designed to assess severity of PTSS. The scale consists of 9 items rated on a 5-point Likert scale from 0 “Never” to 4 “All of the time.” Participants are asked to rate frequency of PTSS over the past 7 days. Total scores range from 0 to 36 with higher scores indicating greater severity of PTSS. Average score (total raw score/number of items answered) can be used as a proxy for PTSS severity – 0 (none), 1 (mild), 2 (moderate), 3 (severe), and 4 (extreme). In our sample Cronbach’s alpha was .97, suggesting that this was an internally consistent measure. We used the NSESSS because it was designed to measure the severity of PTSS and is a part of the *DSM-5*’s “emerging measures” list. The “emerging measures” are recommended by the American Psychiatric Association for further research. We also chose the NSESSS to reduce participant burden because it examines PTSS consistent with the *DSM-5* conceptualization using nine items, as opposed to the full PCL-5, which is 20 items.

Patient Health Questionnaire (PHQ-9). The PHQ-9 is a widely used measure for detecting symptoms of depression based on the *DSM-5* criteria (Kroenke et al., 2001). Participants respond regarding the frequency with which they experience symptoms of depression on a 0–3 scale with 0 being “Not at all” and 3 being “Nearly every day.” The PHQ-9 has been established as a reliable and valid measure of depression severity (Kroenke et al., 2001). The internal consistency of this measure was excellent based on a Cronbach’s alpha of .90 in our sample.

Severity Measure for Generalized Anxiety Disorder—Adult. The severity measure for generalized anxiety disorder (GAD; APA, 2013) consists of 10 items rated on a 5-point Likert scale from 0 “Never” to 4 “All of the time.” Participants are asked to rate frequency of worry and associated symptoms over the past 7 days. Total scores range from 0 to 40 with higher scores indicating greater severity of GAD symptoms. Average score (total raw score/number of items answered) can be used as a proxy for GAD severity – 0 (none), 1 (mild), 2 (moderate), 3 (severe), and 4 (extreme). In our sample Cronbach’s alpha was .92, suggesting that this was an internally consistent measure.

Severity Measure for Perceived Stress in Different Life Areas. The MIDUS self-report scale of perceived stress (Brim et al., 2004; Kessler et al., 2004) was used to assess subjective stress that participants are experiencing “currently.” This scale consists of nine domains of life relevant to college students. Participants rated their stress on a 10-point Likert scale from 0 “No stress” to 10 “Very severe stress.” Domains of subjective life stress that were assessed in the current study were (1) financial situation, (2) school performance, (3) health, (4) love life, (5) relationships with close family and friends, (6) health of loved ones, (7) other problems experienced by loved ones, (8) problems getting along with people at work or in your community, and (9) life overall. We recoded the data in line with prior work (Karyotaki et al., 2020) on a 4-point scale where 0 = 0 (no stress), 1–3 = 1 (mild stress), 4–6 = 2 (moderate stress), 7–9 = 3 (severe stress), and 10 = 4 (very severe

stress). In our sample Cronbach's alpha was .72, suggesting an acceptable level of internal consistency.

2.4. Coding Criterion A trauma

All participants filled out the NSESSS, regardless of their responses to the Criterion A questions from the PCL-5. Participants reported their traumas in text box responses with no character limit, and these were coded by two independent raters (first and third authors) and an expert rater (senior author). Independent raters were provided with the DSM-5-TR criteria for Criterion A and engaged in discussions with senior authors regarding the ambiguity of Criterion A and potentially borderline cases including suicide, overdose, and vague descriptions of traumatic events before beginning coding. A coding criteria sheet was created to explicitly detail Criterion A inclusion. Traumatic events that were coded as positive for Criterion A ("DSM-Congruent") were taken directly from the DSM-5-TR. Traumatic events that were coded as negative for Criterion A ("DSM-Incongruent") were events such as, medical illnesses that were neither life-threatening, nor sudden, nor violent, emotional abuse, verbal abuse problems with school, or having certain mental health experiences (e.g., panic attack, suicidal ideation). Raters also coded when more information was required for traumas that could not be determined as Criterion A ("DSM-Ambiguous"). For example, participants in this category were those who discussed witnessing altercations as a child but did not detail if the altercations were verbal or physical. Inconsistent or responses requiring further clarification were also rated as "DSM-Ambiguous." An example of this is when a participant reported a "minor fender bender no damage to car" but rated that the event was life-threatening. Finally, participants who stated "No" they had not experienced a Criterion A trauma were categorized as "Denied Criterion A."

