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Pathways from Victimization to Substance Use: Post Traumatic Stress Disorder as a Mediator

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Abstract

Traumatic events are linked with an array of adverse consequences such as substance use. Only a few individuals exposed to traumatic events, however, suffer from post traumatic stress disorder (PTSD) or substance use. The present longitudinal study examined the inter-relationship among victimization, PTSD, and substance use. 674 participants (53% African Americans, 47% Puerto Ricans) were surveyed over five time waves at mean ages 14, 19, 24, 29, and 36. Of the 674, 60% were females. We used Mplus to perform structural equation modeling. Victimization at ages 19, 24, and 29 was directly associated with substance use at age 36 and was also related to PTSD at age 36. PTSD, in turn, was related to substance use at age 36. This study indicates the importance of intervention for those who have been victimized with a focus on PTSD treatment. From a public health perspective, health providers should consider treatment and prevention programs for helping individuals cope with some of the consequences of victimization. This might ultimately reduce substance use.

Keywords

post traumatic stress disorder; longitudinal study; structural equation modeling

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Competing interests

None of the authors have any financial conflicts or competing interest regarding commercial associations, consultancies, investment companies, stock or equity ownership, stock options, patent licensing arrangement, or have received payments for conducting or publicizing the study.

Authors' contributions

Each of the authors certifies that the article represents valid work to which they substantially contributed. J. Y. Lee conducted the statistical analysis, created the figure, and contributed to the writing of the article and interpretation of results. J. S. Brook contributed to the research design, interpretation of results, writing, and editing. S. J. Finch provided interpretation of the statistical analysis and review of the article. D. W. Brook was involved in the research design and editing and review of the article. All authors were involved in article preparation and approved the final draft.

1. Introduction

Trauma is an event in which a person witnesses or experiences a threat to his or her own life or physical safety or that of others and experiences fear, terror, or helplessness (VandenBos, 2007). Sixty to ninety percent of the general population has experienced traumatic events (Breslau, 2002). Traumatic events are linked with an array of negative mental health consequences including substance use (Stevens et al., 2003; Tanielian and Jaycox, 2008; Vlahov et al., 2004). However, only a few individuals exposed to traumatic events develop post traumatic stress disorder (PTSD). PTSD, for example, affects 5–10% of those exposed to trauma (Breslau, 2002; Bryant et al., 2010). A major aim of the present study was to examine the temporal relationship between potentially traumatic events (i.e., victimization), PTSD, and substance use.

A number of studies (Bonn-Miller et al., 2010; Fetzner et al., 2011; Jakupcak et al., 2010; Parslow and Jorm, 2006; Walsh et al., 2014; Zvolensky et al., 2008) reported that PTSD is related to the use of substances (i.e., alcohol, cigarettes, marijuana). Findings from a nationally representative sample of American adults indicated that individuals meeting criteria for PTSD were more likely to have alcohol use disorders (Fetzner et al., 2011). Similarly, veterans who screened positive for PTSD were two times more likely to report alcohol misuse compared to veterans who did not screen positive for PTSD (Jakupcak et al., 2010). Trauma-exposed smokers tend to smoke more heavily than non-trauma-exposed smokers (Zvolensky et al., 2008). Additionally, an Australian-based study found 13.2% of trauma-exposed individuals either initiated smoking, resumed, or increased cigarette consumption within the four years after the event (Parslow and Jorm, 2006). The severity of PTSD symptoms is associated with higher levels of marijuana use to cope (Bonn-Miller et al., 2010). In a sample of Jewish household residents living in Israel, PTSD symptoms were associated with an increased odds of alcohol, nicotine, and marijuana dependence (Walsh et al., 2014).

There is increasing evidence that victimization is also directly related to substance use (Ford et al., 2010; Gilreath et al., 2014). One study examined the relationships between high rates of child abuse, street victimization, and substance use among homeless young adults. Those who suffered more childhood physical and sexual abuse and those who experienced more types of relationship violence were more likely to report a greater frequency of substance use (Tyler and Melander, 2013). The current study extends the literature by assessing the extent to which victimization from adolescence through the third decade of life is associated with increased substance use in the fourth decade of life.

