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The Utility of the A1 and A2 Criteria in the Diagnosis of PTSD

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Abstract

In the field of posttraumatic stress disorder (PTSD), the revisions to the DSM-IV definition of a potentially traumatic event are contentious. Proponents praise the subjective emphasis, while others contend that the changes to the criterion broadened the conceptualization of PTSD. This study examined the predictive utility of Criterion A events, examining the stressor (A1) and subjective emotional response (A2) components of the definition of a traumatic event. Rates of Criterion A events and PTSD were calculated for three diverse samples, and predictive power, sensitivity, specificity, and ROC curves were computed to determine the predictive utility of Criterion A requirements for PTSD symptom, duration, and functional impairment diagnostic criteria. Across all samples the current Criterion A requirements did not predict much better than chance. Specifically, A2 reports added little to the predictive ability of an A1 stressor, though the absence of A2 predicted the absence of PTSD-related symptoms, their duration, and impairment. Notably, the combination of three A1 and A2 criteria showed the best prediction. Confronted events also showed less predictive ability than experienced events, with more variable performance across samples. These results raise fundamental questions about the threshold or "gate" that Criterion A ought to play in our current nosology.

Keywords

posttraumatic stress disorder; trauma; stressor criterion; ROC curves

1. Introduction

When an event is labeled as a Criterion A trauma according to the Diagnostic and Statistical Manual (DSM-IV; APA, 1994), many believe that this distinction indicates that the "traumatic event" is inherently different from other stressful experiences. This often implies that the event reaches a distinct threshold, where the likelihood of posttraumatic stress disorder (PTSD) is increased. However, whether or not the DSM-IV Criterion A predicts PTSD, or if this should even be one of the functions of Criterion A, is still up for debate.

The fourth edition of the DSM-IV (APA, 1994) incorporated a notable revision to PTSD; specifically, a modification to the definition of a traumatic event. As stated in the DSM-IV, a person must have "experienced, witnessed, or been confronted with an event that involves actual or threatened death or injury, or a threat to the physical integrity of self or others" (p. 467, Criterion A1), and the person must have a subjective, emotional response which "involved

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intense fear, helplessness, or horror” (p. 467, Criterion A2; APA, 1994) in order to qualify as having experienced a traumatic event. Although these revisions have a variety of implications (see McNally, 2003; Weathers & Keane, 2007), two are the focus of the present study. First, traumatic events are no longer solely defined by an external, stressor criterion (A1) but now also by the person’s emotional, subjective (A2) response. Although the DSM-IV (APA, 1994) remains vague on the timing of the A2 response, it is commonly interpreted as an emotional reaction during or immediately following the event. Second, although similar to DSM-III-R (APA, 1987) in allowing witnessed or confronted events, the revisions made it possible for an individual who learned about the events of others, including strangers, to have a PTSD-qualifying traumatic event (McNally, 2003). Thus, a Criterion A event can now be a directly experienced event (e.g., a rape), a directly witnessed, observed event (e.g., watching a murder), or a confronted learned about event (e.g., hearing about the death of a loved one). Therefore, the current definition of Criterion A events can be simultaneously viewed as more narrow and more broad than preceding DSM versions; it is now limited by the requirement of a subjective response but it also allows for a broader range of event types (Weathers & Keane, 2007). However, the overall impact of the subjective criterion and the revisions to the stressor event on the construct of PTSD remains unclear.

The subjective emphasis (A2) was proposed to allow an individual’s reaction to help determine whether or not an event was traumatic (March, 1993) and to distinguish these events from ordinary stressful occurrences. A common method to investigate the ability of A2 to serve these functions is to test its ability to predict PTSD symptoms (e.g., Kilpatrick et al., 1998; Breslau & Kessler, 2001; Brewin, Andrews, & Rose, 2000; Schnurr, Spiro, Vielhauer, Findler, & Hamblen, 2002). Indeed, the DSM-IV field trial suggested that distress during a potentially traumatic event predicted the development of PTSD; in that individuals who developed PTSD reported greater emotional responses during the event than those who did not develop PTSD (Kilpatrick et al., 1998). Consistent with this, in more recent investigations the subjective criterion has high specificity, with individuals not reporting fear, helplessness, or horror being unlikely to develop PTSD (Breslau & Kessler, 2001; Brewin et al., 2000; Schnurr et al., 2002). Thus, the presence of A2 is associated with an increased likelihood of the disorder. Yet, prevalence rates of PTSD remain virtually unaffected by the inclusion of A2 (Breslau & Kessler, 2001; Kilpatrick et al., 1998; Schnurr et al., 2002), suggesting that A2 may be unnecessary for the diagnosis. Similarly, Breslau and Kessler (2001) found that including A2 did not substantially increase the conditional probability of PTSD compared to the stressor criterion (A1) alone, suggesting A2 may not inform diagnostic status over and above A1.

