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Alexithymia and Alcohol Dependence: The Roles of Negative Mood and Alcohol Craving

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ABSTRACT

Background: Alexithymia is a personality trait associated with emotion regulation difficulties. Up to 67% of alcohol-dependent patients in treatment have alexithymia. **Objectives:** The objective of this study was to investigate the direct and indirect effects of alexithymia, negative mood (stress, anxiety, and depression) and alcohol craving on alcohol dependence severity. **Methods:** Three hundred and fifty-five outpatients (mean age = 38.70, SD = 11.00, 244 males, range 18–71 years) undergoing Cognitive-Behavioral Therapy for alcohol dependence completed the Toronto Alexithymia Scale (TAS-20), Depression Anxiety Stress Scales (DASS-21), Obsessive Compulsive Drinking Scale (OCDS), and Alcohol Use Disorders Identification Test (AUDIT) prior to the first treatment session. **Results:** Alexithymia had an indirect effect on alcohol dependence severity, via both negative mood and alcohol craving ($b = 0.03$, $seb = 0.008$, 95% CI: 0.02–0.05). An indirect effect of negative mood on alcohol dependence via alcohol craving was also observed ($b = 0.12$, $seb = 0.03$, 95% CI: 0.07–0.16). **Conclusions/importance:** Alexithymia worked through negative mood and alcohol craving leading to increased alcohol dependence severity, indicating that craving had an indirect effect on the relationship between alexithymia and alcohol dependence severity. Targeting alcohol craving and negative mood for alcohol-dependent patients with alexithymia seems warranted.

KEYWORDS

Alexithymia; negative mood; alcohol craving; alcohol dependence

Introduction

Relapse is common after treatment for alcohol dependence (Holder & Blose, 1992; Moos, Finney, Ouimette, & Suchinsky, 1999). Impulsivity, stress and negative mood are commonly reported triggers for alcohol craving, loss of control over drinking, and relapse (Czapla et al., 2016; Gullo & Potenza, 2014; Law et al., 2016; Witkiewitz & Villarroel, 2009). Alexithymia is a personality trait characterized by a difficulty identifying and describing feelings, lack of ability to distinguish physiological arousal from feelings, and an externally oriented thinking style (Taylor, Bagby, & Luminet, 2000; Thorberg et al., 2016). Of those with alcohol use disorders (AUD), 30–67%

reported to having alexithymia compared to less than 12% in the general population (Cruise & Becerra, 2018; Franz et al., 2008; Thorberg, Young, Sullivan, & Lyvers, 2009). People with combined alexithymia and alcohol dependence report greater interpersonal difficulties, increased alcohol dependence severity (Thorberg et al., 2010, 2011b) and in some studies, higher relapse rates (Cruise & Becerra, 2018; Thorberg et al., 2009). In addition, alexithymia was recently highlighted as a risk factor for alcohol-related problems among those with alcohol dependence in a systematic review (Cruise & Becerra, 2018).

Over the past two decades, improving treatment outcomes in alcohol dependence has emphasized a

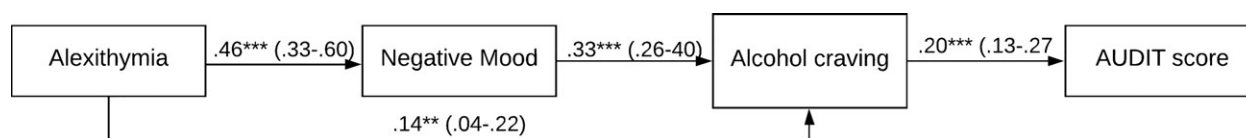


Figure 1. Direct and indirect effects of alexithymia on AUDIT scores, via negative mood and alcohol craving. Unstandardized effects are reported (95% bias corrected confidence intervals). ** $P < .01$; *** $P < .001$.

better understanding of psychosocial mechanisms of change (Finney, 2018; Hallgren, Wilson, & Witkiewitz, 2018). Few studies have investigated potential underlying mechanisms that contribute to alexithymia's role in alcohol dependence. In a treatment seeking, alcohol-dependent sample, Thorberg et al. (2011c) reported that expectations of affective change and increased assertion after alcohol consumption were partial mediators of the relationship between alexithymia and alcohol dependence. This suggests that people with alexithymia may experience stronger emotions from drinking alcohol associated with increased assertion.

