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Coping-strategies as a mediator between emotional disorders and problematic alcohol use

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ABSTRACT

Background: Epidemiological studies reveal a high prevalence of alcohol use and comorbidity rates with emotional disorders. This study aims to explore the possible mediational effect of stress-coping strategies on the relationship between symptoms of emotional disorders and problematic alcohol use.
Methods: The sample included 1014 participants (33.82% male, 66.17% female) aged 18–75 years (M = 33.0, SD = 15.15). Three mediation analyzes were carried out, for depressive, anxious and somatization symptomatology measured with the LSB-50 in which they acted as an independent variable, the coping strategies of the CSQ as a mediating variable and the problematic alcohol use, measured with AUDIT, as a dependent variable. Additionally, sex, age, educational level, and socioeconomic status were entered as covariates.
Results: In all the models, problematic alcohol use was mediated by Problem-Solving Focus and Open Emotional Expression. However, while in depressive symptoms was a fully mediation, in anxious and somatization symptomatology was partially mediated.
Conclusions: The similarities found may be due to shared variance between emotional disorders. Interventions focused on Problem-Solving Focus could improve the emotional symptoms and the problematic alcohol use.

Introduction

Emotional disorders are a group of disorders that include depression, anxiety, and related conditions (e.g., somatizations, obsessive–compulsive disorders, trauma- and stressor-related disorders) (Bullis et al., 2019). This group of disorders is considered the most common in the population (Steel et al., 2014) and the World Health Organization has estimated that its global prevalence is 3.6% (World Health Organization, 2017). In Spain, the data are higher for anxiety and somatization, as according to the latest report made by the Spanish Ministry of Health in 2021, the incidence of anxiety disorders is 10.4% and that of somatization disorders 5.5% (SGIS, 2021). Moreover, these disorders have been associated with a poorer quality of life, both physical and psychological (González-Blanch et al., 2018), and have been identified as one of the main causes increasing the global health-related burden (GBD, 2022). If we consider the sociodemographic characteristics in terms of prevalence, international and Spanish data agree that there is a higher prevalence in the lower economic levels and during middle adulthood (Chen et al., 2019; GBD, 2022; Solmi et al., 2022). But, undoubtedly, the most relevant socio-demographic characteristic is sex, as several studies have shown a clear difference in prevalence, being higher in women (GBD, 2022; Maestre-Miquel et al., 2021). Another prominent characteristic of emotional disorders is that they have high rates of comorbidity both among themselves and with other disorders, such as alcohol use (Bruce et al., 2019; Milton et al., 2020), occurring in almost a quarter of diagnosed patients (van Schrojenstein Lantman et al., 2018).

Alcohol is a substance that stands out for its high rate of consumption. For example, a cross-sectional study showed that the

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average lifetime prevalence of alcohol consumption in the countries analyzed based on World Health Organization surveys was 80% (Glantz et al., 2020). In Spain, alcohol is the most consumed psychoactive substance, and more than three-quarters of the population aged 15–64 years consumed it in 2021, and the consumption is higher in males (64.5%) (Spanish Ministry of Health, 2022). In addition, 6% of the population has problematic alcohol use, measured by the Alcohol Use Disorders Identification Test (AUDIT) (Spanish Ministry of Health, 2022), and it is more likely in males, young adults, and those belonging to a low socioeconomic status (Palma-Álvarez et al., 2019; Spanish Ministry of Health, 2022). This use of alcohol carries various health, social, and legal repercussions (Rehm et al., 2017). For example, Fletcher (2019) studied the relationship between alcohol and peer relationships and found that heavy drinking was significantly associated with having problems with friends. Alcohol consumption also leads to problems for society, such as early retirement, more likely in alcohol consumers (Kendler et al., 2017), disability (Griswold et al., 2018), or a significant impact on mortality and morbidity (Kranzler & Soyka, 2018) causing three million deaths each year (World Health Organization, 2019) as well as to health problems such as heart disease, stroke (Griswold et al., 2018) and to the development of various types of cancer (Rehm et al., 2017).

Due to the multiple consequences of excessive alcohol consumption, explanations have been sought for its origin. One of the best-known is the self-medication hypothesis (Khantzian, 1985). This hypothesis postulates that people turn to alcohol because of a person's inability to tolerate negative states, and it has been proven in longitudinal studies (Crum et al., 2013). Therefore, it is unsurprising that one of the most researched areas has been using coping strategies (Jenzer et al., 2022) to manage stressors and unpleasant emotions (Romero et al., 2020).