Additional doubts about the utility of A2 relate to its ability to limit rates of trauma exposure, specifically any increase in prevalence rates that might result from the expansion of A1 stressors. For example, Breslau and Kessler (2001) found that, while the inclusion of A2 somewhat attenuated rates of exposure to traumatic events, the prevalence of traumatic events still increased by 22% when including confronted events. In addition, women were more likely than men to report A2 (Breslau & Kessler, 2001; see also Brewin et al., 2000), suggesting that under the two part definition gender may influence estimates of trauma exposure and who qualifies as having experienced a traumatic event. This is particularly interesting since men are more likely than women to report a potentially traumatic event (i.e., objective experience without the distress requirement; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995), suggesting that the A2 criterion may reverse this gender difference. Furthermore, the individual items in A2 may differ in predictive ability, with helplessness predicting PTSD better than fear or horror (Roemer, Orsillo, Borkovec, & Litz, 1998). Thus, although PTSD is classified as a fear-based disorder, it may be that other peritraumatic emotional reactions are more predictive of the diagnosis. Taken together, these initial findings raise questions about the predictive utility of A2 suggesting that it may be unnecessary, that A2 may predict differently for men and women, and that all A2 emotional responses may not be equally useful in predicting PTSD.

With the second issue, the expansion of the stressor A1 criterion allows for broader inclusion of events, potentially increasing access to treatment after stressful experiences (e.g., Davidson & Foa, 1991). It is argued that broadening the range of events that qualify as traumatic is constrained by both the requirements of A2 and the PTSD symptoms (Criteria B–D), such that expanding A1 should not affect the conceptualization of the disorder (Avina & O’Donohue, 2002; Weathers & Keane, 2007). Within the DSM-IV field trial, the broadening had little effect on rates of PTSD diagnosis (Kilpatrick et al., 1998). Yet, others argue that this expansion might result in increased rates of trauma exposure and PTSD and the potential overuse and trivialization of the disorder (e.g., Rosen, 2005). Indeed, Breslau and Kessler (2001) report that including confronted events increased the rates of trauma exposure by 59% (22% when also including A2 as mentioned above) in a large community sample, although these events were less likely to lead to PTSD. Furthermore, a recent investigation found that participants who identified a non-A1 event as “traumatic”, such as an expected death of a loved one, self-reported more severe PTSD symptoms than participants who identified an actual DSM-IV A1 event (Gold, Marx, Soler-Baillo, & Sloan, 2005). While this latter study has methodological limitations that may impact its generalizability, both studies raise questions regarding the expansion of A1, particularly concerning the inclusion of “confronted” events.

Accordingly, many wonder if the revisions to Criterion A in DSM-IV are leading to “bracket creep”. Widening what constitutes a traumatic event may have negative consequences such as increasing rates of diagnosis and veering from the original fear-based conceptualization of the disorder (McNally, 2003, 2004; Rosen, 2005). Moreover, concerns that bracket creep could inevitably lead to the removal of Criterion A and/or the elimination of a stressor severity threshold is a concern to researchers, as it would result in both a significant alteration to the way we conceptualize the disorder and could trivialize suffering after a traumatic event (Weathers & Keane, 2007). If Criterion A functions as a gatekeeper for the PTSD diagnosis, then, in the absence of objective (A1) and subjective (A2) criteria, PTSD symptoms (Criteria B–D) and functional impairment (Criteria F) should not consistently be present. In this view, the absence of Criterion A should be a useful screening tool for PTSD, helping to accurately predict cases in which the disorder will not emerge (i.e., high negative predictive power, high specificity). A contrasting view is that since only a minority of trauma-exposed individuals develop chronic PTSD (e.g., Kessler et al., 1995), the mere presence of a Criterion A event should not necessarily be sufficient to predict the PTSD diagnosis. Weathers and Keane (2007) argue that since Criterion A is the initial requirement for the PTSD diagnosis, it should have high sensitivity and thus not exclude anyone who might develop PTSD. They suggest that Criterion A should cast a wide net, so to speak, in order to identify accurately all those at risk for the disorder. Thus, the function of Criterion A and what we should expect its purpose to be remains in question.

In the present study, we focused on examining the predictive power of the current DSM-IV A1 and A2 definition of a traumatic event. Specifically, to address both the addition of the subjective criterion (A2) and the expansion of the objective criterion (A1), we examined predictive power, sensitivity, specificity, and receiver operating curves (ROCs) in the prediction of PTSD symptom criteria (Criteria B–F) across three samples: an undergraduate female sample, a mixed undergraduate sample, and a trauma-exposed female community sample. We examined these questions using a well-validated self-report measure of trauma exposure and PTSD symptoms (Posttraumatic Diagnostic Scale; Foa, Cashman, Jaycox, & Perry, 1997), an approach similar to other large-scale studies of PTSD (e.g., Hoge, Auchterlonie, & Milliken, 2006). Overall, we addressed the following questions. First, how well do the current DSM-IV Criterion A (A1 and A2) requirements predict PTSD symptom, duration, and impairment criteria (Criteria B–F)? Second, does the subjective criterion (A2) add to the utility of the objective criterion (A1) in predicting PTSD symptom, duration, and impairment criteria (Criteria B–F)? More specifically, do the fear and helplessness subjective

criterion (A2) differ in their ability to predict PTSD symptom, duration, and impairment criteria (Criteria B–F)? And finally, do experienced and witnessed/confronted events (A1) differentially predict PTSD symptom, duration, and impairment criteria (Criteria B–F)?