One of the most common factors that may play a role in PTSD is violent victimization (Komarovskaya et al., 2014; Streets, 1990). A cross-sectional study found that 3 cumulative victimization clusters (i.e., witnessing intimate partner violence, physical abuse by an adult caregiver, and sexual victimization, all beginning by age 12), in comparison with low exposure to **these** three types of victimization, were significant predictors of PTSD symptoms among women living in poverty (Kennedy et al., 2014). As an individual's experiences with exposure to violence accumulate, there is an increase in mental health issues, such as PTSD (Nurius et al., 2013). Currently, significant gaps in the literature

remain about the predictors of PTSD among urban minority adults ranging in age from adolescence to the mid 30s. We propose to fill this gap in the literature by examining the relationship between victimization and PTSD using a community sample of African American and Puerto Rican adults living in an urban area.

Research has identified several factors that should be included as control variables in examining the connections among victimization, PTSD, and substance use. Gender differences (female rate > male rate) in PTSD symptoms have been found in a number of studies (Dell'Osso et al., 2011; Ditlevsen and Elklit, 2012; Idsoe et al., 2012). The lifetime prevalence of PTSD among Blacks (8.7%) is somewhat higher than among Hispanics (7.0%) (Roberts et al., 2011). Females as compared with males, report lower frequency of substance use in young adulthood (Chen and Jacobson, 2012). Substance use in adolescence predicts substance use in adulthood (Patrick et al., 2011). Successful transition into adult roles such as completion of school is associated with decreased problematic use of substances (Stone et al., 2012). Unemployment and lack of a stable relationship are significantly associated with an increased likelihood of substance use (Mazzoncini et al., 2010). Therefore, we partialled out the effects of gender, ethnicity, substance use in adolescence, educational level, stressful life events in adulthood such as divorce or widowhood, and adult unemployment in the current analysis.

Our study is unique in three ways. First, we assess the predictors as well as consequences of PTSD among relatively understudied minority groups (i.e., African Americans and Puerto Ricans) living in an urban area. Second, in contrast to prior research using cross-sectional samples of participants, we followed our longitudinal sample (i.e., a cohort) from **adolescence** to the mid 30s. Third, when examining the pathways between victimization, PTSD, and substance use, we controlled for demographic factors (i.e., gender, ethnicity, educational level), stressful life events (i.e., divorce or widowhood, unemployment), and earlier substance use in adolescence.

We hypothesize that: 1) there will be a direct pathway from victimization at age 19–29 to substance use at age 36; 2) victimization at age 19–29 will be associated with PTSD at age 36, which in turn, will be associated with substance use at age 36; and 3) the pathways between victimization at age 19–29, PTSD at age 36, and substance use at age 36 will be maintained after controlling for a number of dimensions (i.e., gender, ethnicity, substance use in adolescence, educational level, divorce or widowhood, unemployment in adulthood) related to PTSD and substance use.

2. Methods

2.1. Participants

Data on the participants in this longitudinal study were first collected in 1990 (time 1; T1, $N=1,332$) when the participants were students attending schools in the East Harlem area of New York City. At T1, the questionnaires were administered in classrooms under the supervision of the study research staff with no teachers present. The mean age of the participants at T1 was 14.1 years (standard deviation; $SD=1.3$ years). At time 2 (T2; 1994 – 1996; $N=1,190$), the National Opinion Research Center interviewed the participants in

person or by phone. The mean age of the participants at this wave was 19.2 years ($SD=1.5$ years). At time 3 (T3; 2000 – 2001; $N=662$ – due to budgetary limitations, we took a subsample of T2 participants), the Survey Research Center of the University of Michigan interviewed the participants in person or by phone. The mean age of the participants at T3 was 24.4 years ($SD=1.3$ years). At time 4 (T4; 2004 – 2006; $N=838$), the data were collected by our research group by interviewing the participants in person, by phone, or by mail. The mean age was 29.2 years ($SD=1.4$ years). The data at time 5 (T5; 2011 – 2013; $N=674$) was collected by our research group using mailed questionnaires. At T5, the average age of the participants was 35.9 years ($SD=1.4$ years) with 53% African Americans and 47% Puerto Ricans. Sixty percent were females ($n=405$).

