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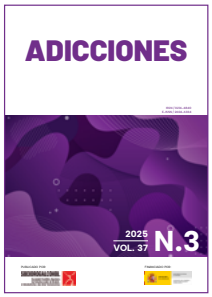

ORIGINAL

A relational model of wellbeing-centered recovery in alcohol use disorder

Modelo relacional de la recuperación centrada en el bienestar en el trastorno por uso de alcohol

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Abstract

Wellbeing is a key element among the prevailing definitions of recovery from alcohol use disorder. However, there is an increasing need to develop a unified framework for recovery conceptualization and characterization of its components, as well as the mechanisms to achieve it. The objective of the study was to test a model relating the dimensions involved in recovery. A total of 348 participants with different periods of abstinence (range:1 month-28 years) were assessed using self-reports of psychological well-being, quality of life, negative emotionality and coping strategies. Statistical analyses entailed an exploratory factor analysis (EFA) to uncover the underlying dimensions of psychological measures and a structural equation model (SEM) to elucidate their interrelations. The EFA identified 3 factors that explained 54.95% of the variance: i) Coping; ii) Functional Discomfort (emotional management and recovery capital); iii) Positive Mental Health (well-being and quality of life). The SEM demonstrated robust fit indices (GFI = 1.00, SRMR = .137) and explained 85% of the variance in well-being (R2 = .85). The results suggest that during recovery in AUD, abstinence duration propels coping strategies which can ameliorate negative emotionality and enable an increase in personal and social resources. This process ultimately contributes to heightened well-being and an enhanced quality of life. The study represents a first methodologically sound proposal in Spain for a clinical recovery model centered on well-being. Its comprehensive paradigm not only reshapes our understanding of AUD recovery but also establishes a robust foundation for more efficacious clinical interventions and evaluations.

Keywords: model of recovery, alcohol use disorder, positive mental health, functional discomfort, enriched recovery, coping

Resumen

El bienestar es un elemento clave de las definiciones actuales de recuperación en el trastorno por uso de alcohol (TUA). No obstante, es preciso desarrollar un marco unificado para conceptualizar la recuperación, caracterizar sus elementos y los mecanismos para lograrla. El objetivo del estudio fue proponer un modelo que relacionara las dimensiones psicológicas implicadas en la recuperación del TUA. Se evaluó a 348 participantes con diferentes períodos de abstinencia (rango:1 mes-28 años), mediante autoinformes de bienestar psicológico, calidad de vida, emocionalidad negativa y estrategias de afrontamiento. El análisis estadístico contó con un análisis factorial exploratorio (AFE) para identificar las dimensiones subyacentes a los indicadores evaluados y un modelo de ecuaciones estructurales (SEM) que las interrelacionó. El AFE identificó 3 factores que explicaron el 54,95% de la varianza: i) Afrontamiento; ii) Malestar Funcional (gestión emocional y capital de recuperación); iii) Salud Mental Positiva (bienestar y calidad de vida). El SEM mostró buenos índices de ajuste (GFI = 1,00, SRMR = ,137) y explicó el 85% de la varianza en Salud Mental Positiva (R^2 = ,85). Los resultados muestran que el tiempo de abstinencia se asocia con el aumento del empleo de estrategias de afrontamiento, lo que contribuye a la mejora del malestar funcional, y esto favorece la salud mental positiva. Esta investigación representa la primera propuesta metodológicamente sólida realizada en España para un modelo clínico de recuperación centrado en el bienestar, que redefine la comprensión de la recuperación en el TUA y proporciona soporte para intervenciones clínicas y evaluaciones más efectivas.

Palabras clave: modelo de recuperación, trastorno por uso de alcohol, salud mental positiva, malestar funcional, recuperación enriquecida, afrontamiento

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In 1948, the World Health Organization (WHO) expanded its definition of health to include new aspects with which to complete the concept. Health was thus considered to be "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1948). Given this enrichment of the concept of health as transcending the mere absence of disease, a substantial revision of the notion of "recovery" has followed in various disciplines which also involved an extension of the scope of recovery beyond the remission of symptoms (Kaskutas et al., 2014, 2015; Slade et al., 2012). Nevertheless, the definition proposed by the WHO is weak in operationality as it uses terms such as "complete state of well-being" which lack a clear meaning (Moreno, 2008). These terms, while expressing an aspiration to optimal levels of health, are challenging in terms of practical application and measurement, thus raising questions about their rendering into measurable actions and criteria.

In response to this need for operationalization in optimal health approaches, new health models have been explored from a positive psychology perspective (Seligman & Csikszentmihalyi, 2000). The dual-factor model of mental health (Greenspoon & Saklofske, 2001), for example, illustrates mental health through two distinct but interrelated constructs: one focused on levels of distress, discomfort or dysfunction, and another on levels of well-being. Mental health is thus considered as a complete state that includes both the absence of negative indicators and the presence of positive parameters (Wang et al., 2011). Negative indicators in this model include psychopathology, symptoms of depression and anxiety, distress and mental disorders, while positive indicators include life satisfaction, psychological, emotional and social well-being (Magalhães & Calheiros, 2017; Westerhof & Keyes, 2010). Each of these would reflect two distinct continuums, rather than the extremes of a single spectrum. With evidence accumulating in different contexts and mental disorders (Iasiello & van Agteren, 2020), this model has developed a consistent psychometric foundation based on a two-dimensionality of health (Magalhães, 2024). However, this promising dual-factor model of mental health has yet to be developed in the field of recovery in addictive disorders.