Thus, there were 4 categories of individuals: (1) Participants who experienced Criterion A trauma consistent with the DSM-5-TR, (2) Participants who reported experiencing a trauma that was not consistent with the DSM-5-TR Criterion A, (3) Participants who reported a potentially traumatic event that required more inquiry to determine, and (4) Participants who denied Criterion A and did not report any details on a traumatic event. All data were coded based on the criteria described above, and using the *irr* package in R Studio, interrater agreement between the two raters was determined to be excellent based on Cohen's Kappa for 2 raters of 0.81. Discrepant responses were coded by the senior author (L.A.R.).

2.5. Data analyses

Data were analyzed in R Studio Version 1.0.153. First, we examined differences in PTSS severity based on the binary Criterion A code using t-tests, expecting that individuals who had experienced a Criterion A trauma that was coded as such would have higher scores than individuals who did not report a Criterion A trauma, lumping together those who reported a trauma that was coded as not Criterion A, had an ambiguous trauma requiring more information, or denied trauma. Next, we conducted an analysis of variance (ANOVA) test to determine whether the PTSS severity scores were different between each of the four groups (i.e., "DSM-Congruent"; "DSM-Incongruent"; "DSM-Ambiguous"; "Denied Trauma"). We used post-hoc Tukey tests to determine if differences in means between groups were statistically significant. Last, we conducted a multiple regression with dummy coded variables for the Criterion A code described above, controlling for gender and levels of depression, anxiety, and stress symptoms. Our sample of 1500 patients provided adequate power ($\beta = 0.80$) to detect effects of small to medium size ($f^2 = .07$; $\alpha = 0.05$) using multiple regression.

3. Results

The average PTSS score in our sample was 8.34 ($SD = 8.18$, range

0–36), indicating mild PTSS. The average stress score based on the first 8 items (excluding "life overall") was 13.35 ($SD = 4.84$; range 0–32), indicating mild to moderate stress. The average PHQ-9 score was 7.26 ($SD = 5.91$; range 0–27), indicating mild depression. The average anxiety score in our sample was 8.69 ($SD = 7.76$, range 0–40), indicating mild anxiety. We conducted a series of Welch's t-tests to test if individuals with a DSM-Congruent Criterion A trauma had higher (i.e., more severe) PTSS scores than all other individuals in the sample. Indeed, this finding was supported ($t = -6.51$, $p < .001$, $d = 0.54$). Additionally, individuals with a DSM-Congruent Criterion A trauma had higher levels of reexperiencing symptoms ($t = -4.59$, $p < .001$, $d = 0.38$), avoidance symptoms ($t = -5.02$, $p < .001$, $d = 0.41$), cognitive symptoms ($t = -5.21$, $p < .001$, $d = 0.44$), and hyperarousal symptoms ($t = -6.68$, $p < .001$, $d = 0.57$) than all other individuals in the sample, confirming our first hypothesis. Individuals with a Criterion A trauma also had significantly higher levels of depression ($t = -6.02$, $p < .001$, $d = 0.48$), anxiety ($t = -6.22$, $p < .001$, $d = 0.50$), and stress ($t = -2.36$, $p = .02$, $d = 0.18$), compared to the rest of the sample. Fig. 1 displays the questionnaire scores among the four Criterion A groupings.

We further tested these results through an ANOVA where we compared mean scores on PTSS severity based on Criterion A groupings (i.e., "DSM-Congruent"; "DSM-Incongruent"; "DSM-Ambiguous"; "Denied Trauma"). Results of the ANOVA showed that there were significant differences in PTSS severity based on Criterion A group, ($F(3, 952) = 43.32$, $p < .001$). Table 1 displays group means and standard deviations in PTSS and related symptoms based on Criterion A groupings. Post-hoc Tukey tests revealed the nature of differences were in the expected directions such that individuals who reported a Criterion A trauma that was coded as such had the highest overall PTSS scores, and the highest scores for B, C, D, and E criteria. "DSM-Congruent" was the reference group, and statistically significant differences between the "DSM-Congruent" group and all other groups, as calculated by post-hoc Tukey tests, are noted in Table 1. This supported our second hypothesis. As shown in Table 1, individuals in the DSM-Congruent Criterion A group had significantly higher overall PTSS than those in the DSM-Incongruent Criterion A group and also significantly higher hyperarousal symptoms, but did not differ from the DSM-Ambiguous trauma group on any PTSS symptom cluster.