2. Method

2.1 Participants

2.1.1 Sample 1: Female undergraduate—This sample consisted of 653 female undergraduates recruited through subject pools at two large metropolitan university campuses. Of these women, 415 (63.5%) endorsed an event (Item 14) on the Posttraumatic Diagnostic Scale (PDS; Foa et al., 1997), selecting the event that “bothers you the most” from a checklist of events. Given the goal of examining the utility of A2, participants ($n = 24$) were excluded if they endorsed childhood sexual assault (CSA) as their primary event because the DSM-IV (APA, 1994) does not require fear or helplessness responses to CSA. Accordingly, the final sample consisted of 391 participants. Mean age was 19.79 years ($SD = 4.28$). Participants were compensated with course credit.

2.1.2 Sample 2: Mixed undergraduate—This sample consisted of 1242 male and female undergraduates recruited through an undergraduate subject pool at a large metropolitan university campus. Of these individuals, 718 (57.8%) reported an event (Item 14) on the PDS. After excluding participants reporting CSA ($n = 31$), the final sample consisted of 687 participants (55.7% female). Participants were compensated with course credit.

2.1.3 Sample 3: Female trauma-exposed community—This sample consisted of 74 women recruited from the communities of two large metropolitan areas who responded to advertisements seeking women with trauma histories. In this sample, 65 (87.8%) endorsed an event (Item 14) on the PDS. No participants reported CSA as their primary event, and thus the final sample consisted of 65 participants. The mean age was 32.51 years ($SD = 13.70$). Participants received monetary compensation for participating.

Table 1 presents the types of events, endorsement of A1, A2, both A1 and A2, and PTSD severity and diagnosis using current DSM-IV criteria across samples.

2.2 Posttraumatic Diagnostic Scale (PDS; Foa et al., 1997)

The PDS is a self-report measure of PTSD that assesses the presence and nature of trauma exposure (Criteria A1 and A2), 17 DSM-IV symptoms (Criteria B–D), time since exposure (Criterion E), and functional impairment (Criterion F). The PDS has good test retest reliability (.74 to .85), validity (sensitivity = .89, specificity = .75), and good diagnostic agreement with interview measures of PTSD (82%; Foa et al., 1997).

2.2.1 Assessment of event, A1, and A2 criterion—The PDS presents a checklist of commonly experienced “traumatic” events and then asks participants who identify having experienced more than one event to focus on the event that bothers them the most (Item 14) when answering the remaining questions. Employing the worst event as the index event is used to ensure that PTSD symptoms are anchored to a specific traumatic experience. In test-retest analyses of this method, the overwhelming majority of participants (164 of 169 respondents) chose the same traumatic event as their worst experience at re-administration (Foa et al., 1997), suggesting this is a reliable method to choose an index event.

For the most bothersome event (Item 14), A1 and A2 are assessed via yes/no items. A1 included: 1) “Were you physically injured?”; 2) “Was someone else physically injured?”; 3) “Did you think your life was in danger?”; and 4) “Did you think that someone else’s life in

danger?”. The PDS does not explicitly inquire about threat to the physical integrity of oneself or others (APA, 1994). The PDS A2 assessment queries for emotional responses during the event: “Did you feel helpless?” and “Did you feel terrified?”. The PDS does not assess the third subjective criterion, horror (APA, 1994). For data analytic purposes, for A1 Questions 1 and 2 were combined to assess physical injury and Questions 3 and 4 were combined to assess life threat. Further, for “experienced” versus “confronted” events, Questions 1 and 3 were combined to assess experienced events, and Questions 2 and 4 were combined to assess witnessed/confronted events (hereafter referred to as confronted events).

2.2.2 Assessment of PTSD symptoms—Based on the Item 14 event, each of the 17 DSM-IV symptoms of the reexperiencing, avoidance, and hyperarousal clusters is rated on a scale from 0 (*not at all or only one time*) to 3 (*5 or more times a week/almost always*) for the preceding month. Following scoring recommendations of Foa and colleagues (1997), a rating of one or greater was considered endorsement of the symptom. Based on DSM-IV diagnostic rules (APA, 1994), to meet symptom diagnostic criteria an individual must endorse one reexperiencing, three avoidance, and two hyperarousal symptoms (Criteria B–D).

2.2.3 Assessment of duration and impairment—Duration is assessed with one question asking how long an individual has experienced problems, rated as 1 (*less than 1 month*), 2 (*1 to 3 months*), or 3 (*more than 3 months*). If duration is more than one month, duration (Criterion E) is met. Impairment is assessed using a yes/no checklist of nine life areas where symptoms may have interfered in the past month (e.g., work, sex life). Impairment (Criterion F) is met if a problem in at least one life area is endorsed.