Mediation studies have indicated coping as a potential mechanism underlying emotional disorders, as well as alcohol consumption, and many studies have linked the management of emotions to alcohol consumption. Regarding negative mood, on the one hand, avoidance behavior acts as a mediating variable between depression and alcohol consumption (McConaha et al., 2024; Villanueva-Blasco et al., 2022), which is also consistent with the self-medication hypothesis since people with greater distress might use alcohol to avoid the malady (Crum et al., 2013; Khantzian, 1985), having the opposite effect (lower levels of alcohol consumption) when this discomfort is addressed through a problem-focused resolution (Tokumitsu et al., 2023). On the other hand, research suggests that individuals who fixate on negative emotions tend to exhibit higher alcohol consumption rates (Tellez-Monnery et al., 2023). Moreover, alcohol consumption has been linked to expressions of hostility (Airagnes et al., 2017), which is related to open emotional expression. Regarding the relationship between religion and alcohol consumption, it has been found that religious beliefs are associated with lower alcohol consumption (Desmond et al., 2013; Queiroz et al., 2015). Another protective factor is positive reappraisal, which is part of some alcohol treatments. Positive reappraisal is a conscious emotional regulation (Hanley & Garland, 2014) related to extracting the positive part of the problem (Sandín & Chorot, 2003) and has been shown in previous studies to be a mediational strategy that reduces alcohol consumption (Garland et al., 2014).

Finally, regarding social support, the results are not conclusive since, while some studies relate social support to a decrease in consumption (Lee et al., 2023), others indicate that what is produced is an increase in consumption (Segrin & Cooper, 2021).

Considering the results of previous research, in the present study we aim to fill an important gap in the existing literature since, to our knowledge, there is no previous study that jointly evaluates all coping styles of the Coping Stress Questionnaire as a mediator between symptoms of anxiety, depression and somatization and problematic alcohol use, controlling for sociodemographic variables (sex, age, educational level, and socioeconomic status). Furthermore, there is hardly any information on the relationship between somatizations and alcohol consumption. Based on previous literature, we hypothesize that the relationship between symptoms of anxiety, depression and somatization, individually studied, and the alcohol use problem will be mediated by problem solving focus, positive reappraisal, overt emotional expression, religion and avoidance.

Methods

Sample and procedure

A cross-sectional study was conduct to August 2022 and September 2023. To collect data an online methodology through the Survey Monkey platform was used. The average time to complete the evaluation was approximately 30 min. Due to the study's observational characteristics, the only exclusion criterion was under 18 years. This study was submitted for approval by the Research Ethics Committee of the Principality of Asturias under the number 2022.193, thus guaranteeing compliance with ethical standards and integrity in the conduct of the study.

At the end of the data collection period (approximately 13 months), 1763 people had started the survey, but only 1014 had completed it correctly (57.7% of the total reached). Participants who did not complete all the required questionnaires were excluded. The final sample consisted of 1014 subjects (33.82 % male, 66.17% female) aged between 18 and 75 years ($M = 33.0$, $SD = 15.15$). The characteristics of the sample are specified in Table 1.

Instruments

Ad-hoc sociodemographic questionnaire. The ad-hoc sociodemographic questionnaire designed for this study comprises a series of

Table 1
Sociodemographic characteristics of the sample.

	Sample ($n = 1014$)	
	n	**%**
Sex		
Male	343	33.83
Female	671	66.17
Family history of mental health		
Yes	190	18.74
No	824	81.26
Age		
18–25 years	546	53.85
26–39 years	164	16.17
40–59 years	265	26.13
60+ years	39	3.85
Marital status		
Single	343	33.83
Married	312	30.77
Divorced	183	18.05
Unmarried couple	161	15.88
Widower	15	1.48
Educational Level		
Basic education	184	18.15
Secondary education	184	18.15
Baccalaureate studies	423	41.72
University studies	223	21.99
Socioeconomic status		
Low	136	13.41
Medium	618	60.95
Medium-high	254	25.05
High	6	0.59

key questions that seek to collect comprehensive information on various social and demographic aspects of the participants' lives. Categories assessed include age, gender, marital status, educational level, presence of family history of mental health problems, and socioeconomic status.