Confirming our third hypothesis, correlations between variables were each statistically significant in the expected directions (PTSS and depression $r = .59$, $p < .001$; PTSS and anxiety $r = 0.69$, $p < .001$; PTSD and stress $r = 0.37$, $p < .001$). Average PTSS scores were higher in females than males ($t = -6.91$, $p < .001$, $d = 0.50$). Rates of experiencing Criterion A traumas ("DSM-Congruent") were also higher in female participants than male participants ($t = -5.44$, $p < .001$, $d = 0.17$) in our sample. We also tested if having a Criterion A trauma was associated with higher PTSS severity scores controlling for depression, anxiety, and stress symptoms and gender as covariates using multiple regression with dummy coding for Criterion A groupings (the reference group was "DSM-Congruent"). Higher PTSS scores were associated with experiencing Criterion A trauma, controlling for gender, depression, anxiety, and stress symptoms, but gender and subjective stress symptoms were no longer significant predictors of PTSS, (model $R^2 = 0.52$, $F(5, 937) = 201.90$, $p < .001$).

4. Discussion

The current study sought to contribute to our understanding of Criterion A and PTSS by examining if a Criterion A trauma is necessary to produce PTSS, and whether if an individual identifies as having experienced a trauma plays a role in PTSS severity. Individuals who self-reported an event that was coded as a Criterion A trauma by researchers ("DSM-Congruent") reported the highest levels of PTSS, even after controlling for perceived stress, depression, anxiety, and gender. PTSS were significantly higher in female participants, and females reported higher rates of Criterion A traumas compared to male

