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Alexithymia and drinking in young adults: The role of alcohol-related intrusive thoughts

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Abstract

Alexithymia refers to difficulties identifying and describing emotions, an externalised thinking style and a lack of imagination. Alexithymia has been linked to heavier drinking in community samples and is strongly associated with alcohol use disorders. Among patients undergoing treatment for alcohol dependence, alexithymia is associated with more intrusive thoughts about drinking. The present research asked whether this may also be the case in a non-clinical sample of social drinkers and whether such intrusive thoughts mediate the relationship between alexithymia and drinking. Participants were 113 university undergraduates aged 18-30 years who completed self-report indices of alexithymia (Toronto Alexithymia Scale-20, or TAS-20), drinking behavior (Alcohol Use Disorders Identification Test, or AUDIT), anxiety (Beck Anxiety Inventory, or BAI), sensitivity to punishment (SP scale of the Sensitivity to Punishment and Sensitivity to Reward scale), frontal lobe dysfunction (Frontal Systems Behavior Scale, or FrSBe), and intrusive thoughts about drinking (the Cognitive-Emotional Preoccupation with alcohol or CEP scale of the Temptation and Restraint Inventory). As predicted TAS-20 scores were significantly positively correlated with scores on AUDIT, CEP, BAI, SP, and FrSBe scales. CEP mediated the association between TAS-20 and AUDIT. Similar to those with alcohol dependence, alexithymic characteristics are related to intrusive thoughts about drinking which may significantly influence drinking behavior even in a non-clinical sample of young adults at university.

KEYWORDS: alcohol; craving; alexithymia; anxiety; frontal lobe

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1. Introduction

Alexithymia, a personality trait encompassing difficulties with identifying and describing emotions and an externalised thinking style (Nemiah, Freyberger & Sifneos, 1976), has been linked to problematic alcohol consumption. Some 45-67% of those in treatment for alcohol use disorders have alexithymia (Thorberg, Young, Sullivan & Lyvers, 2009). Alcohol dependent patients with alexithymia report stronger craving and more intrusive thoughts about alcohol than do alcohol dependent patients without alexithymia (Thorberg et al., 2011). In community samples alexithymia has been associated with heavier drinking (Kauhanen, Julkunen, & Salonen, 1992; Lyvers, Onuoha, Thorberg & Samios, 2012). Several possible reasons for the relationship between alexithymia and alcohol have been tentatively supported by research. Those with alexithymia tend to report higher levels of anxiety and sensitivity to punishment than do those without alexithymia (DeGucht, Fischler & Heiser, 2004; Lyvers, Hasking, Albrecht & Thorberg, 2012), hence alcohol's anxiolytic effects may be particularly rewarding for them. Alexithymia may also reflect inherent deficit of frontal lobe functioning and thus deficient self-regulation (Berthoz et al., 2002; Lyvers, Onuoha et al., 2012) resulting in impaired self-control of alcohol use (Lyvers, 2000). Although inferences regarding causation based on cross-sectional findings are necessarily tentative, interpretations of the alexithymia-alcohol relationship traditionally assume that the personality trait predisposes to heavier drinking rather than alcohol use causing changes in personality (Taylor, Bagby & Parker, 1997).

The present study examined alexithymia in relation to alcohol consumption in a non-clinical sample of young adult social drinkers. One goal was to see if intrusive thoughts about alcohol are associated with alexithymia in a non-clinical sample as previously reported for alcohol dependent patients (Thorberg et al., 2011). Given that such thoughts threaten control over drinking and promote progression to problematic drinking and alcohol dependence (MacKillop, Lisman & Weinstein, 2006), the potential role of such thoughts as a mediator of the alexithymia-drinking relationship was assessed. Alexithymia was additionally examined in relation to indices of anxiety, sensitivity to punishment, and frontal lobe functioning in order to clarify the issues described above regarding

potential explanations for the relationship between alexithymia and alcohol (e.g., intrusive thoughts about alcohol suggest poor cognitive self-control, consistent with a postulated role of frontal lobe dysfunction in both alexithymia and alcoholism; Lyvers, Onuoha et al., 2012).

