Alcohol expectancies in persons with severe mental illness and posttraumatic stress disorder

Pallavi Nishith¹, Kim T. Mueser²* and Gary A. Morse¹

Abstract: Background: Persons with a severe mental illness (SMI) report high rates of trauma, posttraumatic stress disorder (PTSD), and alcohol use disorder. OBJECTIVE: The aim of the study was to compare alcohol use expectancies between persons with an SMI and PTSD with an alcohol use disorder, to similar individuals with no alcohol use disorder. 

Methods: Nine persons with SMI, PTSD, and alcohol use disorder were compared to 12 persons with SMI, PTSD, and no alcohol use disorder on their alcohol use expectancies using the Alcohol Effect Expectancy Questionnaire (AEEQ).

Results: The multivariate F-test for a one-way multivariate analysis of variance was statistically significant, indicating differences between the two groups on the AEEQ subscales. Univariate tests revealed that compared to persons with no alcohol use disorder, those with alcohol use disorder had significantly higher scores on all the AEEQ subscales except the relaxation and tension reduction subscale.

Conclusions: The results suggest that alcohol use disorder in individuals with SMI and PTSD may be related to efforts to cope with specific PTSD symptom clusters, such as feelings of numbness and avoidance. The findings have implications for treating alcohol use disorder and PTSD in the SMI population, by targeting coping skills such as emotional regulation as an alternative to alcohol use.

ABOUT THE AUTHOR

The first author, Pallavi Nishith, Ph.D, has a primary appointment as Staff Psychologist at Places for People, a community mental health center in Saint Louis, MO. In this role, she utilizes Cognitive Behavior Therapy (CBT) models to provide therapy for PTSD in persons with a severe mental illness (SMI). There is evidence that PTSD, in the SMI, contributes to increased vulnerability to alcohol and drug use disorder. However, the specific mechanisms underlying this association are unclear. Assessment of expectancies for alcohol and drug use in persons with SMI and PTSD could provide a potential target for interventions addressing comorbid PTSD and alcohol use disorder in this population. This study compared alcohol use expectancies in persons with SMI, PTSD and alcohol use disorder to similar individuals with PTSD but no history of alcohol use disorder. Findings could be integrated, into existing CBT models, to provide targeted therapy for this dually diagnosed population of persons with SMI.

PUBLIC INTEREST STATEMENT

High rates of trauma and Posttraumatic Stress Disorder (PTSD) have been reported in persons with severe mental illness (SMI). Further, persons with SMI have high rates of alcohol and drug use disorders compared to the general population. Across both the general and SMI populations, there is evidence that PTSD contributes to increased vulnerability to alcohol and drug use disorder. However, the specific mechanisms underlying this association are unclear. Expectancies for the effects of substances have been posited as etiological factors in the development of substance use disorder. Expectancies reflect the degree to which individuals expect a substance to produce a variety of general and specific effects. Assessment of expectancies for alcohol use in persons with SMI and PTSD could provide a potential target for interventions addressing comorbid PTSD and alcohol use disorder in this population. This study compared alcohol use expectancies in persons with SMI, PTSD and alcohol use disorder to similar individuals with PTSD but no history of alcohol use disorder.
The lifetime prevalence of trauma exposure among people with a serious mental illness (SMI) is high (Grubaugh, Zinzow, Paul, Egede, & Frueh, 2011). Specifically, rates of trauma exposure in psychiatric inpatients have been found to range from 53% to 100% (Goodman, Dutton, & Harris, 1997; McFarlane, Bookless, & Air, 2003; Shaw, McFarlane, Bookless, & Air, 2002), while about 90% of people with SMI report having experienced at least one traumatic event, most of whom have been multiply traumatized (Goodman et al., 1997; Mueser et al., 1998). Consistent with the high rate of trauma in persons with SMI, high rates of posttraumatic stress disorder (PTSD) have also been reported in this population, with most estimates of current PTSD ranging from 29% to 43% (Grubaugh et al., 2011; Mueser, Rosenberg, Goodman, & Trumbetta, 2002). These rates are much higher than the estimated 8–12% lifetime prevalence of PTSD in the general population (Breslau, Davis, Andreski, & Peterson, 1991; Kessler et al., 2014; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Kilpatrick et al., 2013; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993).