The Institutional Review Board (IRB) of the New York University School of Medicine approved the study for T4 and T5, and the IRBs of the Mount Sinai School of Medicine and New York Medical College approved the study in the earlier waves. A Certificate of Confidentiality was obtained from the National Institute on Drug Abuse for T1–T5. At each time wave, we obtained informed assent or consent from all of the participants. Additional information regarding the study methodology is available from a previous report (Brook et al., 2013).

At T5, we attempted to follow-up all those who participated at T1. We compared the demographic variables for the 674 adults who participated at both T1 and T5 with the 658 who participated at T1 but not at T5. There were no significant differences between the T5 non-participants and the T5 participants in the proportion of African Americans and Puerto Ricans ($\chi^2(1) = 0.18, p=0.7$). However, the percentage of males among T5 non-participants (53%) was significantly higher than the percentage of males who participated at T5 (40%) ($\chi^2(1) = 26.06, p<.001$).

2.2. Measures

Control variables—

- a. Gender (1=female, 2=male)
- b. Ethnicity (1=African American, 2=Puerto Rican)
- c. Alcohol use at T1 was a single item, e.g., “On average, how often do you currently drink (beer, wine, or hard liquor)?” with a 5-point ordinal scale that ranged from “none” to “three or more drinks every day.”
- d. Cigarette use at T1 was a single item, e.g., “How many cigarettes do you currently smoke?” with a 6-point ordinal scale that ranged from “none” to “more than one pack a day.”
- e. Marijuana use at T1 was a single item, e.g., “How often have you ever used marijuana?” with a 5-point ordinal scale that ranged from “never” to “once a week or more.”
- f. Educational level at T5 (0=11th grade or below, 1=12th grade or GED, 2=business or technical school, 3=college freshman, 4=college sophomore or associate’s

degree, 5=college junior, 6=college senior (Bachelor's degree), 7=postgraduate business, law, medical, masters, or doctoral program)

g. Marital status at T5 (0=married, 1= single, 2=divorced or widowed)

h. Unemployment status at T5 (0=employed, 1=unemployed)

Victimization at each of T2, T3, and T4 was a 5 item scale; "In the past 5 years, how often has someone 1) held a weapon (gun, club or knife) to you? 2) hit you with a weapon or shot you? 3) cut you with a knife? 4) beat you up or threw something at you? 5) stolen something from you, your car or home without using a weapon?" The answer options ranged from "never" to "five or more times". The score on the victimization measure at T2, T3, and T4 was the average of these five items. Cronbach's alphas were 0.70 at T2, 0.74 at T3, and 0.73 at T4.