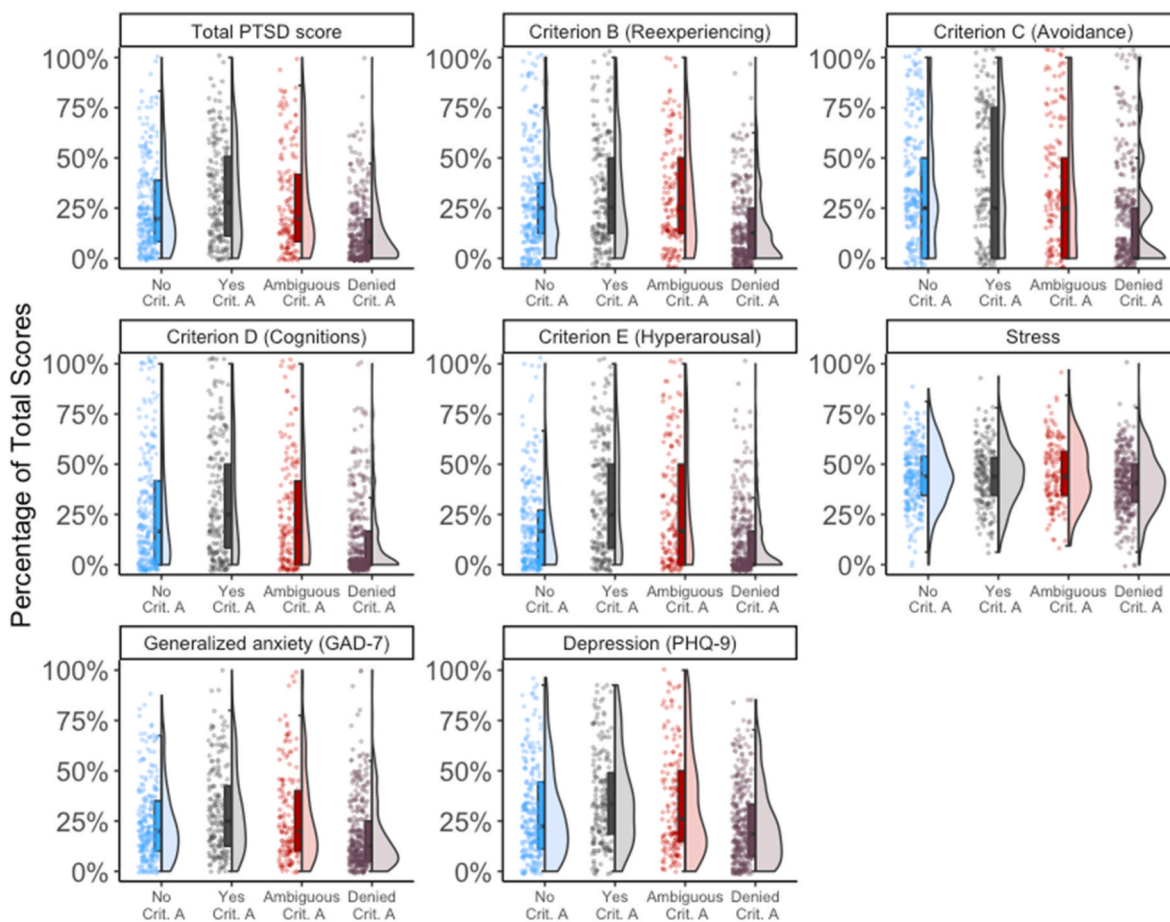


Fig. 1. Differences in self-reported PTSS, stress, anxiety, and depression among 1500 young adults. Note. Percentage of total possible scores are displayed on the y-axis.

Table 1

Group means and standard deviations in PTSS, overall and by symptom type, for 1500 young adults.

Group	Total PTSS score (SD)	Intrusion (SD)	Avoidance/Numbing (SD)	Negative cognitions (SD)	Hyperarousal (SD)
DSM-Congruent Criterion A n = 197	11.90 (8.81)	2.53 (2.11)	1.66 (1.36)	3.83 (3.58)	3.87 (3.38)
DSM-Incongruent Criterion A n = 255	9.21(8.03), p = .001	2.30 (2.09), p = .55	1.45 (1.26), p = .26	3.14 (3.39), p = .08	2.32 (2.63) p < .001
Ambiguous Criterion A, n = 162	10.39 (9.17), p = .26	2.43 (2.09), p = .96	1.41 (1.35), p = .20	3.14 (3.31), p = .15	3.41 (3.52), p = .41
Denied Criterion A, n = 886	4.83 (5.81) p < .001	1.10 (1.44) p < .001	.78 (1.06) p < .001	1.51 (2.28) p < .001	1.43 (2.08) p < .001
Model fit	F(3, 952) = 43.32, p < .001				

Note. Scores are presented as means by subgroups, SD = standard deviation. Overall, group membership predicts differences in PTSS. p values in Table 1 represent the result of post-hoc Tukey tests with individuals in the DSM-Congruent as the reference group.

participants in our sample. There were significant differences in scores across PTSD criteria between individuals who had a positively researcher-coded Criterion A trauma (“DSM-Congruent”) and those who denied trauma. There were no significant differences in total scores or Criterion B, C, D, and E scores between individuals who experienced trauma that researchers coded as Ambiguous or requiring more information (“DSM-Ambiguous”). Individuals who self-reported trauma that did not meet DSM Criterion A (“DSM-Incongruent”) had significantly lower overall PTSS and significantly lower hyperarousal scores than “DSM-Congruent” individuals, but did not differ on reexperiencing, avoidance, or cognitive symptoms.

Consistent with the literature, we found that individuals did not necessarily need to have experienced a Criterion A trauma to have PTSS. Indeed, there were mild levels of PTSS even in individuals who denied experiencing traumas (see Table 1). There is now ample evidence that you do not need to have a Criterion A trauma to have PTSS (Gold et al.,

2005; Robinson and Larson, 2010), but it is interesting that in our study we found that people with Criterion A traumas had the highest level of symptoms. This could be due to the method by which we grouped participants – instead of analyzing stress, Criterion A, or both, we grouped individuals by whether they had a Criterion A trauma, did not have Criterion A trauma, or might have, and controlled for stress and comorbid symptoms. This methodological difference could explain why our results support that Criterion A experiences do produce the highest level of PTSS overall.