There is also abundant evidence that persons with SMI have high rates of alcohol and drug use disorders compared to the general population. Approximately 40–50% of persons with SMI have lifetime substance use disorder (Maslin et al., 2001; Mueser et al., 1990; Volkow, 2009; Weaver et al., 2003) vs. only 15% in the general population (Kessler et al., 1997; Petrikis, Rosenheck, & Desai, 2011; Regier et al., 1990). This raises the question of whether the increased rates of PTSD in persons with SMI may account for some of the higher prevalence of substance use disorder in this population. Substantial evidence shows that PTSD is associated with an increased rate of alcohol and drug use disorder in both the general population (Bonin, Norton, Asmundson, Dicurzio, & Pidlubney, 2000; Breslau, Davis, & Schultz, 2003; Lipschitz et al., 2003; Villagonzalo et al., 2011) and the SMI population (Brady, Rierdan, Penk, Losardo, & Meschede, 2003; Ford & Furnier, 2007; Mueser et al., 2004; Rosenberg, Lu, Mueser, Jankowski, & Cournos, 2007). Furthermore, across both the general and SMI populations, there is evidence that PTSD contributes to increased vulnerability to alcohol and drug use disorder (Chilcoat & Breslau, 1998; Cusack, Herring, & Steadman, 2013).

Although PTSD appears to contribute to alcohol and drug use problems, the specific mechanisms underlying the association are unclear. Expectancies for the effects of substances have been posited as etiological factors in the development of substance use disorder (Cooper, Russell, Skinner, Frone, & Mudar, 1992; Cox & Klinger, 1988). Expectancies reflect the degree to which individuals expect a substance to produce a variety of general and specific effects. These expectancies are in turn hypothesized to influence decisions regarding the use of substances, and have been found to be related to a history of substance use disorder in the general population (Brown, Christiansen, & Goldman, 1987; Goldman, 1994).

Research has shown that both a history of trauma (Corbin, Bernat, Calhoun, McNair, & Seals, 2001; Jester, Steinberg, Heitzeg, & Zucker, 2015; Peters, Khondkaryan, & Sullivan, 2012), as well as PTSD (Schaumberg et al., 2015) predict positive PTSD-related alcohol expectancies (Himmerich & Orcutt, 2019; McDevitt-Murphy, Luciano, Tripp, & Eddinger, 2017; Pederson, Myers, Browne, & Norman, 2014). In particular, relaxation and tension reduction expectancies are related to alcohol use behaviors (Peters et al., 2012; Simpson, 2003; Vil, Islam-Zwart, & Ruge, 2008). It is suggested that alcohol use expectancies may serve as targets for interventions to reduce alcohol use behaviors in persons with PTSD (Himmerich & Orcutt, 2019; Peters et al., 2012).

In a study of expectancies in psychiatric outpatients, Nishith, Mueser, Srsic, and Beck (1997) showed that outpatients with SMI and history of comorbid alcohol use disorder reported greater expectancies for using alcohol than did patients with no such history. Substance-specific expectancies in schizophrenia were reported by Mueser, Nishith et al. (1995), where alcohol expectancies were related to alcohol use disorders but not drug use disorders. Assessment of expectancies for
alcohol use in persons with SMI and PTSD could provide a potential target for interventions addressing comorbid PTSD and alcohol use disorder in this population (Thornton, Baker, Johnson, & Lewin, 2012). The goal of this study was to compare alcohol use expectancies in persons with SMI, PTSD and alcohol use disorder to similar individuals with PTSD but no history of alcohol use disorder.

1. Method
This study was conducted at an urban community mental health center serving a diverse range of persons with SMI. All research procedures were approved by the local Institutional Review Board and all participants provided signed informed consent for the study.

1.1. Participants
The sample comprised persons with an SMI who met diagnostic criteria for PTSD, with or without alcohol use disorder. The only exclusion criteria for participating in the study were: organic brain conditions, currently suicidal or homicidal, or unable or not legally able to provide informed consent.

