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Research Article

The Mediation Role of Trait Mindfulness in the Relationship between Alexithymia and Alcohol Consumption

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ABSTRACT

Even though the relationship between alexithymia and alcohol consumption has been long established, little is known about the factors which may explain this association. The purpose of this study was to investigate trait mindfulness as the mediator of the association between alexithymia and alcohol use. The study was conducted online. A convenient sample was used in the study which consisted of 629 adult participants (243 males). Alexithymia, mindfulness, and, alcohol consumption were assessed with questionnaires. The results were analyzed with Proces macro. The results revealed a full mediation between alexithymia, trait mindfulness and, alcohol consumption. It was shown that high alexithymia via high trait mindfulness contributes to greater levels of alcohol use. The present findings are discussed in the light of mindfulness as a mechanism which guide adaptable and unadaptable tendencies which therefore, can control the consequences alexithymia has on alcohol use.

Keywords: alexithymia, mindfulness, alcohol consumption

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Introduction

Alcohol consumption represents one of the leading health problems. It is accountable for 7.10% of the diseases among males and 2.20% among females (World Health Organisation, 2022). The etiology of alcohol dependence is complex, emphasizing the interaction between biological, psychological, and sociological factors. Among biological factors genes, reward system, and changes in dopamine levels are commonly mentioned (Carvalho et al., 2019; Edenberg & Foroud, 2013; Koob &Volkow, 2016). Socioeconomic status, childhood trauma, or parents abusing alcohol are some of the environmental influences contributing to drinking (Haugland et al., 2021; Sudhinaraset et al., 2016; Zdankiewicz-Scigala & Scigala, 2018) while psychological factors include various personality traits such as high novelty seeking, impulsivity or trait mindfulness (Foulds et al., 2017; Nicola et al., 2014; Sala et al., 2019). Another personality trait most commonly mentioned in the context of alcohol consumption is alexithymia.

Alexithymia is described as the inability to identify, describe and communicate feelings as well as a difficulty in the differentiation of emotions (Messina et al., 2014; Sifneos, 1973). In the past, alexithymia has been commonly seen as a stable trait with a continuous distribution (Keefeer et al. 2019) while recent studies suggest it's levels can change during psychosocial interventions (Cameron et al., 2014). This difficulty in the differentiation of emotions, so-called granularity, is particularly pronounced in the range of negative emotions (Aaron et al., 2018). A person with low emotion granularity will define their own state as „not good“ or "bad" while a person with high emotion granularity the same emotional state will label as „anxious“ or „irritated“. Moreover, alexithymic also presents difficulties in interpreting somatic sensations that accompany emotions. Some argue alexithymia is a deficit of interoceptive accuracy (Bird et al., 2010; Herbert et al., 2011) and is thought to be crucial for the correct identification of emotional states (Barrett, 2006; Herbert & Pollatos, 2012).

The relationship between alcohol consumption and alexithymia is widely confirmed. The prevalence of alexithymia among alcohol addicts ranges from

45–67% (Thorberg et al., 2011) while in the general population the prevalence is estimated to be around 10% (Hiirola et al., 2017). It has been shown that emotional deficits contribute not only to the development but also maintenance of alcohol abuse (Kopera et al., 2015). Recently abstinent and recovering alcoholics tend to have problems with facial expression recognition, especially with regards to negative emotions, and a tendency to overestimate the intensity of emotions (Philippot et al., 2006; Townshed & Duka, 2003). It has also been shown that alexithymic alcoholics experience more negative affect in comparison to non-alexithymic alcoholics, while no difference between these two groups was found regarding positive affect (Cox et al., 1998). Since alexithymic alcoholics have greater problems with negative emotions, it's been argued that this tendency is caused by the discomfort they tend to experience in social situations (Uzun et al., 2003). It is supposed that alexithymic susceptibility toward alcohol in social situations is aimed to reduce stress and improve their interpersonal interactions (Kauhanen et al 1992).