Brief Symptom Checklist (LSB-50) (de Rivera et al., 2012) is a validated and recognized tool in psychological research. Three of its subscales were used for this study: the depression, the anxiety, and the somatization scales. The depression scale assesses in 10 items the presence of symptoms characteristic of depression such as sadness, hopelessness, anhedonia, anergia, helplessness or self-destructive ideation, including guilt. The anxiety subscale explores assesses in 9 items the manifestations of generalized anxiety disorder, panic and phobic anxiety also including symptoms of fear or irrational fear. Finally, the somatization subscale explores assesses in 8 items the presentation of symptoms of somatic or bodily discomfort due to psychological somatization processes. Participants rate the items on a five-point Likert-type scale, where the higher the score, the greater the symptomatology. The mean (SD) of the depression subscale was 1.33 (0.94), the anxiety subscale was 6.15 (0.78) and that of somatization was 1.08 (0.84). Internal consistency for three scales was good, ($\alpha = 0.91$) for depression, ($\alpha = 0.89$) for anxiety and ($\alpha = 0.88$) for somatization.

The Coping with Stress Questionnaire (Sandín & Chorot, 2003) is a self-report measure that evaluates a wide range of ways of coping with stress in 42 items. On the one hand, rational coping, focused on the direct and logical resolution of the stressful situation, is composed of the following scales (1) problem-solving focus (PSF): implementing a direct and planned action to solve the problem; (2) positive reappraisal (PRE): reevaluating and giving a new meaning to the problem, extracting the positive part of the situation; and (3) seeking social support (SSS): seeking understanding, advice or listening about the problem from the social environment. On the other hand, emotional coping, related to the emotional components of coping, includes the scales: (4) negative self-focus (NAF): adopting a pessimistic perspective, with thoughts of self-reproach and helplessness behaviors; and (5) open emotional expression (OEE): venting the emotional reaction caused by the problem, generally behaving in a hostile manner towards others. There are also scales (6) avoidance (AVO): suppressing at a cognitive level the effects caused by the problematic situation; and (7) religion (REL): going to church, praying, trusting that God will help to solve the problem. High scores on the scale indicate high levels of coping strategies. The mean of the total score was 64.34 (18.82) and the internal consistency was good in the test ($\alpha = 0.89$) and on scales with a Cronbach's alpha between 0.72 and 0.90.

Alcohol Use Disorders Identification Test (AUDIT) (Pérula de Torres et al., 2005; Saunders et al., 1993) is a self-administered instrument developed by the World Health Organization (WHO), providing classifications of alcohol consumption and dependence. According to World Health Organization (WHO) guidelines score of 1–7 suggests low-risk consumption, scores from 8 to 14 suggest hazardous or harmful alcohol consumption and a score of 15 or more indicates the likelihood of alcohol dependence. In this study, the mean (SD) of the AUDIT in the present study was 14.13 (4.42) and the internal consistency was acceptable ($\alpha = 0.78$).

Analysis

The IBM-SPSS (v.28) data analysis software was used to perform the statistical analyses. First, basic descriptive statistics were calculated for the sample and the variables involved in the study.

Secondly, using Macro PROCESS (v.3.5) (A. F. Hayes, 2018), 3 multivariate mediation analysis models were performed (model 4), each with a different independent variable (X). In the first model, the independent variable was the score on the LSB-50-De (depression), in the second the score on the LSB-50-An (anxiety) and, in the third, the score on the LSB-50-Sm (somatizations). In all models the dependent variable (Y) was the AUDIT score (problematic alcohol use), and the mediators (M) were the seven CAE coping styles: social support seeking (SSS), overt emotional expression (OEE), religion (REL), problem solving focus (PSF), avoidance (AVO), negative self-focused (NAF), positive reappraisal (PRE). In the three multivariate mediation models a 95% confidence interval and 10000 Bootstrapping samples were selected. Due to the data shown by previous literature, in all models we introduced the variables gender, age, level of education and socio-economic status as covariates to control for their possible effect on the results.

For all models, the direct effects of variable X on the mediators (a_i), the direct effects of the mediators (M) on variable Y (b_i), the direct effect (c'), the total effect (c) and the indirect effect of X on Y through the different mediators are studied.

Results

Mediation analysis

First, the direct and total effects of the independent variables' symptoms of anxiety, depression and somatization on the dependent variable problematic alcohol use are presented. The direct effects were significant for symptoms of anxiety (Fig. 2) and somatizations (Fig. 3), but not for depression (Fig. 1). Total effects were significant in all models (Figs. 1–3).

