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Public Mental Health Clients with Severe Mental Illness and Probable Posttraumatic Stress Disorder: Trauma Exposure and Correlates of Symptom Severity

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Individuals with severe mental illness (SMI) are at greatly increased risk for trauma exposure and for the development of posttraumatic stress disorder (PTSD). This study reports findings from a large, comprehensive screening of trauma and PTSD symptoms among public mental health clients in a statewide community mental health system. In 851 individuals with SMI and probable PTSD, childhood sexual abuse was the most commonly endorsed index trauma, followed closely by the sudden death of a loved one. Participants had typically experienced an average of 7 types of traumatic events in their lifetime. The number of types of traumatic events experienced and Hispanic ethnicity were significantly associated with PTSD symptom severity. Clients reported experiencing PTSD in relation to events that occurred on average 20 years earlier, suggesting the clinical need to address trauma and loss throughout the lifespan, including their prolonged after-effects.

Over the past two decades, a growing body of research has shown that individuals with severe mental illness (SMI) are at greatly increased risk for trauma exposure (see Grubaugh, Zinzow, Paul, Egede, & Frueh, 2011, for a review). Although national surveys indicate that more than half of people in the general population report exposure to at least one event that according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., *DSM-IV*; American Psychiatric Association, 1994) meets criteria for trauma (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995), studies of people with a SMI (such as schizophrenia, bipolar disorder, or major depression) suggest that trauma exposure is nearly universal, with multiple traumas being the norm (Goodman, Rosenberg, Mueser, & Drake, 1997; Mueser et al., 1998; Mueser, Essock, Haines, Wolfe, & Xie, 2004). Violent victimization, a particularly toxic class of trauma, is unusually common in people with SMI, with 34%–53% reporting child abuse, and 43%–81% reporting lifetime victimization (Mueser et al., 1998).

The high rates of trauma exposure among people with SMI, combined with possibly increased vulnerability to the effects of trauma, are associated with an increased prevalence of PTSD in this population (Grubaugh, Elhai, Cusack, Wells, & Frueh, 2007). Specifically, in most studies, the current prevalence of PTSD among persons with SMI has been found to range from 28%–43% (Cascardi, Mueser, DeGiralomo, & Murrin, 1996; Craine, Henson, Colliver, & MacLean, 1988; Cusack, Grubaugh, Knapp, & Frueh, 2006; Goldberg & Garno, 2005; Howgego et al., 2005; McFarlane, Bookless, & Air, 2001; Mueser et al., 1998, 1998, 2004; Picken & Tarrier, 2011), although a few studies have reported lower, but nevertheless increased rates ranging from 16%–18% (Fan et al., 2008; Lommen & Restifo, 2009; Neria, Bromet, Sievers, Lavelle,

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& Fochtmann, 2002). This contrasts with an estimated current rate of 3.5% for PTSD in the general population (Kessler, Chiu, Demler, & Walters, 2005). Despite evidence that PTSD is a significant clinical problem among people with SMI, many questions remain regarding the nature of PTSD in this population (Grubaugh et al., 2011). Although the types of traumatic exposure commonly experienced by people with SMI have been previously reported (e.g., Mueser et al., 1998; McFarlane et al., 2001; Goldberg & Garno, 2005; Goodman et al., 2001), limited data are available on which events are most distressing and most likely to lead to PTSD. In a survey of trauma exposure and associated distress and PTSD symptoms in people with SMI, O'Hare and Sherrer (2011) reported that the most distressing event was sexual assault (either in childhood or adulthood), followed by physical assault, and the sudden unexpected death of a loved one; sexual assault was the strongest predictor of PTSD symptoms, followed by unexpected death. Another study of individuals with SMI reported that exposure to childhood sexual abuse was more uniquely predictive of PTSD than any other types of trauma (Mueser et al., 1998), whereas Goldberg and Garno (2005) found that a history of adult sexual assault or a history of suicide or homicide in a close friend or relative were more strongly related to PTSD.