2. Methods

2.1 Participants

Participants were recruited via a sign-up sheet posted in the psychology building and in the university library. Although 133 individuals volunteered to participate, cases were only included if they indicated that they consumed alcohol at least occasionally, did not smoke, did not use illicit drugs in the past month, were not on medication for a psychiatric or neurological condition, and never sustained a serious head injury. Following deletion of 16 cases that did not meet criteria and 4 multivariate outliers, the final sample consisted of 113 students aged 18-30 years ($M = 22.11$ years, $SD = .35$), with 35 males (31 %) and 78 females (69 %). Based on TAS-20 cut-off scores (Bagby, Taylor & Parker, 1994), 19% of participants were identified as alexithymic (i.e., scored 61 or higher) in the current sample, similar to other recent findings in young adult samples (Lyvers, Hasking et al., 2012). A majority of the current sample (58%) were Low Risk drinkers as they scored less than 8 on the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente & Grant, 1993), with smaller proportions of Hazardous (scored 8-15; 32%) and Harmful (scored 16+; 10%) drinkers; interestingly about half of those in the Harmful drinking category were alexithymic by TAS-20 criteria.

2.2 Materials

2.2.1 Demographic Questionnaire. This questionnaire included questions concerning age and gender as well as alcohol, tobacco, illicit drug and medication use for screening purposes.

2.2.2 Toronto Alexithymia Scale-20 (TAS-20). The TAS-20 (Bagby et al., 1994) is a self-report scale comprised of 20 items assessing three facets of alexithymia: Difficulties Identifying Feelings (e.g., "I am often confused about what emotion I am feeling"), Difficulties Describing

Feelings (e.g., “I am able to describe my feelings easily,” reverse scored), and Externally Oriented Thinking (e.g., “Looking for hidden meanings in movies or plays distracts from their enjoyment”). Each item is rated on a five-point Likert scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*), thus the total score derived from response summation can range from 20 to 100. Scores of 61 or above indicate alexithymia, scores of 51 and below indicate no alexithymia, and scores of 52-60 indicate possible or borderline alexithymia. In the present study the alpha reliability index was .87.

2.2.3 Sensitivity to Punishment and Sensitivity to Reward Questionnaire (SPSRQ). The SPSRQ (Torrubia, Avila, Molto & Caseras, 2001) consists of two scales of 24 items: Sensitivity to Punishment (SP) and Sensitivity to Reward (SR). Odd numbered items assess SP (e.g., “Generally, do you pay more attention to threats than to pleasant events?”), and even numbered items assess SR (e.g., “Do you generally give preference to those activities that imply an immediate gain?”). Dichotomous responses of *Yes* (1) or *No* (0) are made for each item, with affirmative responses summated to produce SR and SP scores. In the present study alpha reliability was .82 for SP and .76 for SR.

2.2.4 Frontal Systems Behavior Scale (FrSBe). The FrSBe (Grace & Malloy, 2001) is a 46 item self-report questionnaire designed to detect behavioural manifestations of deficits in anterior cingulate, orbitofrontal and dorsolateral prefrontal cortical systems via three corresponding subscales which are summed to yield an overall score: Apathy (poor initiation, reduced drive and interest), Disinhibition (distractibility, socially inappropriate behavior), and Executive Dysfunction (difficulties with planning, working memory, and mental flexibility). The standard FrSBe Self Rating form measures behavioral changes by obtaining pre-and post-lesion ratings, however, for the purposes of this study in a non-clinical sample only present-time ratings were obtained (Lyvers, Czerzyk, Follent & Lodge, 2009; Spinella, 2003; Verdejo-García, Bechara, Recknor & Pérez-García, 2006). Items are rated on a 5 point Likert scale from 1=*almost never* to 5= *almost always*. The magnitude of the summed scores indicates the degree of impairment. In the present study alpha

reliability was .91.

2.2.5 Temptation and Restraint Inventory (TRI). The TRI (Collins & Lapp, 1992) is a 15-item self-report instrument assessing preoccupation with alcohol and efforts to control drinking. The TRI has two scales, Cognitive Emotional Preoccupation (CEP) and Cognitive Behavioural Control (CBC). CEP was of interest in the present study as it measures intrusive alcohol-related cognitions that threaten control over drinking (Stewart & Chambers, 2000). Items include “Do thoughts about drinking intrude into your everyday activities?” and “Is it hard to distract yourself from thinking about drinking?” CBC assesses alcohol intake restriction and reflects effortful control over drinking (Cox et al., 2001). Items include “Do you ever cut back your drinking in an attempt to change your drinking habits?” Each item is scored on a nine-point Likert scale from 1 = *Never/Not at all* to 9 = *Always/Extremely*. CEP and CBC scores are obtained by summing the items for each scale. CEP has been strongly linked to an increased intake of alcohol and predicts high risk of alcohol problems (Lyvers, Hasking, Hani, Rhodes & Trew, 2010; MacKillop et al., 2006). Alpha reliability for the TRI in the present study was .91.