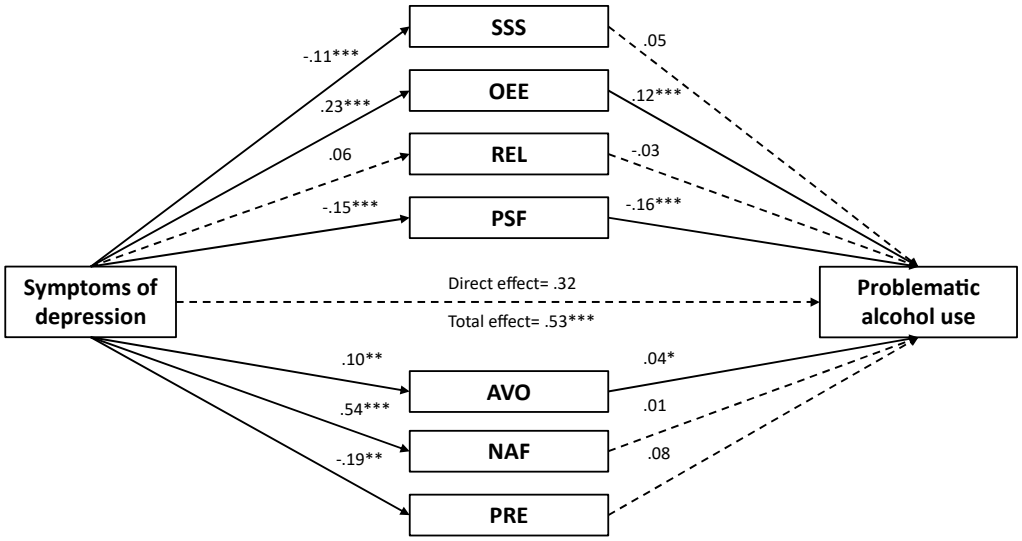
Regarding the direct effects of the independent variables on the mediators, symptoms of depression and anxiety has a significant direct effect on all coping strategies except religion (Figs. 1 and 2). However, in the case of the models with symptoms of somatization as independent variables the mediator REL is significant too (Fig. 3). Moreover, in all three models, most of the relationships between the dependent variable and coping strategies are positive except for SSS, PSF, and PRE (Figs. 1–3).

In relation to the direct effects of the mediators (coping strategies) on the dependent variable (problematic alcohol use) it can be observed that symptoms of depression and anxiety, OEE, PSF and PRE are significant (Figs. 1 and 2). In the case of symptoms of somatizations, only OEE and PSF are significant (Fig. 3). Regarding the direction of the associations, PSF subscale were negative for all three types of symptoms while OEE and PRE were positive.

Finally, in relation to the indirect effects, the three models have shown that only the effects that pass through the OEE and PSF are significant (Table 2). Likewise, the total and direct effects of X on Y have shown that, in the case of symptoms of depression, there is a total mediation effect, and in the case of anxiety and somatizations, the mediation effect is partial (Figs. 1–3).