However, using alcohol to improve coping with perceived "stressful" social situations is also a likely reinforcer for individuals with alexithymia (Thorberg et al., 2009). The stress-alexithymia hypothesis proposes that alexithymic characteristics will prevent an individual from coping effectively with a stressor, due to lack of affective awareness, impaired ability to identify stressful events and the tendency to use action as a primary behavioral generalized response (Martin & Pihl, 1985), e.g., consuming alcohol. Other evidence has indicated that those with alexithymia consume alcohol to cope with anxiety (Stewart, Zvolensky, & Eifert, 2002), or that depression may link alexithymia with alcohol problems (Speranza et al., 2004). Many alcohol drinkers use alcohol to reduce distress when feeling anxious and over-aroused, and to increase positive affect when under-aroused or fatigued (Wills & Shiffman, 1985). Thorberg and Lyvers (2006) found that individuals with AUD suffered from higher levels of stress, anxiety and depression compared to healthy controls, in line with the commonly cited reason for drinking to reduce negative affect known as the self-medication hypothesis (Khantzian, 2003). Similar findings of an association between alexithymia and stress, anxiety and depression have also been reported in nonclinical samples (Lyvers, Makin, Toms, Thorberg, & Samios, 2014).

The relationship between craving and increased risk of alcohol relapse is well documented (Kavanagh et al., 2013; Paille et al., 1995). A recent experimental study investigated if a stress inducing task had any effect on desire for alcohol and alcohol consumption among people with alexithymia. When exposed to an acute social stressor, those with alexithymia experienced

an increased desire for alcohol before, during and after exposure, highlighting the importance of stress in triggering the desire to drink (Knapton, Bruce, & Williams, 2018). The study examined one aspect of craving (the desire to drink) and how that was triggered by the experience of stress in a nonclinical sample with alexithymia. This is an important finding, and a better understanding of how stress and craving are associated with alexithymia among those with alcohol dependence requires further attention. Craving has previously been linked to alexithymia in both cross-sectional and prospective designs among alcohol-dependent patients. Patients with alexithymia and alcohol dependence reported stronger cravings and more obsessive and intrusive thoughts, as well as more vivid mental images of alcohol (Thorberg, Young, Sullivan, Lyvers, Connor, et al., 2011a). Pretreatment alexithymia scores have been shown to predict ratings on the Obsessive Compulsive Drinking Scale (OCDS) (Anton, Moak, & Latham, 1995) post alcohol dependence treatment (Thorberg et al., 2014).

Although previous research has supported relationships between alexithymia, craving, and negative mood (stress, anxiety, depression), the focus has been on investigating interactions between these variables and not to explore indirect effect that may underlie the relationship between alexithymia and alcohol dependence. An improved understanding of the relevant psychological and motivational factors in alcohol-dependent patients with alexithymia is likely to inform specific treatment targets (Finney, 2018). The present study investigated the hypotheses that (a) alexithymia is indirectly linked with alcohol dependence via negative mood (stress, anxiety and depression) and alcohol craving, and (b) negative affect is indirectly related to alcohol dependence via craving (see Figure 1).

Methods

Participants and procedures

The sample included 355 consecutive outpatients (111 females) seeking treatment for alcohol dependence at a metropolitan university-based public hospital outpatient drug and alcohol service in Brisbane,

Table 1. Characteristics of participants.