Post traumatic stress disorder (PTSD) at T5—PTSD was assessed at T5 by the PCL-S (PTSD Checklist for DSM-IV - Specific) measure (Ruggiero et al., 2003). We adapted this measure to make it consistent with the DSM-5 (American Psychiatric Association, 2013) criteria for PTSD. First, participants were asked: "Have you ever experienced or witnessed or had to deal with an extremely stressful traumatic event that included actual or threatened death or serious injury (e.g., rape) to you or someone else? (yes or no)" If the participant answered yes to this question, s/he was asked whether each of the following 17 experiences listed below occurred for at least a month. The participant rated each experience on a 5-point Likert scale: no=1, a little bothered=2, moderately bothered=3, quite a bit bothered=4, and extremely bothered=5. Each experience had a minimum score for consideration of PTSD. These experiences and their minimum scores were: 1) Repeated, disturbing memories, thoughts or images of the stressful experience? (a minimum score of 4) 2) Repeated, disturbing dreams of the stressful experience? (a minimum score of 4) 3) Suddenly acting or feeling as if the experience was happening again (re-experiencing it)? (a minimum score of 3) 4) Feeling very upset when something reminded you of the stressful experience? (a minimum score of 3) 5) Having physical reactions when something reminded you of the stressful experience? (a minimum score of 3) 6) Avoiding thinking about or talking about the stressful experience or avoiding having feelings related to it? (a minimum score of 3) 7) Avoiding activities or situations because they remind you of the stressful experience? (a minimum score of 3) 8) Having trouble remembering important parts of the stressful experience? (a minimum score of 3) 9) Loss of interest in things you used to enjoy? (a minimum score of 4) 10) Feeling distant or cut off from other people? (a minimum score of 4) 11) Feeling emotionally numb or being unable to have loving feelings for those close to you? (a minimum score of 3) 12) Feeling as if your future will somehow be cut short? (a minimum score of 4) 13) Trouble falling or staying asleep? (a minimum score of 3) 14) Feeling irritable or having angry outbursts? (a minimum score of 3) 15) Having difficulty concentrating? (a minimum score of 4) 16) Being "super alert" or watchful, on guard? (a minimum score of 3) 17) Feeling jumpy or easily startled? (a minimum score of 3) A participant was scored as having PTSD when the following four criteria were met: a) at least one question from 1 through 5 met the minimum score, b) at least 3 questions from 6 through 12 met the minimum score, c) at least 2 questions from 13 through 17 met the minimum score, and d) the summed score of all 17 questions was 44.

Alcohol use at T5 was a single item, e.g., “On average, how many drinks (beer, wine, or hard liquor) did you have in the past year?” with a 6-point ordinal scale that ranged from “none” to “five or more drinks every day.”

Cigarette use at T5 was a single item, e.g., “How many cigarettes did you smoke in the past year?” with a 7-point ordinal scale that ranged from “none” to “more than one and a half packs a day.”

Marijuana use at T5 was a single item, e.g., “How often have you used marijuana in the past year?” with a 5-point ordinal scale that ranged from “never” to “once a week or more.”

2.3. Analytic plan

We used Mplus (Version 6) to perform structural equation modeling (SEM) (Muthén and Muthén, 2010). Following Newcomb and Bentler (Newcomb and Bentler, 1988), we partialled out the effects of gender, ethnicity, T1 alcohol use, T1 cigarette use, T1 marijuana use, T5 educational level, T5 marital status, and T5 unemployment. The Mplus Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) were used to assess the fit of the model. For the CFI, values between 0.90 and 1.0 indicate an adequate fit (Muthén and Muthén, 2010). For the RMSEA, values below 0.10 indicate an adequate fit (Kelloway, 1998). For the SRMR, values below than 0.05 indicate an adequate fit (Byrne, 1998; Diamantopoulos and Siguaw, 2000).

We report the standardized regression coefficient (reported as β) and its standard score value (reported as z). We also calculated the standardized total effects and total indirect effects by using the Model Indirect command in Mplus. The standardized total effect equals the sum of the direct and the indirect effects of victimization on substance use at T5.

2.4. Missing data

Of the 674 participants who participated at T5, the percentages of missing values for victimization at T2, T3, T4, PTSD at T5, alcohol use at T5, cigarette use at T5, and marijuana use at T5 were 0.1%, 3.8%, 7.6%, 1.2%, 2.2%, 3.8%, and 1.5%, respectively. The structural equation algorithm in Mplus dealt with missing data by using maximum likelihood estimation (Muthén and Muthén, 2010).

3. Results

Table 1 presents summary statistics (means with standard deviations or percentages) for each of the variables used in this study. The fraction reporting PTSD was 8%. There was no significant difference in the prevalence of PTSD between African Americans and Puerto Ricans ($\chi^2(1) = 0.33, p > .05$).