2.2.6 Beck Anxiety Inventory (BAI). The BAI (Beck & Steer, 1990) is a widely used self-report scale consisting of 21 questions referring to anxiety symptoms experienced over the past week (e.g., “Hands trembling”). Each symptom is evaluated on a four-point Likert scale, from *Not at all bothered* (0) to *Severely bothered* (3). The total anxiety score is calculated by summation of responses and can range from 0 to 63. Alpha reliability in the present study was .95.

2.2.7 Alcohol Use Disorders Identification Test (AUDIT). The AUDIT (Saunders et al., 1993) is a widely used 10-item self-report questionnaire assessing alcohol consumption and alcohol-related risk. Items 1-8 are scored on a five-point Likert scale from *Never* (0) to *Daily or almost daily* (4). Items 9-10 are scored on a three-point Likert scale (0=*No*; 2=*Yes, but not in the last year*; 4=*Yes, during the last year*). The total score is calculated by summation of responses to all 10 items and ranges from 0 to 40. Scores of 0-7 indicate Low Risk drinking, 8-15 Hazardous drinking, and 16+ Harmful drinking. In the present study alpha reliability was .83.

2.3. Procedure

Ethical clearance was obtained from the Bond University Human Research Ethics Committee (BUHREC) prior to data collection. Those who wished to participate were given a written Explanatory Statement outlining the research and provided informed consent. Order of presentation of scales was randomized across participants and names of the scales were removed to reduce bias. Participants completed questionnaires in the presence of the researchers and were rewarded with a credit-point allocation slip for a psychology course (for psychology students) or with a lottery ticket (for non-psychology students). The lottery ticket allowed participation in a lottery with possibility of winning a \$50 gift voucher. After completion of data collection there was a random draw and the owner of the winning ticket was contacted to collect their voucher.

3. Results

Intercorrelations among all continuous measures are displayed in Table 1 as well as means and standard deviations. Distributions were normal or close to normal for all variables. As predicted, TAS-20 scores were significantly positively correlated with BAI, SP, CEP, AUDIT, and FrSBe. CEP was significantly positively correlated with all other measures. AUDIT was significantly positively correlated with SR and FrSBe as in previous work (Lyvers, Duff & Hasking, 2011).

3.1 Mediation analysis. The relationship between TAS-20 and AUDIT was further investigated in a path analysis (Baron & Kenney, 1986) to determine the extent to which the influence of alexithymia on drinking was mediated by CEP. In a standard regression predicting AUDIT from TAS-20, the latter accounted for significant variance in AUDIT, $R^2 = .04$, $F(1,109) = 4.91$, $p = .029$, $\beta = .10$. In a standard regression predicting CEP from TAS-20, the latter accounted for significant variance in CEP, $R^2 = .05$, $F(1,109) = 5.15$, $p = .025$, $\beta = .19$. A multiple regression was then conducted predicting AUDIT: TAS-20 was entered on Step 1 and CEP was entered on Step 2. CEP explained an additional 38% of variance in AUDIT, a significant increment, $R^2_{change} = .38$, $F_{change}(1, 108) = 72.48$, $p < .001$, $\beta = .32$. When CEP was entered on Step 2, the coefficient for

the TAS-20 decreased to $\beta = .03$ and was no longer significant ($p = .33$). Sobel test indicated that the decrease in the coefficient for the TAS-20 was significant ($t = 2.04, p = .04$), indicating mediation. The direct and mediated pathways for the model tested are presented in Figure 1. Exploratory post hoc path analyses indicated no mediation of the relationship between TAS-20 and AUDIT by either FrSBe, BAI or SP, however the relationship between TAS-20 and CEP was mediated by FrSBe, Sobel test $t = 3.30, p < .001$ (significant after adjusting for error inflation).