Variable	Frequency	Percentage
Usual amount of alcohol consumed per day pretreatment (grams)^a	Mean = 154.39, std. deviation = 109.591	
Maximum alcohol consumed per day pretreatment (grams)^b	Mean = 245.78, std. deviation = 115.106	
Education^c		
Degree or higher	47	13.2%
Diploma/advanced diploma	13	3.7%
Certificate	16	4.5%
Senior secondary education (yr 12)	117	33.0%
Junior secondary education (yr 10)	129	36.3%
Primary-school education (yr 7)	25	7.0%
Not stated/inadequately described	7	2.0%
Employment status^d		
Student	6	1.7%
Employed full time (>36 h/week)	175	49.3%
Employed part time (20–36 h/week)	16	4.5%
Employed part time (<20 h/week)	6	1.7%
Unemployed	65	18.3%
Home duties	16	4.5%
Other	67	18.9%
Not stated unknown	3	0.8%
Marital status^e		
Never married	125	35.2%
Married/defacto	135	38.0%
Widowed	3	0.8%
Divorced	47	13.2%
Separated	40	11.3%
Not stated unknown	1	0.3%
Family history of alcohol use disorder^f		
Yes	156	43.9%
No	21	5.9%

^{a–f}Missing data. ^a=36; ^b=130; ^c=1; ^d=1; ^e=4; ^f=178.

Australia. Participants were from 18 to 71 years old (mean = 38.70, SD = 11.00). Most respondents had a family history of AUD (see Table 1). Prior to treatment, participants reported their usual amount of alcohol consumed per day and their maximum alcohol consumed per day; these and other characteristics of participants are presented in Table 1.

Approximately two-thirds of referrals were from medical staff during a hospital inpatient stay or from general community doctors. One-third of referrals were either self-referral or from a community agency. Those with severe cognitive impairment or comorbid mental disorder (e.g., schizophrenia) with potentially impaired decision-making capacity were excluded from the study. All patients were diagnosed with alcohol dependence in accordance with DSM-IV-TR criteria (APA, 2000) and were seeking abstinence as the primary treatment goal (not controlled drinking). Human ethics approval was granted from university and hospital ethics committees. Only patients detoxified or not requiring acute detoxification were entered in a Cognitive-Behavioral Therapy program. These patients were encouraged to maintain abstinence between assessment and program commencement (typically 7 days). Participation was voluntary, and participants could withdraw at any time. Following a brief introduction and written informed consent, participants were asked to complete the assessment

questionnaire package. Few (<3%) patients offered treatment declined participation.

Measures

Toronto Alexithymia Scale (TAS-20)

The TAS-20 is a 20-item self-report measure of alexithymia (Bagby, Parker, & Taylor, 1994). Total scores range from 20 to 100 with higher scores indicating higher levels of alexithymia. This instrument has good validity and reliability (Bagby et al., 1994; Parker, Taylor, & Bagby, 2003). The TAS-20 demonstrated acceptable internal consistency in the current study with a Cronbach alpha coefficient of .85.

Depression Anxiety Stress Scales (DASS-21)

The DASS-21 is a 21-item self-report questionnaire assessing depression, anxiety and stress via corresponding 7-item subscales (Lovibond & Lovibond, 2002). Only the total scale was used in the current study as an index of overall negative mood. This instrument has excellent psychometric properties (Antony, Bieling, Cox, Enns, & Swinson, 1998). In the current study, the Cronbach alpha coefficient was .96.

Obsessive Compulsive Drinking Scale (OCDS)

The OCDS is a 14-item instrument that assesses obsessive thoughts about alcohol use and compulsive

Table 2. Means (SD) and correlations between Toronto Alexithymia Scale (TAS-20), Depression Anxiety Stress Scales (DASS-21), Obsessive Compulsive Drinking Scale-Total Score (OCDS-T), and Alcohol Use Disorder Identification Test (AUDIT) scores.