3. Data Analysis and Results

3.1 General Data Analytic Strategy

3.1.1 Predictive power, sensitivity, and specificity—We calculated both the probability that the presence (positive predictive power, PPP) and the absence (negative predictive power, NPP) of event criterion would predict the presence or absence of PTSD symptom, duration, and impairment criteria (Criteria B–F). We also calculated the sensitivity, or true positive rate, and specificity, or true negative rate, for event criterion and the prediction of PTSD symptoms, duration, and impairment (Criteria B–F). Thus, we examined the ability of Criterion A to predict the presence of meeting symptom, duration, and impairment diagnostic requirements, referred to subsequently as PTSD (Criteria B–F) for simplicity.

3.1.2 ROC Analyses—To represent graphically the utility of the Criterion A, we created receiver-operating characteristic curves (ROC; see Swets, Dawes, & Monahan, 2000a, 2000b; Kraemer, 1992). ROC graphs were computed by plotting the sensitivity (percentage of cases meeting criterion and diagnosis) by one minus the specificity (percentage of cases not meeting criterion or diagnosis). Therefore, ROC curves represent the true positive rate of PTSD (Criteria B–F) by the true negative rate of PTSD (Criteria B–F) predicted by Criterion A. In addition, we computed the area under the curve (AUC) for each ROC curve to quantify the distance of the curve from the line of no information. AUC is a test of the predictive performance of the characteristics (Hsiao, Bartko, & Potter, 1989). The line of no information portrays prediction by random chance with an AUC of .50. As the AUC approaches one, the ability of the criterion to classify diagnosis improves.

3.2 Results

3.2.1 Current DSM-IV Criteria A—First, we examined differences in prevalence rates for potentially traumatic (only A1) versus traumatic (A1 and A2) events. As seen in Table 1, rates of trauma exposure looked relatively similar for potentially traumatic and traumatic events;

the only difference to emerge was lower rates of traumatic events compared to potentially traumatic events for the mixed undergraduate sample. Furthermore, rates of PTSD using current DSM-IV Criteria (A–F) ranged from 15.9% and 11.6% in the undergraduate samples (Samples 1, 2) to 55.4% in the trauma-exposed community sample (Sample 3).

To examine the utility of our current A1 and A2 criterion (one stressor and one emotional response endorsement), we examined predictive power, sensitivity, and specificity of these cutoffs to predict PTSD (Criteria B–F). As seen in Table 2, in the two undergraduate samples, the current DSM-IV requirements had low PPP and specificity, but good NPP and sensitivity. In contrast, in the trauma-exposed community sample, the criteria had strong PPP and sensitivity, and weaker NPP and specificity.

To visually represent the overall utility of A1 and A2, we plotted a ROC graph of the endorsement of A1 (injury, life threat) and A2 (fear, helplessness) in the prediction of PTSD (Criteria B–F). For all ROCs, there was a possibility of one through four endorsements (injury, life threat, fear, helplessness), with one endorsement reflecting any one of the four possible reactions, two reflecting any two of the four possible reactions, three reflecting any three of the four possible reactions, and four reflecting endorsement of all four reactions. As seen in Figure 1a and in Table 3, although prediction improved for the trauma-exposed sample, all curves fell close to the line of no information. Based on the curves, a threshold of three of the four possible A1 and A2 endorsements led to the most accurate classification (i.e., best combination of specificity and sensitivity) for PTSD (Criteria B–F). The AUCs for the samples were: female undergraduate sample (.55), mixed gender undergraduate sample (.63), and female trauma exposed community sample (.67). Thus, across the samples, the ROCs illustrate that although the best combination is a threshold of three A1 and A2 endorsements, the criteria still do not perform much better than chance (.50) at predicting PTSD.

3.2.2 Does the subjective criterion (A2) add to the utility of the objective criterion (A1) in predicting PTSD?

—We then explored the predictive ability of A1 versus A1 and A2 combined, or, in other words, the additive predictive ability of the subjective criterion. Participants were classified as endorsing A1 if they endorsed either of the two A1 constructs (injury, life threat) and as endorsing A2 if they endorsed either of the two A2 constructs (fear, helplessness). Rates of PTSD (Criteria B–F) using endorsement of at least one stressor criterion (A1) ranged from 15.9% and 12.1% in the undergraduate samples to 55.4% in the trauma-exposed community sample. The emotional response criterion (A2) showed comparable, but slightly higher rates of diagnosis, with rates of PTSD using endorsement of at least one A2 criterion ranging from 19.9% and 14.8% in the undergraduate samples to 69.2% in the trauma-exposed community sample. As seen above, it should be noted that A1 only and A1 plus A2 prevalence rates were almost identical, suggesting that the additional presence of A2 (in addition to A1) did not substantially increase the likelihood of PTSD (Criteria B–F) over A1 alone.