4. Discussion

TAS-20 alexithymia scores were significantly positively correlated with alcohol-related risk as measured by AUDIT and with intrusive alcohol-related thoughts as measured by CEP, with CEP mediating the relationship between TAS-20 and AUDIT, a novel finding. Such mediation had been predicted based on Thorberg et al.'s (2011) report of more intrusive alcohol-related thoughts among alcohol dependent patients with alexithymia compared to those without alexithymia, which the authors suggested may underlie the poorer treatment outcomes and higher relapse rates reported among the former group. The present results indicate that even in a young adult university student sample of social drinkers, alexithymic characteristics are associated with intrusive thoughts about alcohol that promote alcohol use and threaten control over drinking. Further, as expected alexithymia scores were significantly positively related to indices of anxiety, punishment sensitivity, and frontal lobe dysfunction, consistent with previous work in a variety of samples (Berthoz et al., 2002; DeGucht et al., 2004; Lyvers, Hasking et al., 2012; Lyvers, Onuoha et al., 2012).

A remaining question concerns why social drinkers with more alexithymic characteristics tend to have more intrusive alcohol-related thoughts. One possibility is that anticipation of anxiety relief from alcohol promotes such thoughts given the association of alexithymia with anxiety. However, contrary to that idea, neither the BAI nor SP indices of anxiety and punishment sensitivity mediated the relationship between alexithymia and drinking. Another possibility is that impaired ability to self-regulate thoughts and emotions due to poor frontal lobe functioning underlies the relationship between alexithymia and intrusive thoughts about alcohol, an idea tentatively supported by

a post hoc path analysis showing strong mediation of the latter relationship by FrSBe frontal lobe dysfunction scores. Limitations of the present study include the restricted sample and the cross-sectional design. Further work in larger and more representative samples appears warranted in order to confirm the present novel finding that alcohol-related thoughts mediate the relationship between alexithymia and drinking, and to elucidate the basis of the perhaps surprising association of alexithymia with intrusive thoughts about alcohol in a non-clinical sample.

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Table 1.

	<i>M</i>	<i>SD</i>	AUDIT	BAI	SP	SR	TAS	CEP
AUDIT	7.69	5.63						
BAI	10.28	10.93	.17					
SP	10.27	5.07	.09	.32**				
SR	11.23	4.28	.32**	.31**	.10			
TAS-20	46.61	12.37	.21*	.42**	.38**	.16		
CEP	18.92	11.19	.65**	.40**	.21*	.40**	.21*	
FrSBe	98.15	19.97	.24*	.34**	.23	.40**	.43**	.41**

Note. AUDIT= Alcohol Use Disorders Identification Test total score; BAI = Beck Anxiety Inventory total score; SP = Sensitivity to Punishment; SR = Sensitivity to Reward; TAS-20 = Toronto Alexithymia Scale-20 total score; CEP = Cognitive-Emotional Preoccupation with alcohol; FrSBe = Frontal Systems Behaviour Scale total score.

* $p < .05$; ** $p < .01$

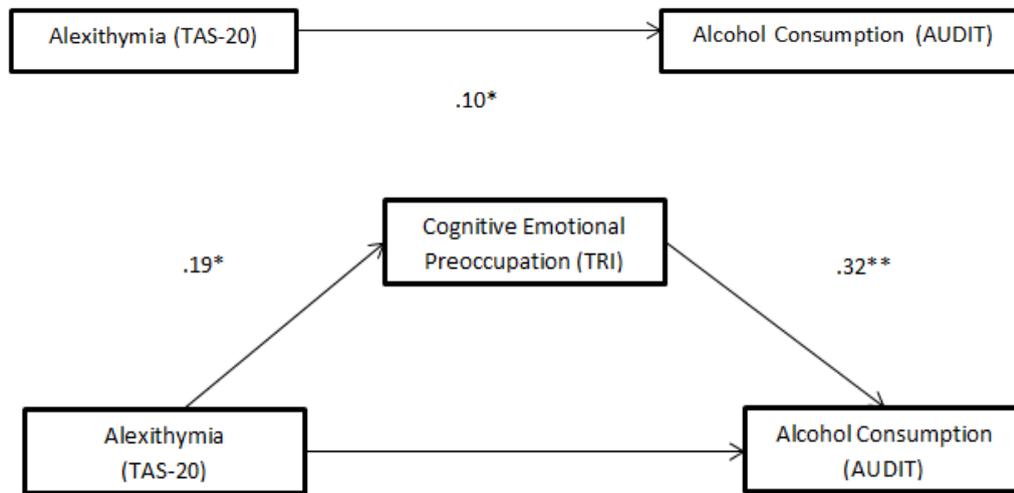


Figure 1. The direct and mediated pathways between TAS-20 and AUDIT.

** $p < .01$; * $p < .05$