Literature attempts to explain the linked relationship between alexithymia and alcohol. According to some, the association between alexithymia and problematic drinking can be explained by negative affect but studies which controlled the effects of negative affect in the analyses still confirmed the relationship between these variables (de Timary et al., 2008). Others explain the link between alexithymia and alcohol with parental bonding and attachment style (Lyvers et al., 2019) or even with impulsivity (Herman et al., 2020). Conversely, no attempts have been made to explain this relationship with trait mindfulness considering there is a plethora of evidence on the association between alcohol consumption and mindfulness (e.g., Karyadi & Cyders, 2015; Sala et al., 2019) as well as alexithymia and mindfulness (e.g., Aaron et al., 2020; Norman et al., 2019). With regard to the alexithymia and mindfulness link, it was shown that this association is inverted. Different components of mindfulness negatively relate to alexithymia (Teixeira & Pereira, 2015). Also, mindfulness training contributes to increased emotional granularity (Van der Gucht et al., 2018) and improved interoceptive accuracy which results in decreased alexithymia over time (Edwards et al, 2018).

Trait mindfulness is defined as the ability to be aware and focused on present experiences in a nonjudgemental manner (Brown & Ryan, 2003). Distance from the experience, which a person creates by implementing mindfulness, allows one to observe the ever-changing nature of emotions and sensations accepting them as they are, not acting upon them. As an outcome, this nonjudgemental and non-reactive stance allows a person to break a cycle of unhealthy behaviors and initiate positive change (Ryan & Deci, 2000). According to studies, trait mindfulness is negatively associated with stress, neuroticism, anxiety trait, and state and depression while positively with positive affect, vitality, life satisfaction, and satisfaction of basic psychological needs (Brown & Ryan, 2003; de Sousa et al., 2021). Also, even though mindfulness was for a long time considered to have dispositional quality, recent studies demonstrate it can be developed over time with regular mindfulness meditation practice (Kiken et al., 2015).

Mindfulness has also been negatively related to addictive behaviors (Karyadi et al., 2014) by redirecting attention from maladaptive cognitions, such as cravings or ruminations, to a broader context making room for the positive assessment of the situation (Garland et al., 2015) which then initiates change for the better. With respect to alcohol consumption, mindfulness is invertedly related to alcohol abuse in student and clinical populations (Bowen & Enkema, 2014; Karyadi & Cyders, 2015). Specific facets of mindfulness, awareness and nonjudgmental acceptance, seem to have a particularly important role in shaping positive outcomes when alcohol use is concerned (Short et al., 2016; Stanley et al., 2019). Practicing awareness and acceptance makes a person embrace negative emotions which weakens mood-regulatory drinking motives (Roos et al., 2015) and prevents alcohol abuse. In general, the relationship between trait mindfulness and alcohol use is stronger for psychiatric than non-psychiatric populations due to the inability of the psychiatric population to distance themselves from negative thoughts, treating them non-judgementally (Sala et al., 2019).

On the other hand, there are also studies which have demonstrated that the effects of mindfulness on health-related behaviors may not always be

positive. Farias et al. (2020) found that adverse effect rates for mindfulness range between 4 and 33%. It is suggested that the increased awareness, which reflects the presence of high mindfulness, prompts the presence of heightened anxiety or full-blown panic attacks while practicing increased psychological distance from the experience may initiate affective blunting and dissociation (Britton, 2019). With respect to alcohol consumption, research suggests acting with awareness decreases alcohol consumption while nonjudgement increases it. (Carter, 2015). Also, mindful curiosity is linked to alcohol misuse which is due to fewer inhibitions associated with high levels of curiosity (Carter, 2015). According to some authors, Mindfulness forms an inverted U-shape relationship with other psychological constructs (Britton, 2019) explaining why too much of a good thing, in this case, mindfulness, can turn bad. It is commonly found that the negative effects of mindfulness are the most pronounced among those actively participating in intense mindfulness sessions. For example, Reangsing et al (2022) demonstrated that a greater number of mindfulness sessions in a week, rather than a few, resulted in greater depression among emerging adults. In the same fashion, Saltsman et al (2021) found that high mindfulness activates cardiovascular response typical of stress-relates states due to greater attention and cognitive processing given to this particular stressor in an attempt to overcome it.

Presently, not many attempts have been made to uncover the pathway through which alexithymia affects alcohol consumption. Since no one has tried to look into trait mindfulness within that role, especially if the mixed findings about its effects on alcohol consumption are taken into account, the aim of this study is to investigate whether trait mindfulness mediates the association between alexithymia and alcohol use. Based on the majority of earlier studies which associate mindfulness with health-related behaviors, it is expected that trait mindfulness is a mediator of the relationship between alexithymia and alcohol use. It is predicted that high alexithymia through low mindfulness contributes to high alcohol consumption.