We recruited 21 participants for the study based on referrals from intake and community support teams for the treatment of PTSD. Participants had a mean age of 42.3 years. Seven participants (33%) were male and 14 (67%) were female; 7 (33%) were Caucasian and 14 (66%) were African-American; 13 participants were single, 1 was married, and 7 divorced or separated; 8 had less than high school level of education, 7 (33%) had graduated from high school, 5 had some college, and 1 had a college degree. Regarding income, 7 participants (33%) were earning (from social security income and/or other supplemental income) less than $500/month, 12 were earning between $500 and $1000 per month, and 2 were earning between $1000 and $1500 per month. Chart diagnoses were used to establish primary SMI diagnoses. One participant had a diagnosis of schizophrenia, four had schizoaffective disorder, five had bipolar disorder, nine had major depression, four had an anxiety disorder, and one had dissociative disorder.

1.2. Instruments
Clinical interviews based on the DSM-IV-TR (American Psychiatric Association, 2000) were conducted to confirm PTSD in all participants and to evaluate the history of substance use disorder. In addition to PTSD and SMI diagnoses, 9 participants (43%) had a history of alcohol use disorder and 12 (57%) did not. Among the 9 participants with an alcohol use disorder, 8 also had a history of a drug use disorder, whereas among the 12 participants with no alcohol use disorder, 9 also had a history of a drug use disorder.

Alcohol expectancies were assessed with the Alcohol Effect Expectancy Questionnaire (AEEQ; Brown et al., 1987). The AEEQ contains 68 items describing the common effects of alcohol. Respondents are asked to agree or disagree with each item according to their own current thoughts, feelings, and beliefs about alcohol. The AEEQ contains six subscales that measure global positive change, sexual enhancement, physical and social pleasure, increased social assertiveness, relaxation and tension reduction, and arousal and aggression. The scales have high internal consistency and test–retest reliabilities and have been found to distinguish between patterns of non-use and varying degrees of use in the general and psychiatric populations (Mueser, Nishith et al., 1995).

1.3. Procedures
Clinicians at the agency were informed about the nature of the study, asked to identify individuals who might be eligible for the study and to briefly describe the study to potential participants. Interested individuals were referred to meet with a member of the research team, who explained the study procedures, obtained informed consent, and then administered the PTSD assessment to confirm eligibility for the study. Participants who had a lifetime diagnosis of PTSD were then assessed for substance use disorder and administered the AEEQ. Participants were paid $15 for completing the assessments.
2. Results

A one-way multivariate analysis of variance (MANOVA) was conducted to compare the participants with an alcohol use disorder to those without such as disorder on the AEEQ subscales. The multivariate test was significant, multivariate $F(6,14) = 5.14, p < .01$, indicating that the profile of AEEQ subscales differed significantly between the two groups. Univariate tests showed that participants with PTSD and alcohol use disorder had significantly higher alcohol expectancy scores than those with no alcohol use disorder on most of AEEQ subscales, including global positive changes [$F(1,20) = 10.81, p < .004$], enhanced sexual performance [$F(1,20) = 5.08, p < .04$], physical and social pleasure [$F(1,20) = 10.09, p < .005$], increased social assertiveness [$F(1,20) = 8.89, p < .008$], and arousal and power [$F(1,20) = 14.30, p < .001$]. The only AEEQ subscale that did not differ significantly between the two groups was the relaxation and tension reduction subscale (see Table 1).

3. Discussion

Participants with SMI and co-occurring PTSD and a history of alcohol use disorder endorsed significantly more positive expectancies for the effects of alcohol on five of the six subscales of the AEEQ than participants with SMI and PTSD, but no history of alcohol use disorder. These findings are generally consistent with extensive research in the general population linking positive alcohol expectancies to both a history of alcohol use problems and future drinking problems (Leigh & Stacy, 2004; Maisto, Corey, & Bradizza, 1999; Park & Grant, 2005), and more limited research demonstrating associations between alcohol expectancies and SUD in persons with SMI (Mueser, Nishith, et al., 1995). However, considering the unique population studied here, persons with SMI and PTSD, and the high level of distress associated with PTSD (Mueser et al., 2004), these expectancies could reflect beliefs about the ameliorating effects of alcohol on PTSD symptoms. Research on combat veterans using the PTSD Alcohol Expectancy Questionnaire (Norman, Inaba, Smith, & Brown, 2008) has shown alcohol expectancies to moderate the relationship between PTSD severity and hazardous drinking (McDevitt-Murphy et al., 2017), suggesting that similar mechanisms may contribute to alcohol problems among persons with SMI and PTSD.