No studies that we know of have evaluated the relationship between exposure to different types of traumatic events and PTSD symptom severity among people with SMI and probable PTSD. A better understanding of which traumatic events clients with SMI and PTSD find most distressing, and which events are most strongly related to PTSD symptom severity, could inform specific trauma interventions for this population. The experience of traumatic events and their relationship to PTSD symptom severity tends to differ by gender (Breslau, Davis, Andreski, & Peterson, 1991; Kessler, et al., 1995; Norris, Foster, & Weishaar, 2002), so the differential impact of traumatic events on PTSD among people with SMI also needs to be examined. Consistent with research in the general population, studies suggest that women with SMI are significantly more likely to experience sexual violence than men, both in childhood and adulthood (see Grubaugh et al., 2011 for a review).

In addition to evaluating the importance of exposure to different types of traumatic events in people with SMI, there is a need to further examine the role of ethnicity in the experience of these events and their effects on PTSD symptoms. Some have suggested that culture may have an influence on the impact of traumatic events (Carlson, 2005; Fontes, 1995), for example, by moderating the relationship between trauma exposure and development of psychopathology (Garcia-Coll & Garrido, 2000). Studies in the general population have found that Hispanic individuals are more vulnerable to developing PTSD when exposed to sexual, assaultive, or combat-related traumatic events and among those with PTSD, Hispanics experience more severe symptoms than persons from other ethnic backgrounds (Marshall, Schell, & Miles, 2009). Although one study found higher rates of PTSD among Hispanic individuals with SMI (Mueser, Saylers, et al., 2004), we know of no other studies that have examined the relationship between ethnicity and PTSD symptom severity in this population.

To address these gaps in the literature, this study reports findings from a comprehensive screening of trauma and PTSD symptoms in public mental health clients in a statewide community mental health system. Among a large group of individuals with SMI and probable PTSD, we examined the types of trauma experienced; which traumatic events were most distressing to participants; and the association between traumatic events, demographic and clinical characteristics, and PTSD symptom severity.

Method

Participants and Procedures

Study participants were clients with SMI (defined by the State of New Jersey) receiving services at the University of Medicine and Dentistry of New Jersey-University Behavioral HealthCare (UMDNJ-UBHC). UBHC serves approximately 15,000 clients annually, and is one of the largest mental health specialty providers in the United States. In addition to outpatient clinics and partial hospitalization clinics (five of which participated in the study), UBHC is also equipped with programs such as intensive case management services, residential programs, an emergency room, and an inpatient unit. UBHC serves clients on Medicaid/Medicare (56%) as well as uninsured/self-pay clients (20%).

Acceptance into services at UMDNJ-UBHC requires meeting New Jersey criteria for SMI, which include a DSM-IV diagnosis; disability within the past 3–6 months from the mental disorder which has resulted in functional limitations in major life activities that would be appropriate for the client's developmental stage; and that during the past 2 years the mental disorder led to two or more treatment episodes of greater intensity than outpatient services, such as inpatient, emergency, or partial hospitalization care, or a single episode lasting 3 months or more or that the normal living situation was disrupted to the point that supportive services were required to maintain the client in that home or residence or housing, or law enforcement officials intervened. Although these criteria are similar to broad criteria for SMI that have been discussed in the literature (e.g., Ruggieri, Leese, Thornicroft, Bisoffi, & Tansella, 2000), we removed participants with no Axis I diagnosis other than substance use, as this is a further criterion for SMI in other jurisdictions.

Study sites included five outpatient and partial hospitalization programs located in three different cities in central and northern New Jersey. A comprehensive screening of trauma exposure and PTSD symptoms was implemented at these sites as part of a research study aimed at evaluating two different treatments for PTSD in people with SMI. Clients were not paid for their participation in the screening. This screening sought to identify clients with SMI and probable PTSD, who were then approached for participation in a treatment study. The study protocol, informed consent, and all study-related materials were reviewed and approved by the Institutional Review Boards at Dartmouth Medical School and the University of Medicine and Dentistry of New Jersey (UMDNJ)-Robert Wood Johnson Medical School.

Within a 31-month period, 851 clients endorsed at least one traumatic event on the Traumatic Life Events Questionnaire (TLEQ), had a total PCL score of at least 45 indicating probable PTSD, had a chart diagnosis of an Axis I diagnosis other than substance use disorder, and expressed an interest in the study. Data are not available on screened individuals who did not show evidence of likely PTSD, as clinicians were instructed to seek consent for release of the information to the research team only if the participant showed evidence of likely PTSD and would be a candidate for targeted PTSD treatment. We note, however, that the ethnic and diagnostic characteristics of the study sample were similar to the characteristics of clients at the participating sites of UBHC: demographic information available for participants from these four sites was the following: 30% European Americans, 47% African Americans, 14% Hispanic, 8% other; 17% with schizophrenia-spectrum disorders.