Methods

Participants

The convenience sample was used. In total 639 participants took part in the study of which 10 were not yet 18 years of age so their data were omitted from the further analyses. Therefore, the results of 629 adult participants (243 males, 383 females, and 3 choosing „other") entered the final analyses. The age range was 18 to 80 with the average age being 31.43 (*SD* = 13.31). The age distribution of the current sample according to developmental stages suggested by Lally and Valentine-French (2019) was as follows: 51% of participants were in the emerging adulthood stage (18-25-year-olds), 22% were in the early adulthood stage (26-40-year-olds), 25% was in the middle adulthood stage (41-65-year-olds) and 2% belong to late adulthood stage (65 onwards). The sample consisted of 22 participants who had finished elementary school, 370 with finished secondary school, 93 with high school qualifications, and 144 who had a university degree and above. Socioeconomically, 7 participants were considered as having low status, 27 reported below-average status, 470 considered to be in the average range, 104 to be above average while 21 participants reported high socioeconomic status. Of all participants, 57 (9.10%) reported having some kind of mental health condition.

Measures

The sociodemographic questionnaire was used to collect data on age, gender, socioeconomic status, education, and mental health status of participants. The socioeconomic status was assessed by asking the respondents to choose the answer from the 5-point scale (1-low socioeconomic level to 5 high socioeconomic level) which best indicated their socioeconomic level. Participants' education is assessed by asking them to indicate their level of education by choosing one of the answers from a 4-point scale (1 - *elementary school* to 4 - *high education*). Mental health status was measured by asking participants if they suffer from any mental health illness which they indicated by choosing between Yes/No option. The information on parents' educational

background and problematic consumption of alcohol was collected too. Education level was assessed for each parent choosing answers from a 4-point scale (1-elementary school to 4-high school diplomas). Parents' problematic alcohol consumption was measured by asking participants to indicate if any parent has/or had problematic alcohol use which they answered by choosing between Yes/No options. If the Yes option was chosen, then they had to indicate which parent has/had such difficulties.

Toronto Alexithymia Scale (TAS-26; Bagby et al., 1986)

Alexithymia was measured with Toronto Alexithymia Scale (TAS-26; Bagby et al., 1986). This scale consisted of 26 items grouped into four subscales: a) difficulty to identify and distinguish between feelings and bodily sensations; b) difficulty to describe feelings; c) reduced daydreaming; and d) externally oriented thinking. The answers are given on a 5-point Likert scale (1 - *strongly disagree*, 5 - *strongly agree*). Results are calculated by adding together all the answers which a participant chose. The higher the results, the more profound alexithymic tendencies. The scale was already used in research on Croatian samples. This instrument was translated and validated by Kocijan Lovko, Gelo, and Karlovic (2015). The internal reliability of the scale in that study was .71. The reliability of the scale on the sample of this study is α= .73.

Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003)

Trait mindfulness was assessed with the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003). The scale assesses the capability to bring attention and awareness to what is happening at a particular moment. It has a total of 15 items on which participants are answering on a six-point scale (1 - *never*, 6 - *always*). The total score is calculated by summing all the answers and dividing them by the number of questions. Higher scores indicate the presence of higher dispositional mindfulness. This scale was translated and validated on a Croatian sample by Kalebic Jakupcevic (2014). The Cronbach alpha reported from that study was .89. The measured internal consistency of scale on the sample of this study is .88.

The level of alcohol consumption was measured with the Alcohol consumption scale from Alcohol Use Disorders Identification Test (Saunders et al., 1993). This scale consists of three items on which respondents answer choosing from a five-point scale (0 to 4). The composite score is obtained by summing across the items whereas higher scores indicate greater consumption of alcohol. This scale was already adapted and used on a Croatian language by Spehar (2009). In that study the internal consistency of the scale was .78. Cronbach alpha for this scale in the current study is .75.

Procedure

All procedures performed in the study were in accordance with the ethical standards of the Institutional Research Board of the Department of Psychology, Faculty of Humanities and Social Sciences, University of J. J. Strossmayer in Osijek, Croatia. The study was conducted online by advertising the study on social networks. As part of general instructions, participants were familiarized with aim of the study, that only those who are 18 years of age and above can take part in the study as well as being familiarized with their rights. The contacts of psychological services were available before and after the instruments in case questions on alcohol consumption were too disturbing for them. After general instruction, participants were asked to give their consent for taking part in the study by choosing the option „I agree".