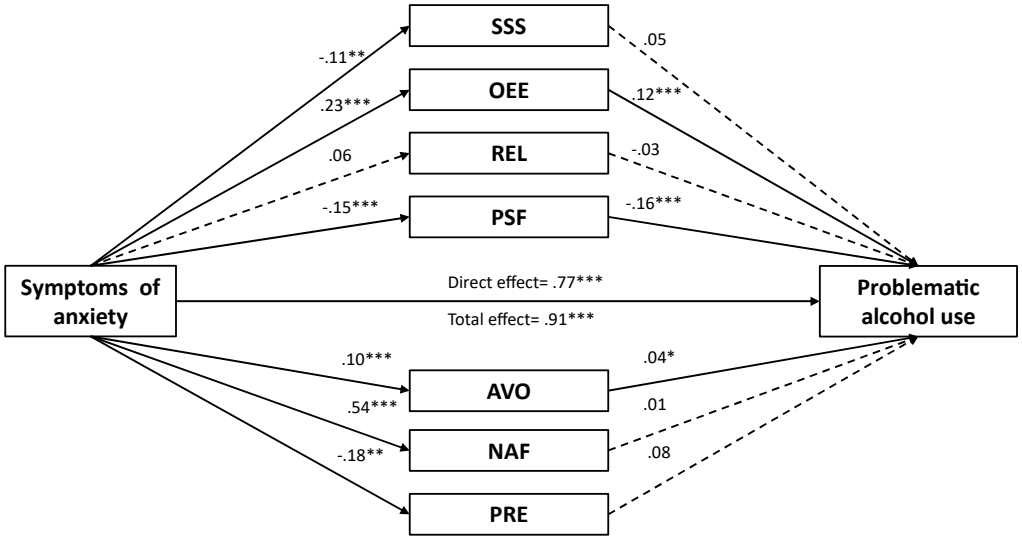
Discussion

This study jointly evaluated all coping styles of the Coping Stress Questionnaire as a mediator between symptoms of emotional disorders (anxiety, depression, and somatization) and problematic alcohol use, controlling for sociodemographic variables (sex, age, educational level, and socioeconomic status). In all the models, the relationship between symptoms of emotional and problematic alcohol use, was mediated by overt emotional expression and problem-solving focus. However, while in the case of depression symptoms the mediation was fully, in the case of anxiety and somatization symptoms was partial. That is, in the case of depression, the effect on coping strategies influences alcohol consumption, while in the case of anxiety and somatization, alcohol consumption is also associated with the symptomatology itself.



Note: *$p < .05$, **$p < .01$, *** $p < .001$

Fig. 1. Symptoms of depression mediation model with problematic alcohol use.



Note: *$p < .05$, **$p < .01$, *** $p < .001$

Fig. 2. Symptoms of anxiety mediation model with problematic alcohol use.

The fact that strategies are similar among the symptoms of depression, anxiety, and somatization groups could indicate the presence of common underlying factors that would fit the transdiagnostic approach according to which diagnoses could be explained in broader dimensions such as emotional disorders (Bullis et al., 2019). In this sense, there would be a shared variance among the emotional disorders, and perhaps because of this, these similarities may have arisen.

Considering our results, in the three models studied, the relationship between emotional symptoms and problematic alcohol use is positively mediated by the OEE subscale and negatively mediated by the PSF subscale. On the one hand, the mediational effect of OEE may be because elevated emotional symptoms lead to a greater need for overt emotional expression due to emotional overload. However, and as reflected in the self-medication hypothesis (Khantzian, 1985) using such an emotional strategy is not sufficient to alleviate emotional distress, leading to seeking relief behaviorally through alcohol consumption, increasing the risk of problematic alcohol use. On the other hand, the mediational effect of PSF on the relationship between emotional symptoms and problematic alcohol use is negative. This fits with the scientific evidence supporting the efficacy of cognitive-behavioral treatments both in the treatment of emotional symptomatology and in the treatment of problematic alcohol use (Zamboni et al., 2021).

These results align with previous research conducted in other countries that have demonstrated the importance of coping skills in developing a drinking problem. Although, to our knowledge, this is the first study to examine all the strategies included in the CSQ