Table 1 summarizes the demographic and clinical characteristics of the study sample. The participants were predominantly female (64%), in their early 40s, and had completed high school. Participants were ethnically diverse, with most self-identifying as African American (44%) or European American (33%); 14% identified themselves as Hispanic. The most common principal Axis I diagnoses in clients' charts were major depressive disorder and other depressive disorders (46%), schizophrenia and other psychotic disorders (17%), and bipolar disorders I and II (22%). Of note, only 5% of the sample had PTSD listed as a primary diagnosis in their medical record. The average age was 40.4 years ($SD = 11.2$) and average education was 12.0 years ($SD = 2.0$).

From January 12, 2007 to August 2, 2010, clinicians conducted routine screening (using the aforementioned measures) of trauma history and PTSD with their clients, either at the second intake session for new clients or at regular sessions for clients who were already in treatment (treatment participants were receiving was routine mental health treatment and not the specific treatment targeting PTSD for which they were being screened). When clients were grossly psychotic or suicidal, the screening was deferred until a later time when the person was more clinically stable.

Table 1
Demographics and Clinical Characteristics Participants

Variable	*n*	%
Gender		
Male	298	35.2
Female	548	64.4
Missing	5	0.6
Race/ethnicity		
African American	371	43.6
Native American	2	0.2
Asian/Pacific Islander	8	0.9
European American	282	33.1
Hispanic	117	13.7
Other	62	7.3
Missing	9	1.1
Psychiatric diagnoses		
Schizophrenia/schizoaffective	123	14.5
Major depressive disorder	245	28.8
Bipolar I disorder	116	13.6
Bipolar II disorder /other bipolar	78	9.2
Other mood disorders	156	18.3
Anxiety disorder	27	3.2
PTSD	43	5.1
Other psychotic disorders	23	2.7
Adjustment disorders / acute stress	8	0.9
Other (e.g., eating disorder)	16	1.9
Missing	16	1.9

Note. $N = 851$. PTSD = posttraumatic stress disorder.

Measures

An abbreviated 16-item version of the Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000) was as described above to screen lifetime trauma history for all clients at one of the five sites. For each event on the scale, the client indicated whether he or she had ever experienced it over their lifetime in a binary (yes/no) format (e.g., "Has anyone threatened to kill you or seriously hurt you?"). The TLEQ asks about the experience of traumatic events using wording that corresponds with the *DSM-IV* Criterion A for PTSD. This version of the TLEQ was used to screen for trauma exposure in previous studies with persons with SMI (Mueser et al., 2008).

The PTSD Checklist (civilian version) (PCL; Blanchard, Jones-Alexander, Buckley, & Forneris, 1996) was used to screen and identify cases with probable PTSD, as well as to assess PTSD symptom severity. The PCL includes one question for each *DSM-IV* PTSD symptom, requiring the respondent to rate the severity of each symptom over the past month on a 5-point Likert scale (range: 17–85). The PCL has good test-retest reliability and convergent validity in people with SMI (Grubaugh et al., 2007; Mueser et al., 2001). A total score of 45 or greater on the PCL was used to identify cases of

Table 2
Traumatic Events Reported on Abbreviated Traumatic Life Events Questionnaire (TLEQ) by Gender

