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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.

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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

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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; Idose 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, $N=1332$) 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; $N=1190$), 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 consent 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

2.2.1. Control variables

- Gender (1=female, 2=male).
- Ethnicity (1=African American, 2=Puerto Rican).
- 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.”
- 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.”
- 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.”
- 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).
- Marital status at T5 (0=married, 1=single, 2=divorced or widowed).
- 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.

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