Variable	Mean (SD)	Age	TAS-20	DASS-21	OCDS-T	AUDIT
Sex ^a	–	.09	–.08	.12*	.13*	.08
Age	38.70 (11.00)		–.21***	–.03	–.06	–.03
TAS-20	54.39 (11.80)			0.33***	0.29***	0.14**
DASS-21	20.74 (15.60)				0.52***	0.28***
OCDS-T	22.52 (11.08)					0.39***
AUDIT	28.34 (6.83)					–

TAS-20, Toronto Alexithymia Scale; DASS-21, Depression Anxiety Stress Scales; OCDS-TS, Obsessive Compulsive Drinking Scale-Total Score; AUDIT, Alcohol Use Disorder Identification Test. ** $p < .01$; *** $p < .001$; ^aPoint biserial correlations.

behaviors toward drinking (Anton et al., 1995). Only the total OCDS score was utilized in the current study. A higher score indicates stronger obsessions and compulsions concerning drinking alcohol. The OCDS possesses sound psychometric properties (Anton et al., 1995; Connor, Jack, Feeney, & Young, 2008). OCDS demonstrated good internal consistency in the current study with a Cronbach alpha coefficient of .92.

Alcohol Use Disorder Identification Test (AUDIT)

The AUDIT is a 10-item measure developed to assess alcohol problems (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). Scores range from 0 to 40, with scores of 20 or higher indicating dependent drinking. The AUDIT has been proposed to be a “gold standard” criterion measure of alcohol problems (Hodgson, Alwyn, John, Thom, & Smith, 2002) and has good reliability and validity (Reinert & Allen, 2007). In the current study, the Cronbach alpha coefficient was .79.

Data analysis

The PROCESS v2 macro for SPSS (Model 6; Hayes, 2013) was used to test the proposed direct and indirect effects, with 95% bias corrected confidence intervals, and 5000 bootstrap resampling draws. This model simultaneously assesses all hypothesized direct and indirect effects, allowing for serial mediation (see Figure 1). This was followed by a second PROCESS analysis (Model 4) to directly test the indirect effect of negative mood on AUDIT scores via craving. Following Hayes' (2013) recommendation unstandardized coefficients are presented. Given variation in age and sex, both variables were entered as covariates in the analysis.

Results

Assumption testing

Descriptive statistics are shown in Table 2. All variables were significantly intercorrelated in the expected directions, but not highly enough to indicate multicollinearity; all VIF values were below 10 (range: 1.05–1.46). Inspection of the P–P plot indicated that residuals were distributed normally, and the scatterplot of residuals indicated homoscedasticity.

Model testing

There was a direct positive effect of alexithymia on both negative mood and alcohol craving, and a direct effect of alcohol craving on AUDIT score (Figure 1). Three significant indirect pathways were observed. First, the serial mediation pathway from alexithymia to AUDIT scores, via negative mood and alcohol craving, was significant, $b = 0.03$, $seb = 0.008$, 95% CI: 0.02–0.05. Second, the indirect path from alexithymia through alcohol craving to AUDIT scores was also significant, $b = 0.03$, $seb = 0.01$, 95% CI: 0.01–0.05. Finally, there was an indirect effect of negative mood on AUDIT scores via alcohol craving, $b = 0.12$, $seb = 0.03$, 95% CI: 0.07–0.16. There were no direct effects of either alexithymia or negative mood on AUDIT scores. Overall, 16% of variance in AUDIT scores was predicted by the model, $R^2 = 0.16$, $F(5,348) = 13.03$, $p < .001$.