These findings should be considered alongside a few limitations. First, while we were able to collect self-report data of participant experiences and symptoms, we did not have a clinical assessment to follow up on Criterion A inquiry, or to explain other aspects of PTSS that are commonly confused such as the difference between internal and external reminders of trauma, or the differences between flashbacks and memories. It is also possible that when participants were reporting on

the PCL-5/NSESSS, they may have been grouping symptoms related to multiple traumas or stressors (that may or may not have been Criterion A) and reporting on them collectively, instead of the “worst” event. Furthermore, we did not administer a measure such as the Life Events Checklist (Weathers et al., 2013), which would have allowed us to more finely detail the potential categories of trauma in an empirical or scientific way. As a result, we were unable to study how this breakdown related to specific types of traumatic events like sexual assault, robbery, or physical assault, for example. Additionally, our sample was college-aged and it is not clear if our results would apply to other populations including military groups or first-responders, for example. Finally, it is worth noting that it can be stigmatizing to share traumatic experiences online, so participants may have been concerned about confidentiality with an online questionnaire where they did not want to provide a lot of details about their trauma into a text box.

Despite these limitations, the study has notable strengths. Importantly, our study was conducted with a large sample in a population where experiencing emotional distress is common. Depression and anxiety are common symptoms in college students and commonly co-occur with PTSS (Spinhoven et al., 2014). Second, participant responses to the Criterion A questions were coded to determine whether they qualified as Criterion A traumas, to ensure accuracy of the analytic groups. Furthermore, this study builds upon prior work by continuing to evaluate the PTSD criteria based on the DSM-5-TR, which is important to do with every new addition of the DSM.

5. Conclusion and implications

Our results show that individuals with DSM-Congruent Criterion A trauma had higher average PTSS scores than all other individuals in our sample. However, when we examined symptoms more closely, individuals in the DSM-Congruent Criterion A group had significantly higher overall PTSS and significantly higher hyperarousal symptoms than those in the DSM-Incongruent Criterion A group, but did not differ from the DSM-Ambiguous trauma group on any PTSD symptom cluster. While it is important to evaluate all groups, it is especially important to recognize that there is a group of people who are reporting intensely stressful experiences that may not meet criteria for a diagnosis (potentially limiting their options for treatment), who look clinically very similar to people who would meet criteria for a PTSD diagnosis. In general, the lack of differences in scores between individuals with DSM-Congruent, DSM-Incongruent, and DSM-Ambiguous trauma provides additional evidence about the subjective nature of trauma and how non-treatment seeking college age students experience symptoms of PTSD. Our results do not necessarily support the removal of Criterion A.

Appendix

Severity of Posttraumatic Stress Symptoms—Adult*

*National Stressful Events Survey PTSD Short Scale (NSESSS).

Instead, they suggest that Criterion A continues to be complicated. This underscores the importance of assessment. If individuals do not meet criteria for a DSM-5-TR diagnosis, yet have high levels of symptoms, they could still benefit from a targeted treatment for trauma. For PTSS, trauma-focused treatments are recommended, particularly prolonged exposure (PE; Foa et al., 2019) and cognitive processing therapy (CPT) (Resick et al., 2016). CPT for example, addresses themes (e.g., power, self-esteem) and symptoms (e.g., guilt, shame), which could be beneficial for individuals regardless of Criterion A trauma.

Future directions include adding a more detailed assessment of Criterion A to online surveys, which could be as simple as adding the Life Events Checklist to clarify the types of traumatic experiences being assessed. Given that this was an online study, it is also recommended to investigate the relationship between trauma and other related symptoms that can be readily assessed online, including social media use (Abdalla et al., 2021). Although PTSD is a diagnosis of psychosocial adversity, social support is one of the most robust predictors of PTSD, and that the relationship between social support and PTSD severity is complex (Zalta et al., 2021). Thus, investigating the social support of individuals with ranging severities of symptoms and of Criterion A experiences is recommended. Future work may do this through use of social media and text-based analyses.

CRedit authorship contribution statement

Jacqueline Howard: Conceptualization, Data curation, Project administration, Writing – original draft, Writing – review & editing. **Lorenzo Lorenzo-Luaces:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. **Colton Lind:** Conceptualization, Writing – original draft, Writing – review & editing. **Prabhvir Lakhan:** Writing – original draft, Writing – review & editing. **Lauren A. Rutter:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing.

Declaration of competing interest

None.

Acknowledgments

Thank you to the IU SONA systems research administrators and participants for their contributions to this study.

Instructions: People sometimes have problems after extremely stressful events or experiences. How much have you been bothered during the PAST SEVEN (7) DAYS by each of the following problems that occurred or became worse after an extremely stressful event/experience? Please respond to each item by marking (✓ or x) one box per row.