Results

The descriptive statistics can be seen in Table 1.

Table 1

Descriptive data of the examined variables (N = 629)

Variable	*M*	*SD*	T_{min}	T_{max}	*Skewness*	*Kurtosis*
Alexithymia	78.74	11.07	26	130	.30	1,11
Mindfulness	48.90	12.75	15	90	.09	-.26
Alcohol consumption	3.59	2.47	0	12	.72	.33

Note. T_{min} - theoretical minimum; T_{max} - theoretical maximum.

The descriptive statistics reveal that participants reported the presence of moderate levels of alexithymia and mindfulness. The consumption of alcohol was reported to be pretty low among participants in the study which is not surprising considering that a non-clinical sample was used. The results also reveal that all three variables are positively skewed but visual inspection of the results (histogram) shows that the mindfulness result distribution was normal while the other two were positively skewed. The greatest skewness was observed with alcohol consumption, a result distribution which is common for measures of clinical phenomena obtained from non-clinical populations. The only negative kurtosis of data was obtained with mindfulness results while the other two distributions were positive. The correlations between research variables can be seen in Table 2.

Table 2

The correlations between examined variables (*N* = 629)

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
Age											
Gender	-.06										
Socioeconomic status	-.00	-.00									
Education	.29**	.16**	.17*								
Education of father	-.21**	.01	.14**	.15**							
Education of mother	-.36**	-.02	.10*	.05	.57**						
Mental health	-.01	.02	-.01	.01	-.01	-.03					
Alcohol consumption of parents	-.17**	.00	-.02	-.01	.12***	.14**	.07				
Alexythimia	-.19**	.02	-.09*	-.19**	.01	.09*	-.10*	-.07			
Mindfulness	-.17**	.06	-.12**	-.12**	-.00	.04	-.13**	-.12**	.61**		
Alcohol consumption	-.20**	-.25**	.06	-.07	.13**	.16**	-.01	-.06	.17**	.19**	

Note. *p < .05, **p < .01; gender: 1 - male/ 2 – female.

Age correlated with alexithymia, mindfulness, and alcohol consumption. Older participants had lower levels of alexithymia, mindfulness, and alcohol consumption. Gender was negatively associated with the consumption of alcohol indicating male-to-female drinking prevalence. Both socioeconomic status and education negatively correlated with alexithymia and mindfulness in a way that participants with lower socioeconomic status and less education experienced greater alexithymia and mindfulness. Mental health status negatively correlated with alexithymia and mindfulness indicating that having pre-existing mental health condition is associated with more profound alexithymia and mindfulness.

Alexithymia is highly positively associated with mindfulness and weakly positively with alcohol consumption. This indicates that the greater the alexithymia, the higher mindfulness and consumption of alcohol. Finally, mindfulness was weakly positively related to alcohol consumption indicating that people with greater mindfulness had higher levels of alcohol intake.

In order to test the mediation role of mindfulness on the relationship between alexithymia and alcohol consumption, SPSS Process Macro (Hayes, 2013) was used. The number of bootstrap samples for calculating confidence intervals was 5000. The obtained results can be seen in Figure 1.

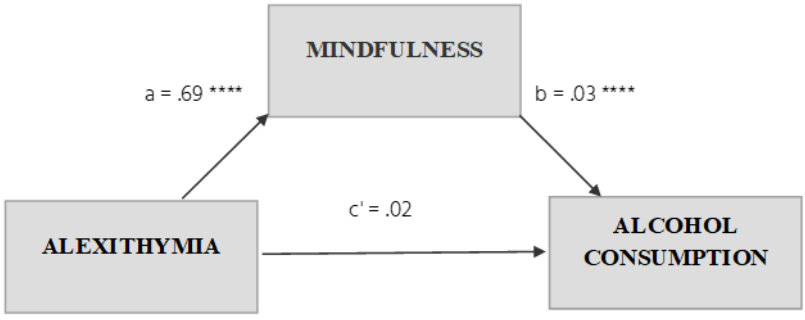

Figure 1. The mediation effects of mindfulness on the relationship between alexithymia and alcohol consumption

As Figure 1 shows full mediation occurred. That is, the indirect contribution of alexithymia to alcohol intake entirely takes place through mindfulness (*b* = .02, *BootstrapCI95* = .006 – .031). High alexithymia through high mindfulness contributes to high alcohol use.