We tested the measurement model, as well as the structural model, controlling for the participant's gender, ethnicity, use of substances (alcohol, cigarettes, marijuana) at T1, educational level, marital status, and unemployment status at T5. All factor loadings were significant ($p < 0.001$). The CFI was 0.99, the RMSEA was 0.01, and the SRMR was 0.02,

which indicated an adequate model fit. The standardized coefficients (β) and z -statistics in the parenthesis for the sample are presented in Figure 1 for the structural model.

Victimization at age 19–29 was associated with substance use at age 36 ($\beta=0.16, p<.05$). Victimization at age 19–29 was also related to PTSD at age 36 ($\beta=0.15, p<.01$), which in turn, was related to substance use at age 36 ($\beta=0.11, p<.05$). The total effect (direct and indirect effect) of victimization at age 19–29 on substance use at age 36 was statistically significant ($\beta=0.17, p<.01$).

4. Discussion

We investigated the associations between victimization at age 19–29 and PTSD at age 36 **and** substance use at age 36. A structural equation model supported the hypothesized pathways. First, victimization at age 19–29 was directly associated with substance use at age 36. Second, victimization at age 19–29 was also associated with PTSD at age 36, which in turn, was related to substance use at age 36. Third, these pathways were maintained after controlling for eight variables (i.e., gender, ethnicity, alcohol use, cigarette use, and marijuana use at T1, educational level, marital status, and unemployment status at T5) that are associated with later PTSD and substance use.

Our finding indicating a direct pathway from victimization to substance use is supported by the stress and coping theory (Folkman and Moskowitz, 2004), which was developed to examine how people appraise and cope with a wide variety of stressful encounters ranging from minor daily difficulties to major life events. The stress and coping theory suggests that many individuals may use substances to cope with the negative effect resulting from adverse experiences (e.g., victimization).

The sensitization hypothesis (Heim and Nemeroff, 2001; Heim et al., 2000) also supports the pathway from victimization to PTSD. The sensitization hypothesis suggests that early adversities such as physical assault contribute to a biological diathesis for later mental health problems (e.g., PTSD). That is, exposure to violent experiences may render individuals sensitive to further exposure to stress, subsequently increasing the risk for the development of serious mental health problems such as PTSD.

The pathway from PTSD to substance use is supported by the self-medication theory (Khantzian, 1997), which postulates that an individual may use a substance to self-administer treatment for physical or psychological ailments. People who have post traumatic stress symptoms may treat themselves by using substances to relieve their stress. Animal studies showing that stress induces relapse to both heroin and cocaine self-administration in rats trained to self-administer these substances (Shaham et al., 2000) are consistent with this interpretation.

Our results are also consistent with the findings from a study based on a sample of soldiers stationed in Iraq (Wright et al., 2012), which found that combat experiences had a direct effect on substance use after controlling for rank and age. Post traumatic stress symptoms partially mediated the associations between combat experiences and substance use. Another study, based on a sample of adolescents attending Jewish secular and religious schools and

Israeli Arab schools, found a direct association between exposure to multiple political traumas (e.g., exposure to terror attack, nearby bombardment) and substance use, as well as an indirect association mediated by post traumatic stress symptoms (Schiff and Fang, 2014).

4.1. Limitations and Strengths

This study has some limitations. The measures used in this study were based on self-report and may include some respondent bias (e.g., under-reporting of marijuana use). Some confounding covariates associated with selection bias in the victimization variable may also be included. However, self-reported data has been used in a number of survey studies and has been found to have adequate reliability and validity (Harrison et al., 2007; Ledgerwood et al., 2008; Vartiainen et al., 2002). The findings of this study are based on a sample of 674 African American and Puerto Rican adults living in an urban area, a relatively small sample given that 8% of the participants were diagnosed with PTSD. This may affect the generalizability of the findings to other populations. There were no ethnic differences in terms of the participants reporting PTSD. This may be due to the fact that we did not have sufficient power since our sample was relatively small. This study was not designed to test all aspects of specific theories. However, we did incorporate several components of the major theories. In regards to the time point of the measures, future research should assess PTSD soon after the participants were victimized. This will make a clearer time-line among victimization, PTSD, and substance use enabling the analyses of the possible mediating role of PTSD.