Furthermore, as seen in Table 2, PPP, NPP, sensitivity, and specificity of A1 remained almost unchanged when A2 was included, as evidenced by similar predictive values for the stressor criterion compared to the DSM-IV criteria. Across the three samples, the emotional response criterion (A2) had greater NPP and sensitivity than the stressor criterion (A1) but similar PPP and specificity, suggesting that if an individual does not have a subjective reaction during the event they are unlikely to develop PTSD. To examine possible gender differences in A2, we split our mixed gender sample (Sample 2). There were no differences in stressor criterion ($\chi^2(1, N = 675) = .71, ns$) or in the percentage of cases that fulfilled the current DSM-IV requirements for a traumatic event (i.e., minimum of one A1 and one A2 endorsement; $\chi^2(1, N = 675) = 3.66, ns$). However, females (88%) were significantly more likely than males (76%) to report an A2 reaction ($\chi^2(1, N = 675) = 16.21, p < .05$).

3.2.2.1 Fear versus helplessness: Rates of PTSD (Criteria B–F) using endorsement of only fear ranged from 13.4% and 18.9% in the undergraduate samples to 66.2% in the trauma-exposed community sample. Similarly, rates of PTSD using endorsement of only helplessness ranged from 14.1% and 19.4% in the undergraduate samples to 66.2% in the trauma-exposed community sample. As seen in Table 2, fear and helplessness appear similar in their ability to predict PTSD (Criteria B–F). Again, in the two undergraduate samples fear and helplessness had greater NPP and sensitivity and weaker PPP and specificity, while in the community sample, each had good PPP, NPP, and sensitivity, and weaker specificity. Taken together, across samples, neither fear nor helplessness appears superior at discriminating PTSD.

3.2.3 Do experienced and confronted A1 events differentially predict PTSD?—

To examine this question, participants were classified as having an experienced event if they endorsed either of the two questions assessing experienced events (Sample 1: $n = 180$; Sample 2: $n = 290$; Sample 3: $n = 39$). If participants endorsed both the experienced and confronted questions, participants were classified as having experienced the event, as experiencing the event is thought to encompass confrontation of the event. Accordingly, participants were classified as having a confronted event if they endorsed either of the two questions assessing confronted events and did not endorse having an experienced event (Sample 1: $n = 137$; Sample 2: $n = 269$; Sample 3: $n = 10$). Some participants who endorsed a potentially traumatic event did not endorse any of the four questions differentiating experienced and confronted events and thus were excluded (Sample 1: $n = 74$; Sample 2: $n = 128$; Sample 3: $n = 16$). Thus, with these analyses we are not directly looking at events rated as both experienced and confronted, but instead are comparing events characterized as experienced versus events characterized as only confronted. Rates of PTSD (Criteria B–F) using endorsement of an experienced event ranged from 19.0% and 24.4% in the undergraduate samples to 74.4% in the trauma-exposed community sample. However, confronted events were somewhat less likely to lead to PTSD (Criteria B–F), with rates of PTSD using endorsement of a confronted event ranging from 10.4% and 13.1% in the undergraduate samples to 70.0% in the trauma-exposed community sample. As seen in Table 2, both experienced and confronted events showed similar weak PPP and strong NPP in the undergraduate samples and the opposite pattern in the community sample. However, sensitivity of the confronted events was considerably less than that of experienced events, suggesting that the true positive rate of diagnosis is less for events that did not involve threat or injury to the self.

To visually represent the predictive ability of experienced and confronted events, ROCs were calculated using the same method as for the full samples, but now separating the samples into those who reported experienced versus confronted events. As shown in Figure 1b and in Table 3, across all three samples, experienced events predicted better than confronted events. Yet, none predicted well, with all curves falling close to the line of no information. The best predictions were for the experienced events in the mixed gender undergraduate and the female trauma-exposed community samples. Similar to above, a cutoff of three A1 and A2 endorsements showed the best combination of sensitivity and specificity for both experienced and confronted events. The AUCs were generally similar for the female undergraduate and mixed undergraduate samples for experienced (respectively, .59, .70) and confronted (.59, .67) events, with all being relatively close to chance. However, for the female community sample, confronted events had worse prediction (.45) than experienced events (.69).

4. Discussion

Under the original conceptualization of PTSD, the traumatic event was proposed to serve a gate-keeping function for the diagnosis (Davidson & Foa, 1991). However, across all three samples, the current Criterion A requirements generally performed poorly as a screening measure, not performing much better than chance at predicting PTSD symptom, duration, and

functional impairment criteria and calling into question the utility of our current definition of a traumatic event for this gate-keeping function. Although the requirement of a subjective response was proposed to help clarify the definition of a traumatic event (e.g., March, 1993), in the present study reports of subjective emotional experiencing during the event added little to the predictive ability beyond endorsement of an objective experience, though lack of a subjective emotional response screened well for the absence of PTSD symptoms, their duration, and impairment. Overall, endorsement of three criteria, any combination of objective and subjective, was the best predictor. Furthermore, the actual type of objective event reported impacted its predictive ability, with confronted events (e.g., hearing about a murder) showing a reduced ability to accurately predict compared to directly experienced events (e.g., attempted murder).