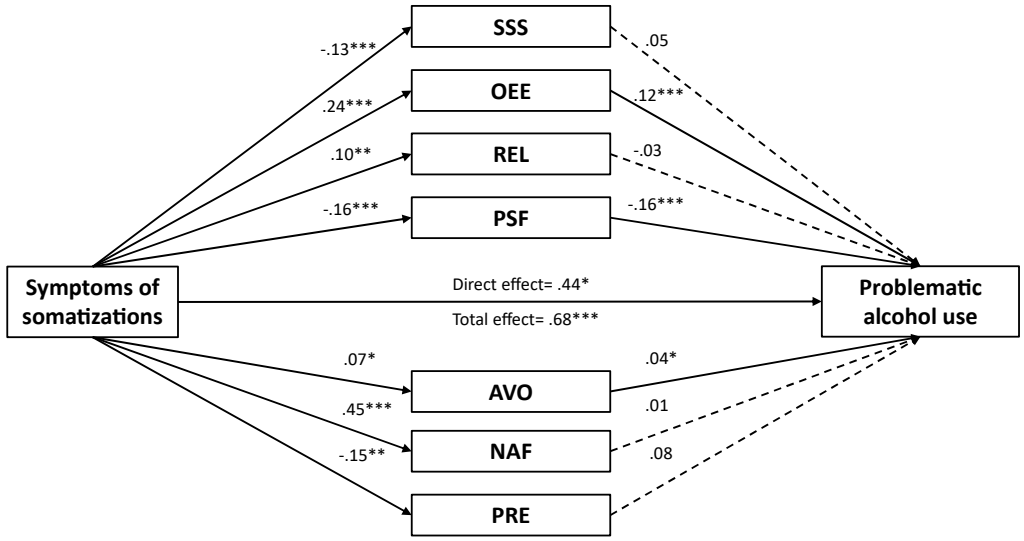


Fig. 3. Symptoms of somatization mediation model with problematic alcohol use

together (i.e., problem-solving approach, positive reappraisal, seeking social support, negative self-focus, overt emotional expression, avoidance, and religion), previous studies have examined some of these variables individually. Our results add to the support of studies that demonstrate how problem-solving focus (Tokumitsu et al., 2023), and open emotional expression (Airagnes et al., 2017) are mediating variables for problematic alcohol use, even controlling for variables that could affect problematic alcohol use this relationship such as gender, age, educational level, and socioeconomic status.

Table 2
Estimates of standardized indirect effects of the multivariate mediation analyses.

Independent variable	Mediator	Results of multivariate indirect effects Estimate effect (SE)	95 % CI	
			LL	UL
Depression	SSS	−0.009 (0.008)	−0.025	0.006
	OEE	**0.032 (0.012)**	**0.011**	**0.057**
	REL	−0.001 (0.002)	−0.005	0.001
	PSF	**0.033 (0.011)**	**0.014**	**0.058**
	AVO	0.003 (0.003)	−0.003	0.011
	NAF	0.009 (0.027)	−0.046	0.059
	PRE	−0.023 (0.011)	−0.045	0.001
Anxiety	SSS	−0.005 (0.005)	−0.017	0.004
	OEE	**0.026 (0.001)**	**0.008**	**0.047**
	REL	−0.002 (0.002)	−0.007	0.002
	PSF	**0.024 (0.009)**	**0.009**	**0.044**
	AVO	0.004 (0.005)	−0.004	0.015
	NAF	−0.007 (0.022)	−0.052	0.036
	PRE	−0.016 (0.008)	−0.032	0.001
Somatizations	SSS	−0.009 (0.008)	−0.025	0.006
	OEE	**0.032 (0.012)**	**0.011**	**0.206**
	REL	−0.005 (0.002)	−0.009	0.001
	PSF	**0.033 (0.011)**	**0.014**	**0.058**
	AVO	0.003 (0.004)	−0.003	0.011
	NAF	0.009 (0.027)	−0.046	0.059
	PRE	−0.023 (0.011)	−0.045	0.001

Note: SSS: social support seeking; OEE: overt emotional expression; REL: religion; PSF: problem solving focus; AVO: avoidance; NAF: negative auto-focused; PRE: positive reappraisal; LL: lower limit; UL: upper limit. The indirect effect is statistically significant (in bold formatting) if the confidence interval (CI) does not include zero.

However, our study does not meet the hypothesis that avoidance mediated the relationship significantly. It can be due to the fact that previous studies could be because the avoidance measured by the test seems to be measured in cognitive terms (e.g., "Concentrate on other things," "Do not think about the problem"), whereas experiential avoidance, demonstrated in several articles (e.g., Luoma et al., 2020; Serowik & Orsillo, 2019) is a broader concept that implies that the person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioral predispositions) (Hayes et al., 1996). Our results are also not in line with previous research in which religion has been shown to be a protective factor for problematic alcohol use. This may be because Spain has experienced a change regarding religiosity. Thus, according to the latest survey by the Observatory on Secularism (Center for Sociological Research, 2017) on religious beliefs, 69.8% of the population declares themselves Catholic, although only 26.4% of them claim to follow the precepts of religion; 25.2% of the Spanish population declares themselves agnostic or atheist; and only 2.6% of the population claims to profess other religions. Furthermore, in Spain the Christian religion predominates and previous studies have shown that Catholics (Charro Baena et al., 2019) and non-practicing people (Sinha et al., 2007) consume more alcohol. Another point of disagreement with respect to our hypothesis is the results obtained with the PRE subscale. Although the direct effects of the PRE subscale were significant, the direct pathway of that subscale is not statistically significant. Although reappraisal has been shown to be an effective strategy in interventions to reduce alcohol use (Rodriguez et al., 2019), the fact that it has not been positive may be due to the fact that the PRE scale is defined as reevaluating and giving a new meaning to the problem, extracting the positive part of the situation (Sandín & Chorot, 2003), so it is not a purely cognitive reappraisal, but highlights positive aspects and, as previous studies have shown (Muñoz-Navarro et al., 2022), to reduce symptomatology what is really important is to work with maladaptive strategies. However, due to the direct effect, it could be relevant in preventive studies on problematic alcohol consumption or an effect during treatment, for which longitudinal studies that evaluate this variable will be necessary.