Bearing in mind that pre-existing mental health conditions could affect tested relationships (Sala et al., 2019) the mediator role of trait mindfulness on the association between alexithymia and alcohol consumption was also tested whilst controlling the effects of mental health condition status. The results of this analysis also confirm mindfulness as the full mediator of the relationship between alexithymia and alcohol use (*b* = .02, *BootstrapCI95* = .006 – .030).

Discussion

Using available literature on the relationship between alexithymia and alcohol consumption on one hand, and the positive effects of trait mindfulness on human functioning on the other, the current work investigated if trait mindfulness mediates the association between alexithymia and level of alcohol consumption. The hypothesis that trait mindfulness mediates the relationship between alexithymia and alcohol consumption was confirmed. Considering numerous studies demonstrated the positive effects of mindfulness on health-related behaviors, it was expected that low alexithymia would, through high mindfulness, initiate low levels of alcohol consumption. Surprisingly, this assumption was not confirmed. It was shown that high alexithymia via high mindfulness contributes to higher alcohol consumption.

The findings highlight several important points. Firstly, heightened attention and awareness of emotional experiences rising from high mindfulness, create a context where those experiences are not observed from the distance but rather submerge a person completely into them. Secondly, for these reasons such experiences are most likely falsely negatively interpreted which most likely perpetuates high anxiety that makes alexithymic's, who poorly deal with social stressors (Uzun et al., 2003), resort to excessive drinking as means of coping with the given circumstances. Therefore, high trait mindfulness amplifies the already existing negative effects of alexithymia on alcohol consumption. Finally, these

effects of high mindfulness may not be a problem for „healthy" individuals but it is an issue for the vulnerable, those who struggle with emotional experiences, or those who are prone to negative interpretations of feelings as a result of already existing mental conditions. The following information confirms these claims.

Mindfulness Attention Awareness Scale (Brown &Ryan, 2003), which was used in this research, is comprised of items that are mainly oriented at measuring awareness. This means that in the current study mindfulness was mainly evaluated through this dimension. Now, even though high awareness has many benefits (Brown & Ryan, 2003) for meditators who are working to develop this quality, it is reported that heightened awareness also produces harmful consequences. The negative consequences of practicing high awareness reported by meditation practitioners are profound symptoms of anxiety, sadness, and trauma-related memories (Cebolla et al., 2017; Lomas et al., 2015).

In addition, some authors argue that mindfulness, like some other positive traits, is non-monotonic meaning it has its optimal level which initiates positive change but above and below negative effects exist. Since it was shown that greater levels of mindfulness contribute to the low intensity of emotions, emotional numbing, and dissociation (Cebolla et al., 2017; Lindahl et al., 2017; Taylor et al., 2011) it would not be surprising that for these reasons higher mindfulness contributed to greater alcohol consumption. After all, higher mindfulness has been shown to activate physiological responses typical of high-stress states (Saltzman et al., 2021) and initiate the presence of depression among those who practice mindfulness intensively (Reangsing et al., 2022).

Support for given claims is also drawn from research findings regarding characteristics of alexithymia. It was shown that people with alexithymia have susceptibility toward low granularity of negative emotions (Aaron et al., 2018) that is, failing to make fine differentiation between different negative emotions. For example, alexithymic confronted with a stressor will interpret their own feelings as „negative" rather than „irritated" or „angry". This feature of alexithymia, on its own, may not represent a problem if it were not for the magnifying properties of high mindfulness which accentuates the feeling of a generally present negative mood. Thus, for an individual with such a constellation of

personality traits, confrontation with stressors initiates a cycle of catastrophizing thoughts and the usage of coping strategies, such as problematic alcohol use, which should alleviate the generally present negative mood.

Further, the tested relationships are examined on a sample whose majority consists of emerging adults. With this in mind, it is likely that the given associations were established due to a large subsample of emerging adults participating in this study. Because of limited personal resources whilst facing transitioning from adolescence to adulthood these individuals face a greater number of life stressors which makes them more prone to mental health problems in comparison to individuals from other age groups (Arnett, 2000; Marchica et al, 2019). So, all point to the conclusion that the negative effects of high mindfulness may be more observable among those who are psychologically vulnerable in comparison to those who are well-adapted.