Across samples, the absence of a subjective reaction was more of a marker for PTSD symptoms, duration, and impairment than its presence, suggesting that A2 may be more useful for predicting who will *not develop the disorder* than who will. This is consistent with previous research highlighting the negative predictive ability of A2 (Breslau & Kessler, 2001; Brewin et al., 2000; Schnurr et al., 2002). Further, consistent with Schnurr et al. (2002) and Kilpatrick et al. (1998), the addition of A2 did not change rates of PTSD prevalence and did not improve the overall predictive accuracy above the objective criterion alone. Nor were rates of trauma exposure changed by the inclusion of the subjective criterion. One clear implication of this is that the absence of A2 may be most useful as a screening measure immediately following trauma, improving allocation of resources to those most vulnerable to PTSD. Thus, ascertaining who did not have a strong emotional reaction during the event would be more important than ascertaining who did. This is consistent with functions of A2 other than predicting the PTSD diagnosis, such as using A2 as a threshold of trauma necessary for psychopathology.

When examining specific subjective reactions, there was no differential utility for fear or helplessness, which is consistent with the presence of three characteristics predicting better than one, two, or four, discussed below. Although this is inconsistent with Roemer et al. (1998) who found that helplessness was a superior predictor to fear and horror, it may be that the current subjective criterion is too narrow in the emotional reactions that it captures (Brewin et al., 2000) and the inclusion of reactions such as peritraumatic dissociation (e.g., Ozer, Best, Lipsey, & Weiss, 2003) or cognitive appraisals (e.g., Blanchard et al., 1995) may help to predict PTSD. However, retrospective reports of emotional reactions, such as peritraumatic dissociation, may be subject to reporting biases consistent with current symptom presentation (e.g., Southwick, Morgan, Nicolaou, & Charney, 1997; Zoellner, Sacks, & Foa, 2001). Further, it may be the intensity of the reaction that predicts PTSD and not the mere presence of the emotional response (Brewin et al., 2000; Roemer et al., 1998). However, assessment of this intensity is complicated; for most individuals, a ceiling effect occurs with the traumatic event being their most distressing experience rendering quantitative measurement more difficult (McNally, 2004).

As briefly mentioned above, the best prediction of PTSD symptoms, their duration, and subsequent impairment was when three or more criteria, any combination of objective and subjective, were endorsed. Based on the observed endorsements, this is most likely due to three being the minimum number of criteria that forces endorsement of at least one objective criterion. Although some suggest that it may be possible to rely on the emotional response criterion and/or the symptoms to characterize the disorder (e.g., Avina & O'Donohue, 2002), the current data suggest that this is not the case and that the objective criterion is indeed necessary for enhanced diagnostic prediction. This coincides well with others (e.g., Breslau & Kessler, 2001; Brewin et al., 2000) who also argue for the centrality of continuing to use the objective event criterion.

When looking at the different types of objective events, confronted events were worse than experienced events at identifying the presence of PTSD symptoms (i.e., the true positive rate). Consistent with Breslau and Kessler (2001), broadening of the traumatic event criteria may lead to difficulties in PTSD assessment (e.g., McNally, 2004), by classifying events that vary in their emotional impact as “equivalent” stressors. Specifically, as suggested by Dohrenwend (2006), high intracategory variability exists in reporting stressful events, especially when using self-report checklists that allow for subjective determination of what is included in each category. This may be particularly pronounced regarding confronted events where there is a large amount of variability in event characteristics, such as the amount of direct exposure (e.g., witnessing a shooting versus hearing about a shooting on the news) and expected emotional impact (e.g., witnessing a shooting of a friend versus witnessing a shooting of a stranger).

Furthermore, although confronted events were less accurate at identifying PTSD symptoms, duration, and functional impairment in all three samples, they performed better in the community sample than in the undergraduate samples. Overall, rates of PTSD in our community sample were high, while diagnostic rates in our undergraduate samples were lower, but similar to those in the general population (Kessler et al., 1995) and to those found in other undergraduate samples (Bernat et al., 1998; Lawler, Ouimette, & Dahlstedt, 2005). Thus, confronted events may work better at identifying those likely to develop the disorder in samples with higher, rather than lower, levels of trauma exposure or psychopathology. Alternatively, it should be expected that lower base rates of symptoms will inherently lead to less accurate prediction. However, this is problematic under the conceptualization of Criterion A as a gatekeeper, as it ought to perform relatively consistently across heterogeneous samples with varying levels of trauma exposure and symptom severity. Although it may not be possible to expect Criterion A to predict equally well across samples with various base rates of trauma exposure, if it behaves very differently, its utility, particularly for confronted events, must be carefully evaluated across general epidemiological, trauma exposed, and psychiatric samples. This has implications for both interpretation of large-scale epidemiological samples, where rates will be subject to sampling procedures, and also for appropriate allocation of services if Criterion A is used to screen for high versus low risk after trauma exposure.