						Clinician Use	
		Not at all	A little bit	Moderately	Quite a bit	Extremely	Item score
1.	Having “flashbacks,” that is, you suddenly acted or felt as if a stressful experience from the past was happening all over again (for example, you reexperienced parts of a stressful experience by seeing, hearing, smelling, or physically feeling parts of the experience)?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	
2.	Feeling very emotionally upset when something reminded you of a stressful experience?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	
3.	Trying to avoid thoughts, feelings, or physical sensations that reminded you of a stressful experience?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	
4.	Thinking that a stressful event happened because you or someone else (who didn’t directly harm you) did something wrong or didn’t do everything possible to prevent it, or because of something about you?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	
5.	Having a very negative emotional state (for example, you were experiencing lots of fear, anger, guilt, shame, or horror) after a stressful experience?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	
6.	Losing interest in activities you used to enjoy before having a stressful experience?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	
7.	Being “super alert,” on guard, or constantly on the lookout for danger?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	
8.	Feeling jumpy or easily startled when you hear an unexpected noise?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	
9.	Being extremely irritable or angry to the point where you yelled at other people, got into fights, or destroyed things?	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	
Total/Partial Raw Score:							
Prorated Total Raw Score: (if 1-2 items left unanswered)							
Average Total Score:							

Kilpatrick DG, Resnick HS, Friedman, MJ. Copyright © 2013 American Psychiatric Association. All rights reserved. This measure can be reproduced without permission by researchers and by clinicians for use with their patients.

References

Abdalla, S.M., Cohen, G.H., Tamrakar, S., Koya, S.F., Galea, S., 2021. Media exposure and the risk of post-traumatic stress disorder following a mass traumatic event: an in-silico experiment. *Front. Psychiatr.* 12 <https://doi.org/10.3389/fpsy.2021.674263>.
 American Psychiatric Association, 2022. *Diagnostic and Statistical Manual of Mental Disorders*, fifth ed. <https://doi.org/10.1176/appi.books.9780890425787> text rev.
 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. *J. Trauma Stress* 28 (6). <https://doi.org/10.1002/jts.22059>.
 Bovin, M.J., Marx, B.P., Weathers, F.W., Gallagher, M.W., Rodriguez, P., Schnurr, P.P., Keane, T.M., 2016. Psychometric properties of the PTSD checklist for diagnostic and statistical manual of mental disorders-fifth edition (PCL-5) in veterans. *Psychol. Assess.* 28 (11) <https://doi.org/10.1037/pas0000254>.
 Brim, O.G., Ryff, C.D., Kessler, R.C., 2004. The MIDUS national survey: an overview. In: *How Healthy Are We?: A National Study of Well-Being at Midlife*.
 Foa, E., Hembree, E.A., Rothbaum, B.O., Rauch, S., 2019. Prolonged exposure therapy for PTSD. In: *Prolonged Exposure Therapy for PTSD*. <https://doi.org/10.1093/med-psych/9780190926939.001.0001>.
 Flory, J.D., Yehuda, R., 2015. Comorbidity between post-traumatic stress disorder and major depressive disorder: alternative explanations and treatment considerations.

Dialogues Clin. Neurosci. 17 (2), 141–150. <https://doi.org/10.31887/DCNS.2015.17.2/jflory>.
 Gold, S.D., Marx, B.P., Soler-Baillo, J.M., Sloan, D.M., 2005. Is life stress more traumatic than traumatic stress? *J. Anxiety Disord.* 19 (6), 687–698. <https://doi.org/10.1016/j.janxdis.2004.06.002>.
 Hyland, P., Karatzias, T., Shevlin, M., McElroy, E., Ben-Ezra, M., Cloitre, M., Brewin, C.R., 2021. Does requiring trauma exposure affect rates of ICD-11 PTSD and complex PTSD? Implications for DSM-5. *Psychol. Trauma: Theor. Res. Pract. Pol.* 13 (2) <https://doi.org/10.1037/tra0000908>.
 Karyotaki, E., Cuijpers, P., Albor, Y., Alonso, J., Auerbach, R.P., Bantjes, J., Bruffaerts, R., Ebert, D.D., Hasking, P., Kiekens, G., Lee, S., McLafferty, M., Mak, A., Mortier, P., Sampson, N.A., Stein, D.J., Vilagut, G., Kessler, R.C., 2020. Sources of stress and their Associations with mental disorders among college students: results of the world health organization world mental health surveys international college student initiative. *Front. Psychol.* 11 (July), 1–11. <https://doi.org/10.3389/fpsyg.2020.01759>.
 Kessler, R.C., Mickelson, K.D., Walters, E.E., Zhao, S., Hamilton, L., 2004. Age and depression in the MIDUS survey. In *How healthy are we? A National Study of Well-Being at Midlife*. The University of Chicago Press, pp. 227–251.
 Kilpatrick, D., Resnick, H., Friedman, M., 2013. National Stressful Events Survey PTSD Short Scale (NSESS-PTSD). American Psychiatric Association. https://www.psychiatry.org/File%20Library/Psychiatrists/Practice/DSM/APA_DSM5_Severity-of-Posttraumatic-Stress-Symptoms-Adult.pdf.