	Total ($N = 851$)		Male ($n = 299$)		Female ($n = 552$)		
Variable	*n*	%	*n*	%	*n*	%	χ^2
Car accident	327	38.4	115	38.4	212	38.5	0.00
Other accident	240	28.2	99	33.1	141	25.5	5.48*
Warfare	50	5.9	35	11.7	15	2.7	28.33***
Sudden death of loved one	667	78.4	238	79.6	429	77.7	0.41
Robbery	367	43.1	164	54.8	203	36.8	25.83***
Stranger assault	414	48.6	192	64.2	222	40.2	44.71***
Seeing stranger violence	402	47.2	164	54.8	238	43.1	10.71***
Being threatened	534	62.7	202	67.6	332	60.1	4.56*
Childhood physical abuse	420	49.4	152	50.8	268	48.6	0.41
Witnessing domestic violence	534	62.7	167	55.9	367	66.5	9.38**
Experiencing domestic violence	527	61.9	140	46.8	387	70.1	44.60***
CSA by Adult	457	53.7	117	39.1	340	61.6	39.36***
CSA by peer	339	39.8	77	25.8	262	47.5	38.15***
CSA	491	57.7	122	40.8	369	66.8	53.90***
Adult sexual abuse	310	36.4	52	17.4	258	46.7	72.13***
Being stalked	396	46.5	98	32.8	298	54.0	35.07***
Other	351	41.2	141	47.2	210	38.0	6.65**

Note. $N = 851$. CSA = childhood sexual abuse.
*$p < .05$. **$p < .01$. ***$p < .001$.

probable PTSD during the initial screening (Blanchard et al., 1996). A mean imputation procedure whereby the scale mean for the participant was substituted for missing items was used in cases where individual items were missing for participants. Across the 14,467 responses, 89 items (or less than .01%) were replaced using this procedure.

Clients first completed the TLEQ. If they indicated yes to any of the 16 items, they then completed the PCL, based on the most upsetting event identified on the TLEQ (only two clients in the current study were unable to identify one most distressing event, and data were noted as "missing" for these participants). Clients with probable PTSD (PCL $\geq$ 45) were then asked if they were willing to have their screening data, and other pertinent clinical information, provided to the research team for possible participation in a treatment study. Clients who agreed then completed a consent form, and the results of the screening and other clinical information were then provided to the research team. Data on primary psychiatric diagnoses, ethnicity, education level, and age were drawn from participants' medical records after they had provided consent.

Data Analysis

Descriptive data were calculated and bivariate correlations between events and symptoms were derived. Differences between men and women were tested via chi-square or *t* test. Finally, we used linear regression to examine which combination of demographic and trauma variables was most strongly associated PTSD symptom severity. For this analysis, we used a step-wise regression approach and included all variables that showed a significant bivariate relationship with PCL total score. Thus, variables included TLEQ total score, all TLEQ items with the exception of warfare and car accidents, ethnicity (dummy coded so that Hispanic participants were contrasted to all other race/ethnic groups), and years of education. We confirmed that PCL scores were normally distributed in the sample, despite our sample being restricted to persons with high scores.

Results

Table 2 lists the types of traumatic events reported by the participants on the TLEQ by gender. The most common traumatic event was the sudden death of a loved one, which did not differ in frequency by gender. Car accidents and childhood physical abuse were also reported at similar frequencies by both men and women. Men, however, more frequently experienced robbery, stranger assault, and being threatened, and were significantly more likely than women to report experiencing combat and other accidents. Women more often experienced domestic violence, childhood sexual abuse, adult sexual assault, and stalking than men. Average total events was 7.43 ($SD = 3.47$) for the total sample, but the difference between men ($M = 7.18$, $SD = 3.33$) and women ($M = 7.57$, $SD = 3.55$) was not significant.

Table 3
Traumatic Events Identified as Most Distressing by Gender

	Total ($N = 851$)		Male ($n = 299$)		Female ($n = 552$)	
Variable	*n*	%	*n*	%	*n*	%
Car accidents	16	1.9	10	3.3	6	1.1
Other accidents	13	1.5	8	2.7	5	0.9
Warfare	7	0.8	6	2.0	1	0.2
Sudden death of loved one	166	19.5	63	21.1	103	18.7
Robbery	13	1.5	7	2.3	6	1.1
Stranger assault	34	4.0	27	2.7	14	2.5
Witnessing stranger violence	16	1.9	9	3.0	7	1.3
Childhood physical abuse	33	3.9	14	4.7	19	3.4
Witnessing domestic violence	5	0.6	1	0.3	4	0.7
Experiencing domestic violence	60	7.1	11	3.7	49	8.9
Childhood sexual abuse	189	22.2	40	13.4	149	27.0
Adult sexual abuse	31	3.6	3	1.0	28	5.1
Other	134	15.7	59	19.7	75	13.6
Not specified/ missing	120	14.1	45	15.1	75	13.6

Note. $N = 851$.