One final question is what actually should be expected from the DSM-IV Criterion A definition. Should it have good specificity or good sensitivity? Or should it strike a reasonable balance between the two? Perhaps most importantly, given that Criterion A is the standard that defines an event as “traumatic” or not, it is crucial that we are aware of the function of Criterion A; specifically, its ability and limitations in informing us about the presence of traumatic events and their relationship to PTSD symptoms. Across all samples, the DSM-IV current Criterion A requirements did not accurately identify true absence of the diagnosis (i.e., specificity). Thus, the traumatic event requirement was not useful in identifying who is less likely to develop PTSD following an event. However, in all three samples, the ability of the current Criterion A requirements to predict PTSD caseness was good (i.e., sensitivity). This is consistent with Weathers and Keane’s (2007) expectation that the Criterion A diagnostic requirement not exclude anyone who may be at risk for the diagnosis. However, although a broad initial “gate” may be pragmatically desirable to avoid excluding actual cases of PTSD (Weathers & Keane, 2007), the risk of identifying a high number of mistaken cases may have a detrimental scientific impact in terms of understanding underlying mechanisms. Furthermore, in practical arenas, the risk of not being able to rely on the traumatic event criterion to screen out cases of non-diagnosis may lead to a strain on resources and misallocation of prevention and intervention efforts.

The results of the present study need to be tempered by the use of one measurement instrument, the limited samples, and the PTSD diagnostic criteria (B–F) as the benchmark to assess the current Criterion A requirements. Although an interview measure of PTSD symptoms would

have strengthened these analyses, similar to other large scale epidemiology studies assessing rates of trauma exposure and PTSD (e.g., Hoge et al., 2006) we used a self-report measure as a more feasible means of screening large samples than clinician administered measures (Brewin et al., 2002). Further, the PDS directly links trauma exposure to symptom presentation, unlike symptom-only PTSD measures, making it a more reliable screen for PTSD. Undergraduate samples were included due to ease of recruitment and their potential for being representative of trauma exposure and PTSD in the general U.S. population (Bernat, Ronfeldt, Calhoun, & Arias, 1998; Vrana & Lauterbach, 1994; Kessler et al., 1995). Although the reliance on two purely undergraduate samples may limit the generalizability of these results, we also chose to include a general trauma-exposed community sample to ensure that our results generalize beyond undergraduate samples. Using current symptoms, duration of symptoms, and functioning requirements as defined by the DSM-IV may be confounding the test of their utility by limiting the reactions that are being studied. However, at current time, the use of DSM-IV A1 and A2 is the most commonly employed method of studying the utility of a Criterion A event in predicting PTSD symptoms, duration, and impairment (e.g., Breslau & Kessler, 2001; Kilpatrick et al., 1998). In addition, our sample included only individuals who endorsed at least one event, which potentially leads to a restricted range of trauma exposure. On the other hand, assessment of trauma exposure commonly involves identifying an event that meets the minimum threshold of a “traumatic” experience and thus our samples are representative of a trauma-exposed population. Although including only trauma-exposed individuals restricts variability, there was still heterogeneity in terms of reported event characteristics, allowing for us to examine the prediction of PTSD symptoms. Similarly, using dichotomous items to assess objective and subjective event criterion and diagnosis may have restricted our ability to see associations. However, the DSM-IV uses a dichotomous yes-no criterion for traumatic events. Therefore, our method generally mimics current DSM-IV assessment methods and criterion. We did not explicitly inquire about threat to the physical integrity of oneself or others (APA, 1994), and though potentially subsumed in the questions asked, it is possible that this exclusion resulted in a more conservative definition, lower numbers of Criterion A1 events, and thus a more stringent test of the ability of Criterion A to predict PTSD. Similarly, the PDS omits the third subjective criterion “horror” and our results are not able to comment on the usefulness or additive benefit of this emotional response. However, it seems unlikely that the inclusion of horror would have changed the pattern of results considerably, as horror tends to be less common and to have less predictive ability for PTSD than reports of fear and helplessness (Brewin et al., 2000). Further, it may be difficult for lay individuals to distinguish between being “terrified,” and “horrificed.”

In conclusion, with both the emphasis on subjective responses and the broadening to include confronted events, DSM-IV revised what constitutes Criterion A events. Yet, in the present study, across samples, neither of these dramatically improved diagnostic capabilities. Given that PTSD is one of very few DSM disorders based on a predisposing event, the definition of what constitutes a traumatic event becomes crucial. Relying on a definition that does not consistently predict symptoms, duration of those symptoms and functional impairment ultimately complicates the diagnosis, understanding, and treatment of PTSD by making it difficult to identify important phenotypic markers (e.g., Rosen, 2005; McNally, 2004). Although others (e.g., Avina & O’Donohue, 2002) suggest that Criterion A does not need to serve a gate-keeping function, as the other symptom criteria (i.e., Criteria B–F) balance the event criterion and preserve the conceptualization of the disorder and the rates of diagnosis, the present study suggests that these other criteria do not perform this balancing function well.

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Figure 1.