- Kroenke, K., Spitzer, R.L., Williams, J.B.W., 2001. The PHQ-9: validity of a brief depression severity measure. *J. Gen. Intern. Med.* 16 (9) <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>.
- Larsen, S.E., Berenbaum, H., 2018. Did the DSM-5 improve the traumatic stressor criterion?: association of DSM-IV and DSM-5 criterion A with posttraumatic stress disorder symptoms. *Psychopathology* 50 (6). <https://doi.org/10.1159/000481950>.
- Larsen, S.E., Pacella, M.L., 2016. Comparing the effect of DSM-congruent traumas vs. DSM-incongruent stressors on PTSD symptoms: a meta-analytic review. *J. Anxiety Disord.* 38, 37–46. <https://doi.org/10.1016/j.janxdis.2016.01.001>. Elsevier Ltd.
- Mol, S.S.L., Arntz, A., Metsemakers, J.F.M., Dinant, G.J., Vilters-Van Montfort, P.A.P., Knotterus, J.A., 2005. Symptoms of post-traumatic stress disorder after non-traumatic events: evidence from an open population study. *Br. J. Psychiatry* 186 (JUNE), 494–499. <https://doi.org/10.1192/bjp.186.6.494>.
- Pai, A., Suris, A.M., North, C.S., 2017. Posttraumatic stress disorder in the dsm-5: controversy, change, and conceptual considerations. *Behav. Sci.* 7 (1) <https://doi.org/10.3390/bs7010007>.
- Resick, P., Monson, C., Chard, K., 2016. *Cognitive Processing Theory for PTSD: A Comprehensive Manual*. Guilford Publications.
- Robinson, J.S., Larson, C., 2010. Are traumatic events necessary to elicit symptoms of posttraumatic stress? *Psychol. Trauma: Theor., Res., Pract., Pol.* 2 (2) <https://doi.org/10.1037/a0018954>.
- Spinhoven, P., Penninx, B.W., van Hemert, A.M., de Rooij, M., Elzinga, B.M., 2014. Comorbidity of PTSD in anxiety and depressive disorders: prevalence and shared risk factors. *Child Abuse Negl.* 38 (8) <https://doi.org/10.1016/j.chiabu.2014.01.017>.
- Weathers, F.W., Blake, D.D., Schnurr, P.P., Kaloupek, D.G., Marx, B.P., Keane, T.M., 2013. *The life events checklist for DSM-5 (LEC-5)*. National Center for PTSD 5 (October).
- Wortmann, J.H., Jordan, A.H., Weathers, F.W., Resick, P.A., Dondanville, K.A., Hall-Clark, B., Foa, E.B., Young-McCaughan, S., Yarvis, J.S., Hembree, E.A., Mintz, J., Peterson, A.L., Litz, B.T., 2016. Psychometric analysis of the PTSD checklist-5 (PCL-5) among treatment-seeking military service members. *Psychol. Assess.* 28 (11) <https://doi.org/10.1037/pas0000260>.
- Zalta, A.K., Tirone, V., Orłowska, D., Blais, R.K., Lofgreen, A., Klassen, B., Held, P., Stevens, N.R., Adkins, E., Dent, A.L., 2021. Examining moderators of the relationship between social support and self-reported PTSD symptoms: a meta-analysis. *Psychol. Bull.* 147 (1) <https://doi.org/10.1037/bul0000316>.