Table 3 lists the traumatic events identified by participants as most distressing on the TLEQ, upon which the PCL was based. The most frequently endorsed distressing event, across gender, was childhood sexual abuse (22%), followed by the sudden death of a loved one/friend (20%). Inspection of the specific nature of the sudden death of a loved one/friend found the following causes: murder (12%), suicide (9%), witnessing death/finding someone dead (7%), car accident/fire (4%), drug overdose (1%), or unspecified (68%). Among women, the next most common most distressing events were childhood sexual abuse (27%), sudden death of a loved one (19%), and being a victim of domestic violence (9%). Among men, the next most common most distressing events were the sudden death of a loved one (21%), childhood sexual abuse (13%), and robbery/stranger assault (10%). On average and across gender, the reported index trauma had occurred almost 19 years prior to the screening (mean = 18.71, $SD = 14.30$, range: 0–54.71).

Table 4 reports correlations between endorsement of specific traumatic events on the TLEQ and PCL total score. The overall number of types of trauma exposed to as reported in the TLEQ was moderately and significantly correlated with PCL total score ($r = .27$, $p < .001$), and specific traumatic experiences (with the exception of car accidents and warfare) were also significantly correlated with PTSD symptom severity. To evaluate diagnostic and demographic correlates of overall trauma exposure and PTSD symptom severity we also performed *t* tests or one-way analyses of variance (for categorical variables), or computed Pearson correlations (for continuous variables). Hispanic participants had significantly higher PCL total scores than participants of other ethnic groups, $F(3, 838) = 5.19$, $p = .001$. Education level was modestly negatively correlated with PCL total score ($r = -.09$, $p = .008$). Age, gender, diagnosis (psychotic vs. other), and index trauma identified as most distressing were not significantly related to PTSD symptom severity.

The overall linear regression equation was significant, $R^2 = .09$, $F(4, 824) = 20.99$, $p < .001$. The final equation included four variables: TLEQ total ($\beta = .17$, $t = 3.80$, $p < .001$), Hispanic ethnicity ($\beta = .09$, $t = 2.66$, $p = .008$), being threatened

Table 4
Correlations Between Endorsement of Trauma on the TLEQ and PCL Scores

Variable	*r*
Total	.27***
Car accident	.09
Other accident	.14***
Warfare	.05
Sudden death of loved one	.09**
Robbery	.13***
Hit by stranger	.10**
Witnessing stranger violence	.17***
Threatened with death	.21***
Childhood physical abuse	.13***
Witnessing domestic violence	.11**
Adult domestic violence	.14***
CSA	.08*
CSA by peer	.12**
Adult sexual abuse	.08*

Note. $N = 851$. TLEQ = traumatic life events questionnaire; PCL = posttraumatic stress disorder checklist; CSA = childhood sexual abuse.
*$p < .05$. **$p < .01$. ***$p < .001$.

to be killed ($\beta = .10$, $t = 2.46$, $p = .014$). and being stalked ($\beta = .09$, $t = 2.42$, $p = .016$).

Discussion

The present study represents the first effort (to our knowledge) to examine the correlates of PTSD symptom severity among a large sample of persons with SMI and probable PTSD. Findings provide important implications for the targeting of trauma-based interventions for this population, in that they identify factors associated with risk for greater levels of PTSD symptoms. One important finding was that exposure to more types of traumatic events was a strong correlate of PTSD symptom severity in this sample. These findings extend previous research showing that exposure to a number of types of trauma is correlated with PTSD diagnosis and symptom severity in clients with SMI (Goldberg & Garno 2005; McFarlane et al., 2001; Mueser et al., 1998; O'Hare & Sherrer, 2009), by demonstrating a similar association within the subgroup of clients with probable PTSD.