Receiver Operating Curves: (Figure 1a) showing predictive power of Criterion A (1, 2, 3, and 4 criteria) for other PTSD diagnostic criteria (symptoms, duration, and impairment only) across three samples: female undergraduate (Sample 1), mixed undergraduate (Sample 2) and community trauma-exposed (Sample 3); and (Figure 1b) across experienced and confronted events separately for each sample. Each curve represents a sample or subsample. Each data point on a curve represents a particular cutoff of symptoms, reading left to right moving from the lower left-hand corner "0" to the upper right-hand corner "1", with the first data point representing any one of four possible Criterion A endorsements, the second, any two of four possible Criterion A endorsements, the third, any three of four possible Criterion A endorsements, and the fourth, all four of the possible Criterion A endorsements. Greater bowing of the curve represents better prediction.

Table 1

Endorsement of Potentially Traumatic Events, Criteria A, and PTSD Across Samples, shown by both percentage and number of participants in parentheses.

	Sample 1 Female Undergrad (<i>n</i> = 391)	Sample 2 Mixed Undergrad (<i>n</i> = 687)	Sample 3 Community (<i>n</i> = 65)
Event Type			
Accident	17.1% (67)	26.3% (181)	3.1% (2)
Disaster	17.6% (69)	18.2% (125)	3.1% (2)
Sexual Assault	9.7% (38)	5.2% (36)	53.8% (35)
Physical Assault	14.3% (56)	14.1% (97)	7.7% (5)
Life Threatening Illness	14.8% (58)	10.0% (69)	3.1% (2)
Combat/Prison/Torture	.6% (2)	1.4% (10)	3.0% (2)
Other	25.9% (101)	24.6% (169)	26.2% (17)
Criteria A Assessment			
Objective A1	81.1% (317)	81.6% (561)	75.4% (49)
Subjective A2	92.8% (363)	82.5% (567)	95.4% (62)
Both A1 & A2	79.5% (311)	70.1% (482)	75.4% (49)
PTSD Diagnosis	15.9% (62)	11.6% (80)	55.4% (36)
PTSD Severity <i>M</i> (<i>SD</i>)	7.56 (4.28)	7.05 (8.45)	22.09 (11.59)

Table 2

Positive and Negative Predictive Power, Sensitivity, and Specificity for A1 and A2 Predicting PTSD Diagnosis

	Sample 1	Sample 2	Sample 3
DSM-IV (One A1 and one A2 Criteria)			
Positive Predictive Power	.20	.17	.74
Negative Predictive Power	.78	.86	.44
Sensitivity	.78	.74	.80
Specificity	.20	.30	.35
Stressor Criterion (any A1)			
Positive Predictive Power	.20	.15	.74
Negative Predictive Power	.76	.81	.44
Sensitivity	.78	.77	.80
Specificity	.18	.18	.35
Emotional Response Criterion (any A2)			
Positive Predictive Power	.22	.18	.73
Negative Predictive Power	.93	.95	1.00
Sensitivity	.98	.94	1.00
Specificity	.08	.20	.15
Endorsement of Fear Only (A2)			
Positive Predictive Power	.25	.20	.77
Negative Predictive Power	.94	.94	.78
Sensitivity	.93	.85	.96
Specificity	.29	.36	.35
Endorsement of Helplessness Only (A2)			
Positive Predictive Power	.23	.20	.74
Negative Predictive Power	.93	.95	.71
Sensitivity	.95	.90	.96
Specificity	.17	.32	.25
Experienced Events (A1)			
Positive Predictive Power	.24	.19	.74
Negative Predictive Power	.83	.87	.39
Sensitivity	.55	.51	.64
Specificity	.56	.59	.50
Confronted Events (A1)			
Positive Predictive Power	.13	.10	.70
Negative Predictive Power	.76	.81	.31
Sensitivity	.23	.26	.16
Specificity	.62	.58	.85

Table 3

ROC Statistics (Sensitivity and 1 Minus Specificity) for DSM-IV Criteria Endorsements for All Events, Experienced Events, and Confronted Events.

Number of Endorsements of DSM-IV Criteria	Sensitivity			1 minus specificity		
	Sample	1	2	3	1	2
All Events						
Any 1 Criterion	.97	.98	1.00	.93	.94	.85
Any 2 Criteria	.91	.96	.96	.82	.88	.80
Any 3 Criteria	.73	.75	.78	.58	.70	.55
All 4 Criteria	.46	.44	.49	.25	.37	.25
Experienced Events						
Any 1 Criterion	1.00	1.00	1.00	1.00	1.00	1.00
Any 2 Criteria	1.00	0.98	1.00	1.00	.93	1.00
Any 3 Criteria	.96	.95	.97	.85	.75	.80
All 4 Criteria	.55	.64	.62	.42	.29	.30
Confronted Events						
Any 1 Criterion	1.00	1.00	1.00	1.00	1.00	1.00
Any 2 Criteria	1.00	.96	1.00	.97	.91	1.00
Any 3 Criteria	1.00	.96	1.00	.85	.66	1.00
All 4 Criteria	.61	.54	.57	.49	.32	.67

Note. Sensitivity and specificity range from 0–1. Sensitivity of 1 implies a 100% true positive rate, but also a 100% false positive rate (Specificity of 0). Conversely, specificity of 1 implies a 0% false positive rate, but also a 0% true positive rate (Sensitivity of 0).