Discussion

This study aimed to test whether there was an indirect relationship between alexithymia and alcohol dependence severity through negative mood (stress, anxiety, depression) and alcohol craving. The observed indirect effects suggest that both negative mood and alcohol craving play an essential role in the relationship between alexithymia and alcohol dependence. Negative mood may be a factor “driving” craving for alcohol experiences among those with alexithymia that may lead to more severe alcohol dependence. These results are partially in line with a previous study (Thorberg et al., 2011b) where alcohol expectancies of affective change and assertion were partial mediators of the association of alexithymia and alcohol dependence severity. The findings suggest that negative mood (e.g., stress and anxiety) contributes to alcohol craving and increased alcohol misuse in accordance with the stress-alexithymia hypothesis, and in part supports the hyperarousal model of alexithymia. According to this model individuals experience prolonged “autonomic

hyper-reactivity” given that alexithymia is associated with increased levels of sympathetic arousal related to emotional stimuli (Infrasca, 1997; Neumann, Sollers, Thayer, & Waldstein, 2004). Thus, alcohol use may regulate excessive hyperarousal, stress and anxiety due to the lack of ability to distinguish physiological reactions and effectively regulate emotions, which are related to arousal in those with alexithymia. As tolerance for alcohol increases, individuals may increase their use of alcohol to sustain this effect emergent with the association between alexithymia and more severe alcohol-related problems and dependence (Uzun, 2003), consistent with evidence that those prone to higher levels of coping-related alcohol use experience more alcohol-related problems (Berking et al., 2011).

The findings also suggest that there is an indirect relationship between alexithymia and alcohol dependence severity through craving. This result is consistent with a previous study in a community sample reporting that the association of alexithymia and risky drinking was mediated through alcohol-related intrusive thoughts (Lyvers, Lysychka, & Thorberg, 2014). By contrast, a population based prospective study showed that alexithymia appeared to be indirectly associated with an AUD via depression (Honkalampi et al., 2010). In the present study negative mood worked through alcohol craving for those with alexithymia, contributing to alcohol dependence severity. In any case the current findings also lend support to the self-medication hypothesis (Khantzian, 2003). Finally, alcohol craving had an indirect effect on the relationship between negative mood and alcohol dependence severity. Based on the current model and findings, one reason for this result may be that individuals with alexithymia have an impaired ability to self-regulate emotions, thus increasing negative mood as well as thoughts and impulses related to alcohol craving that contribute to loss of control over drinking, leading to alcohol-related harm.

This study is not without limitations and the cross-sectional design does not allow any causal conclusions to be drawn about the relationships investigated. A longitudinal design is warranted for future studies to explore causal relationships. A second limitation concerns the lack of a multimethod approach to assessing alexithymia. Previous arguments suggest that individuals with this trait may have difficulty with self-report biases and frontal lobe dysfunction due to excessive long-term alcohol use (see Thorberg et al., 2009). Given that this study investigated the role of negative mood, a third limitation is related to the lack of

assessment of potential comorbid mood disorders that may have influenced the results. One last important issue concerns the type of sample; the current study utilized treatment-seekers in an outpatient CBT program and that limits the generalizability of findings to alcohol-dependent individuals outside of the treatment setting. However, the present study also has strengths such as the large sample size and the fact that it is the first study (to our knowledge) to show that the relationship of alexithymia and alcohol dependence severity works through both negative mood and craving.

The findings of this study have potential clinical implications. Assessment of negative mood and alcohol craving, in addition to alcohol expectancies, at the commencement of therapy may be helpful. Interventions targeting negative mood by developing affect awareness and emotion regulation skills, as well as coping skills addressing intrusive alcohol-related thoughts, may be essential in reducing craving and alcohol-related problems with a goal of reduced drinking or abstinence. One tailored approach could involve cognitive restructuring of beliefs related to the loss of control over drinking that may be helpful to reduce the interference of alcohol-related cognitions on social functioning and improve outcomes. Given that previous research has shown that poor emotion regulation skills can predict risk for relapse in situations involving negative emotion (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003), improving affect awareness and emotion regulation skills among those with alexithymia may be beneficial to reduce negative mood and craving as well as alcohol dependence severity, related harm and relapse.

Taken together, the results of this study expand the current literature in important ways. The findings indicated that alexithymia worked through negative mood and alcohol craving to increase alcohol dependence severity, and that craving had an indirect effect on the relationship between alexithymia and alcohol dependence severity. It is suggested that future treatment interventions target these constructs.

Disclosure statement

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