Despite these limitations, our findings contribute to the literature in three important ways. First, the analysis covers several significant stages of development, beginning when the participants were in adolescence and continuing into their mid thirties. Second, to our knowledge, this is the first longitudinal study of victimization as related to PTSD and substance use in the mid 30s assessed in a sample of urban African Americans and Puerto Ricans. Third, our findings indicated that PTSD served as a partial mediator on the pathway from earlier victimization to later substance use.

4.2. Conclusions

Our findings document the association between victimization at age 19–29 and PTSD as well as substance use at age 36. The relationship between stressful life events and substance use has been well studied (Tyler and Melander, 2013). Similarly, the relationship of victimization and PTSD has received some attention (Komarovskaya et al., 2014). However, the interrelationships among victimization, PTSD, and substance use are less well understood among policy makers and health professionals. The current study may lead to a better understanding by physicians and mental health professionals of the associations between victimization, PTSD, and substance use.

Cognitive behavioral therapy is an effective treatment for symptomatic individuals when started soon after exposure to traumatic events (Boris et al., 2005). In addition, pharmacological treatments also show some evidence for improving PTSD symptoms (Jonas et al., 2013). This study points to the importance of intervention with regards to victimization, PTSD, and substance use. From a public health perspective, to achieve

satisfactory treatment outcomes in people who have experienced victimization, PTSD, and substance use, clinicians need to consider programs including both cognitive behavioral therapy and pharmacological treatment. This might ultimately reduce substance use as a response to the victimization.

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Highlights

1. We examined the inter-relationship among victimization, PTSD, and substance use.
2. Victimization at age 19–29 was directly associated with substance use at age 36.
3. Victimization at age 19–29 was also associated with PTSD at age 36.
4. PTSD at age 36 was related to substance use at age 36.

Fig. 1.

Pathways from Victimization at T2 through T4 and Post Traumatic Stress Disorder (PTSD) at T5 to Substance Use at T5

CFI = 0.99, RMSEA = 0.01, SRMR = 0.02

Note. * $p < 0.05$, ** $p < 0.01$;

β =standardized regression coefficient;

Gender, ethnicity, T1 alcohol use, T1 cigarette use, T1 marijuana use, T5 educational level, T5 marital status, and T5 unemployment status were statistically controlled.

Table 1Summary statistics by ethnic group (means with standard deviations or percentages)^a

	African American (53%, n=356)	Puerto Rican (47%, n=318)	Total (N=674)
Control variables			
Gender	Female=61% (n=217)	Female=59% (n=188)	Female=60% (n=405)
Educational level T5	3.4 (2.4)	2.6 (2.2)	3.1 (2.3)
Marital status T5	Married=32% (n=116) Single=58% (n=206) Divorced or widowed=10% (n=34)	Married=40% (n=123) Single=52% (n=160) Divorced or widowed=9% (n=27)	Married=36% (n=239) Single=55% (n=366) Divorced or widowed=9% (n=61)
Unemployment T5	18% (n=64)	23% (n=72)	20% (n=136)
Victimization			
Victimization T2	0.4 (0.5)	0.4 (0.6)	0.4 (0.5)
Victimization T3	0.5 (0.6)	0.4 (0.6)	0.5 (0.6)
Victimization T4	0.6 (0.6)	0.5 (0.6)	0.5 (0.6)
PTSD			
PTSD T5	8% (n=30)	7% (n=23)	8% (n=53)
Screening question	28% (n=100)	33% (n=105)	30% (n=205)
1	2.9 (1.4)	2.9 (1.5)	2.9 (1.4)
2	2.2 (1.4)	2.3 (1.3)	2.2 (1.4)
3	2.0 (1.3)	2.0 (1.3)	2.0 (1.3)
4	2.8 (1.3)	2.7 (1.4)	2.8 (1.3)
5	2.0 (1.3)	2.2 (1.4)	2.1 (1.4)
6	2.6 (1.5)	2.4 (1.4)	2.5 (1.5)
7	2.3 (1.4)	2.1 (1.3)	2.2 (1.4)
8	1.6 (1.1)	1.8 (1.3)	1.7 (1.2)
9	2.1 (1.3)	2.0 (1.4)	2.0 (1.3)
10	2.4 (1.6)	2.1 (1.4)	2.2 (1.5)
11	2.0 (1.4)	1.9 (1.4)	2.0 (1.4)
12	1.9 (1.4)	1.9 (1.3)	1.9 (1.3)
13	2.4 (1.5)	2.2 (1.4)	2.3 (1.4)
14	2.0 (1.4)	2.0 (1.3)	2.0 (1.4)
15	2.2 (1.5)	2.1 (1.3)	2.1 (1.4)
16	2.5 (1.4)	2.5 (1.5)	2.5 (1.5)
17	2.0 (1.3)	2.1 (1.3)	2.0 (1.3)
Substance use			
Alcohol use T1	0.2 (0.4)	0.2 (0.4)	0.2 (0.4)
T5	1.3 (1.0)	1.2 (1.1)	1.3 (1.1)
Cigarette use T1	0.1 (0.6)	0.3 (0.6)	0.2 (0.6)
T5	1.0 (1.6)	1.1 (1.7)	1.0 (1.6)
Marijuana use T1	0.2 (0.6)	0.2 (0.7)	0.2 (0.7)
T5	0.8 (1.5)	0.8 (1.4)	0.8 (1.5)