Although coping strategies have been extensively studied in relation to alcohol, the current study presents several novelties. On the one hand, this is the first study to examine all the strategies included in the CSQ. On the other hand, it is proposed to study not only the symptoms of a disorder (e.g., depression) but three models have been provided, one for depressive symptoms, one for anxious symptomatology and one for somatization symptomatology. Moreover, there are hardly any studies linking somatizations and alcohol, which is relevant considering that the self-medication hypothesis could also have purposes associated with the reduction of somatic symptomatology. This study has seen how the coping strategies that mediate problematic alcohol use are the same, which suggests that they share part of the variance of a broader group: emotional disorders (Bullis et al., 2019).

The results presented above can be used to detect the needs of society and to improve therapies. Regarding the first point and considering the health, social and economic costs that problematic alcohol use entails (Griswold et al., 2018; Kendler et al., 2017; Kranzler & Soyka, 2018; World Health Organization, 2019) preventive policies could be implemented to regulate alcohol consumption, which is closely linked to leisure in Spain. On the other hand, we must also highlight the clinical implications it presents, especially in the case of depressive symptoms in which mediation has been total. Considering that overt emotional expression, problem-solving approach, and positive reappraisal have been statistically significant, clinicians should evaluate coping styles exhaustively to promote adaptive coping strategies and work on maladaptive coping strategies as a priority which could help reduce dual pathology, that is the presence of problematic alcohol use together with another psychopathological diagnosis.

This study should be analyzed regarding its limitations. Firstly, the study employed a cross-sectional design, capturing data at a single point in time. This limits the ability to establish causal relationships, and the temporal sequence of events between symptoms of emotional disorders, coping strategies, and problematic alcohol use cannot be definitively determined. Secondly, the reliance on self-report measures, such as questionnaires, introduces the possibility of response bias and social desirability. Participants may underreport or overreport certain behaviors due to perceived societal norms or personal biases, impacting the accuracy of the data. Thirdly, the sample is not socio-demographically homogeneous. In this sense, there are variables such as socioeconomic level, educational level, age and, above all, sex, which have been shown to be influential both in the appearance of emotional symptoms and problematic alcohol use. To overcome this limitation, firstly a moderate mediation was carried out, with sex being the mediating variable, and the moderation indices were not statistically significant (see supplementary material). After that, it was decided to control the most important sociodemographic variables (socioeconomic status, educational level, age, and sex). However, future studies are encouraged to perform invariance tests that allow these sociodemographic variables to be controlled.

The present results provide new information by studying how the CSQ coping strategies jointly mediate the relationship between the most prevalent emotional disorders and problematic alcohol use, establishing a model for depressive symptoms, another for anxious symptoms and another for somatizations symptoms. The findings suggest that certain coping styles, particularly open emotional expression, problem-solving approach, and positive reappraisal, fully (in the case of depression symptoms) and partially (in anxiety and somatizations symptoms) mediate the relationship between the symptomatology of emotional disorders and problematic alcohol use. The research highlights the need to carry out public policies and to consider highlighting the evaluation and work with coping strategies to avoid the appearance of dual pathology.

Author agreement statement

We the authors of this manuscript declare that this manuscript is original, has not been published before and is not currently being considered for publication elsewhere. We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us. We understand that the Corresponding Author is the sole contact for the Editorial process. She is responsible for communicating with the other authors about progress, submissions of revisions and final approval of proofs.

Joel Juarros-Basterretxea: Writing – review & editing. Roger Muñoz-Navarro: Writing – review & editing, Supervision. Gabriel Esteller-Collado: Writing – original draft, Validation, Methodology. Celia Antuña Camblor: Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. Francisco Javier Rodríguez-Díaz: Writing – review & editing, Supervision, Investigation

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None.

Declaration of competing interest

The authors report there are no competing interests to declare.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.alcohol.2024.07.008.

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