Similarly, mindfulness shares some characteristics with other psychological phenomena, such as introspection (Chambers et al, 2009) or neuroticism-related analyses of bodily sensations, feelings, and experiences which are then interpreted negatively. We can't be sure if this study's answers on mindfulness measure truly reflect mindful tendencies or features of some other phenomena which contributed to the presence of negative relationships between variables.

The fact that the adverse effects of mindfulness on the tested relationship are established on a random sample rather than a population with pre-existing psychiatric conditions confirms naturally occurring individual differences in mindfulness. In the past, the adverse effects of mindfulness were mainly reported by those who already had a tendency toward negative emotional experiences or who are in rigorous mindfulness training. Pauly et al. (2022) reported that meditators who had a pre-existing inclination toward negative thinking (i.e. poorer mental health) were the ones who reported those negative experiences. However, the authors also demonstrated when the effects of mental health status were controlled in the analysis, no association between negative thinking and adverse mindfulness effects was found. Considering that in this study the negative effects of mindfulness were evident even after

controlling for the mental status of participants suggests that the unpleasant effects of trait mindfulness are naturally occurring and are widespread in the general population.

Overall, this study suggests that mindfulness sometimes may not be bound by positive outcomes. According to the findings, it seems that the unwanted effects of mindfulness may be expected among groups that are susceptible to excessive alcohol consumption, as well as those who are having difficulty to adequately deal with emotions (e.g. those with high trauma exposure) or interpretations of internal experiences, for example, those who are mental disadvantaged (e.g. those with body dysmorphic disorder) or those prone to high-stress reactivity due to age-related limitations (e.g. emerging adults). For this reason, trait mindfulness could be assessed as part of the standard psychodiagnostic procedure in order to gain insight into the extent to which trait mindfulness complicates the clinical picture of those with pre-existing clinical diagnoses. Also, the findings remind us that mindfulness-fueled interventions should be individually tailored where the intensity or frequency of mindfulness practice should accommodate the patient characteristics in order to achieve optimal results. For this reason, studies like this are needed to gain insight into the all-around effects of trait mindfulness as well as to recognize individuals which may be particularly vulnerable to the adverse effects of this trait rather than just promising quick positive change for those who are trying to initiate their own development.

Some limitations need to be taken into consideration when interpreting the results of this study. Taking into consideration an indirect mediation effect confidence interval suggests a significant but weak indirect mediation effect which suggests that such findings should attempt to be replicated once more. Because of the cross-sectional nature of the study, no conclusions about causality can be drawn. In order to control the effects of pre-existing mental status on the results, mental health status was controlled in the analysis. However, we can't know if the results of participants with sub-clinical symptoms of depression or anxiety affected the data. Future studies should control these variables more rigorously. This study used the Mindfulness Attention Awareness

Scale (Brown &Ryan, 2003) which may not have the best capture of the full effects of mindfulness since it is primarily oriented toward measuring the awareness facet. Maybe the use of an instrument which, besides awareness, assesses other facts of mindfulness (e.g. Five Facet Mindfulness Questionnaire) may yield different results. Some studies indicate that different facets of mindfulness are related to different aspects of alcohol use behaviors (e.g. Fernandez et al., 2010) so it would be useful to assess the indirect effects of mindfulness facets on the tested relationship to gain a fuller understanding of established effects. Furthermore, even though the negative effects of high mindfulness were detected among those prone to greater alcohol consumption, the findings can not be generalized to other substance use behaviors. Literature suggests that trait mindfulness is more related to alcohol and tobacco use in comparison to marijuana consumption (Robinson et al, 2008) so it would be interesting to test the effects of trait mindfulness on the relationship between alexithymia and other substance use behaviors to see if findings would be replicated. Finally, the choice of an instrument with which alcohol use was assessed may not be the best as it did not cover other alcohol-related behaviors (e.g. duration of alcohol use, or alcohol-related symptoms) which may more objectively reflect the problematic consumption of alcohol among participants.

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Conflict of interest

We have no conflicts of interest to disclose.

Data availability statement

The data that support the findings of this study are available on request from the author.

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