Among the range of traumatic events experienced, childhood sexual abuse was the most commonly endorsed index trauma leading to PTSD symptoms. This is consistent with previous research showing that childhood sexual abuse is uniquely associated with PTSD in people with SMI (Mueser et al., 1998). The findings support the growing evidence documenting the significant public health burden of childhood sexual abuse in the public sector (Gilbert et al., 2009; Talbot et al., 2009), and considering the increased rate of such abuse in SMI, underscore the importance of treating the most common sequelae of abuse, PTSD. Although the most frequently endorsed index trauma was childhood sexual abuse, however, it is interesting to note that the traumatic events that were associated with the most severe PTSD symptoms in the regression equation were being stalked and being threatened. This indicates that although these events were not most frequently identified by clients as most distressing, the experience of these events was associated with significantly elevated PTSD symptoms above and beyond the effect of experiencing a number of different types of traumatic events.

The traumatic event most frequently experienced in this sample was the sudden unexpected death of a loved one, reported by 78% of the sample. This finding is consistent with other research on the SMI population showing that unexpected death is the most commonly reported traumatic event (Mueser et al., 1998; O'Hare & Sherrer, 2009), and supports Goldberg and Garno's (2005) assertion that childhood sexual abuse and severe interpersonal loss may sensitize individuals with SMI to the development of PTSD.

The high frequency of unexpected death in this sample of clients with SMI, and its association with PTSD symptom severity, raises the question of the related disorder of complicated grief (Horowitz et al., 1997). There is significant overlap between PTSD, complicated grief, and depression (Bonanno et al., 2007; Burke, Neimeyer, & McDevitt-Murphy, 2010; Craig, Sossou, Schnak, & Exxex, 2008; Pivar & Field, 2004), and recent trials report the success of cognitive–behavioral therapy in treating grief reactions in the general population (de Groot et al., 2007; Shear, Frank, Houck, & Reynolds, 2005). The findings from this study support O'Hare and Sherrer's (2011) suggestion that clients with SMI may benefit from counseling that targets complicated grief reactions.

Despite a more ethnically diverse population in this study, consistent with previous findings among clients with SMI (Kilcommons & Morrison, 2005; Mueser et al., 1998), men were more likely to have experienced warfare, robbery, stranger assault, witnessing stranger assault, and being threatened. Women were more likely to have experienced sexual abuse in childhood and adulthood, domestic violence, being stalked, and witnessing domestic violence. Men and women did not differ on exposure to childhood physical abuse, and sudden death of loved ones, and had comparable rates of traumatic event exposure, consistent with previous findings with SMI clients (Kilcommons & Morrison, 2005; Mueser et al., 1998). Hispanic ethnicity was also found to be significantly associated with PTSD symptom severity, a finding that remained significant with education level and TLEQ score in the model. The finding of more severe PTSD symptoms among Hispanic individuals is consistent with Marshall et al.'s (2009) findings that Hispanic individuals with PTSD tend to report more severe symptoms. This result is also consistent with one previous report that Hispanics with SMI were more likely to have PTSD than non-Hispanic clients (Mueser, Saylers, et al., 2004). Although the mechanisms underlying this relationship remain unclear (Marshal et al., 2009), the finding suggests that clinicians should be aware of the risk for increased PTSD symptoms in Hispanic clients.

Although the type of trauma identified as most distressing was not found to be associated with PTSD symptom severity, the number of types traumatic events experienced was in line with previous research showing that cumulative trauma exposure is related to PTSD diagnosis in people with SMI (Mueser et al., 1998). Of particular note, clients with SMI reported experiencing PTSD symptoms related to events that had occurred on average almost 20 years earlier. These findings highlight the need to routinely assess trauma exposure, and to address the prolonged effects of trauma and loss throughout the lifespan of individuals with SMI.

Some limitations of the present study should be noted. Diagnoses were based on clinical charts and therefore may be less reliable than research-based diagnoses conducted using interview schedules such as the Structured Clinical Interview for the DSM-IV. Furthermore, though the sample was drawn from a large community mental health center as part of a comprehensive screening effort, data may not be generalizable to other groups of individuals with SMI living in less urban settings, with larger numbers of individuals with psychotic disorders, and with fewer individuals from African American and Hispanic backgrounds. Finally, although data from the TLEQ give us a sense of the range of exposure to different types of trauma

which participants experienced, we are unable to determine the number of traumatic experiences that participants had (e.g., repeated experience of multiple traumatic events of the same type). Future research needs to be conducted to more accurately assess the relationship between the number and severity of types of traumatic events experienced by people with SMI and PTSD symptom severity.

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