Difficulties in emotional regulation have been hypothesized to mediate the relationship between PTSD symptoms and alcohol use, and consequences in college students (Radomski & Read, 2016; Tripp, McDevitt-Murphy, Avery, & Bracken, 2015) and inner-city females. In particular, poor emotional regulation has been found to explain the relationship between PTSD avoidance/numbing symptoms and alcohol dependence in inner-city females (Goldstein, Bradley, Ressler, & Powers, 2017). In the present study, co-occurring alcohol use disorder in persons with SMI and PTSD was associated with stronger expectancies for positive effects of alcohol on global changes, as well-positive effects on social and sexual behavior, arousal and power, and the experience of pleasure—aspects of functioning that are especially impaired by numbing and avoidance symptoms. The findings suggest that persons with SMI and PTSD who use alcohol as a stimulant to cope with or counteract the effects of these symptoms on their social and sexual lives, and their capacity for pleasure, may be particularly prone to developing alcohol use problems. Consistent with the possible use of alcohol to stimulate interpersonal and pleasurable experiences affected by prominent numbing and avoidance symptoms, the only subscale of the AEEQ that was not related to lifetime history of alcohol use disorder was expectancies for relaxation and tension reduction, or expectancies for de-activating rather than activating effects of alcohol.

The present study extends previous research on the associations between alcohol expectancies and alcohol use disorder in people with SMI by demonstrating that persons with SMI and PTSD who have more positive expectancies for the effects alcohol are significantly more likely to have alcohol use problems than similar persons with PTSD and less positive expectancies for the effects of alcohol. A particularly intriguing finding was that compared to people with SMI, PTSD, but no alcohol use disorder, people who also had co-occurring alcohol use disorder endorsed more positive expectancies for the effects of alcohol on increasing social and sexual behavior, and the experience of power and pleasure, but not for the effects on reducing tension and promoting relaxation. The findings raise the question of whether alcohol use and related...
<table>
<thead>
<tr>
<th>AEEQ Scale</th>
<th>PTSD with Alcohol Use Disorder</th>
<th>Mean</th>
<th>SD</th>
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<tbody>
<tr>
<td>Global Positive Changes</td>
<td>13.33</td>
<td></td>
<td>8.82*</td>
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<td>PTSD with Alcohol Use Disorder</td>
<td>3.75</td>
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<td>4.35</td>
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<tr>
<td>Enhanced Sexual Performance</td>
<td>3.89</td>
<td></td>
<td>3.18*</td>
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<tr>
<td>PTSD with Alcohol Use Disorder</td>
<td>1.33</td>
<td></td>
<td>2.01</td>
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<tr>
<td>Physical and Social Pleasure</td>
<td>6.44</td>
<td></td>
<td>3.21*</td>
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<tr>
<td>PTSD with Alcohol Use Disorder</td>
<td>2.42</td>
<td></td>
<td>2.61</td>
</tr>
<tr>
<td>Increased Social Assertiveness</td>
<td>6.44</td>
<td></td>
<td>3.61*</td>
</tr>
<tr>
<td>PTSD with Alcohol Use Disorder</td>
<td>2.08</td>
<td></td>
<td>3.09</td>
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<tr>
<td>Relaxation &amp; Tension Reduction</td>
<td>5.22</td>
<td></td>
<td>3.53</td>
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<tr>
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<tr>
<td>Arousal &amp; Power</td>
<td>5.89</td>
<td></td>
<td>2.67*</td>
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<td>2.15</td>
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*p < .05
problems in individuals with SMI and PTSD may be related to efforts to cope with specific symptom clusters of PTSD, such as feelings of numbness and avoidance. If replicated, the findings could have important implications for interventions targeting alcohol use disorder and PTSD and the SMI population, such as the teaching of more effective coping or emotional management strategies as alternatives to alcohol use.

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