^a Educational level T5 (0=11th grade or below, 1=12th grade or GED, 2=business or technical school, 3=college freshman, 4=college sophomore or associate's degree, 5=college junior, 6=college senior (Bachelor's degree), 7=postgraduate business, law, medical, masters, or doctoral)

program) ; Victimization T4 (0=never, 1=once, 2=twice, 3=3 or 4 times, 4=5 or more times); PTSD T5 screening question and 17 items: Have you ever experienced or witnessed or had to deal with an extremely stressful traumatic event that included actual or threatened death or serious injury (e.g., rape) to you or someone else? (0=no, 1=yes) 1) Repeated, disturbing memories, thoughts or images of the stressful experience? 2) Repeated, disturbing dreams of the stressful experience? 3) Suddenly acting or feeling as if the experience were happening again (reliving it)? 4) Feeling very upset when something reminded you of the stressful experience? 5) Having physical reactions when something reminded you of the stressful experience? 6) Avoiding thinking about or talking about the stressful experience or avoiding having feelings related to it? 7) Avoiding activities or situations because they remind you of the stressful experience? 8) Having trouble remembering important parts of the stressful experience? 9) Loss of interest in things you used to enjoy? 10) Feeling distant or cut off from other people? 11) Feeling emotionally numb or being unable to have loving feelings for those close to you? 12) Feeling as if your future will somehow be cut short? 13) Trouble falling or staying asleep? 14) Feeling irritable or having angry outbursts? 15) Having difficulty concentrating? 16) Being “super alert” or watchful, on guard? 17) Feeling jumpy or easily startled? (1=no, 2=a little bothered, 3=moderately bothered, 4=quite a bit bothered, 5=extremely bothered); Alcohol use T1 (0=none, 1=less than once a week, 2=once to several times a week, 3=1 or 2 drinks a day, 4=3 or 4 drinks a day, 5=5 or more drinks everyday); Cigarette use T1 (0=none, 1=a few cigarettes or less a week, 2=1–5 cigarettes a day, 3=about half pack a day, 4=about 1 pack a day, 5=about 1 and a half packs a day); Cigarette use T5 (0=none, 1=a few cigarettes or less a week, 2=1–5 cigarettes a day, 3=about half pack a day, 4=about 1 pack a day, 5=about 1 and a half packs a day, 6=more than 1 and a half packs a day); Marijuana use T1 and T5 (0=never, 1=1 or 2 times, 2=3–5 times, 3=6–9 times, 4=10 or more times).