In this context of a paradigm shift in health, recovery approaches are needed in the field of addictive disorders, in particular alcohol use disorder (AUD), that focus on the comprehensive health of the individual, beyond abstinence and remission of symptoms. Although the attempts to define recovery in substance use disorders have contributed positively to delimiting the concept and its constituents, a consensus is still clearly lacking (Ashford et al., 2019; Esteban-Rodríguez et al., 2024a; Inanlou et al., 2020; Witkiewitz et al., 2020). The diversity of definitions illustrates the lack of a consolidated theoretical framework unifying the understanding of recovery in AUD (Kelly & Hoeppner, 2015). This scenario highlights the need to develop a holistic conceptual framework where a convergence of ideas and perspectives is promoted which can allow for a unified understanding of health-centred recovery.

Definitions proposed in the first decade of the 2000s (e.g., Betty Ford Institute Consensus Panel, 2007; Center for Substance Abuse Treatment, CSAT, 2005; UK Drug Policy Commission Group, UKDPC, 2008) were characterized by the integration of abstinence into the definition of recovery, although this was qualified by the admission that they were not totally comparable concepts. These initial post-paradigm shift definitions conceived recovery as a process that includes improvements in health, well-being and social participation. Later definitions (Ashford et al., 2019; Best et al., 2016; Substance Abuse and Mental Health Services Administration, 2011; Witkiewitz et al., 2020) have mainly highlighted the notions of well-being and quality of life, decoupling substance management from the definition itself. However, all of these definitions also present challenges in terms of applicability, as they tend to be more prescriptive than descriptive and are difficult to operationalize in practice.

In response to these criticisms, Kelly and Hoeppner (2015) proposed a biaxial model of recovery. This model is defined by two fundamental components: remission (maintaining sobriety) and recovery capital (resources to support recovery, for more information see the review by Hennessy et al., 2017). This model postulates that the relationship between remission and recovery capital is reciprocal, mediated by absolute reductions in stress and/or an improvement in coping strategies to manage it (Kelly & Hoeppner, 2015). Moreover, the biaxial model suggests that, instead of being static, the recovery process has different characteristics at different times of development, suggesting the existence of various stages or phases of change, depending on the length of abstinence (Kelly & Hoeppner, 2015). According to the proposal of the UK Drug Policy Commission (UKDPC, 2008), the biaxial model of recovery proposes three stages: early sobriety (first year of abstinence); sustained sobriety (1-5 years of abstinence); and stable sobriety (more than 5 years of abstinence).

In this regard, quantitative work has outlined different stages of recovery based on the interaction between abstinence duration and the different domains that have been linked to recovery. In the Spanish context, four stages have been proposed based on the alignment of well-being and quality of life levels between individuals with AUD and a control group without an addiction diagnosis (Rubio et al., 2023). Early recovery manifests itself during the first year of sobriety, where patients with AUD reach levels similar to those of healthy people in the quality of life in terms of physical health. Sustained recovery (from 1 to 4 years

of sobriety) is characterized by attaining the quality of life related to psychological health. With increasing abstinence duration, new alignments emerge in dimensions such as relational quality of life, affective symptoms, eudaimonic well-being and subjective well-being, marking the advanced recovery phase (from 4 to 10 years of sobriety). Finally, after 10 years of sobriety, alignments were observed in dimensions such as self-acceptance and autonomy (Rubio et al., 2023).

While this study (Rubio et al., 2023) and other research (Kelly et al., 2018) have provided valuable perspectives on long-term recovery and levels of positive and negative health at different times during abstinence, they raise the difficulty of how the recovery process should be approached in an integrated way. The considerable diversity of variables which have been used to characterize the stages has been beneficial in approaching the complexity of recovery, but hampers the development of a global vision of it as a unitary and dynamic process. Likewise, while these studies focused on analyzing the individual relationship of the variables with abstinence duration help to understand the process, they fail to provide information on how these dimensions interrelate to promote long-term recovery.

In summary, the development of the recovery paradigm in AUD, now oriented towards the comprehensive health of the individual, has prompted at least two crucial challenges. First, the absence of a common definition and operational dimensions of recovery makes it difficult to construct a solid theoretical framework, essential for a holistic and effective understanding of the process. Second, the lack of a model of interrelations between the various dimensions limits the description and understanding of the long-term recovery process.

The application of the dual-factor model of mental health in the field of AUD recovery could be beneficial in this context. The model offers a complete and operational conceptualization of health, addressing distress reduction (negative component) and the increase of positive mental health. Understanding recovery as the process of change towards that complete state of health can act as a link between the various definitions of recovery. While recent conceptualizations increasingly emphasize positive indicators of health (Ashford et al., 2019; Best et al., 2016; Substance Abuse and Mental Health Services Administration, 2011; Witkiewitz et al., 2020), conflicts have emerged when these are dissociated from symptoms, such as alcohol use (Esteban Rodríguez et al., 2024b). The dual model of health would allow distress reduction throughout the recovery process to be covered alongside the attainment of well-being as the ultimate goal, in accordance with the definitions of recovery. If abstinence and recovery capital are also taken into consideration, together with coping strategies, within Kelly and Hoeppner's biaxial model framework (2015), a global and dynamic vision of the recovery process could be developed.

This study addresses key issues related to AUD recovery, integrating various domains to offer a comprehensive view of the process. The idea of recovery as a health-improving process is adopted, with both its negative and positive components considered. In addition, contributions from other specific models for addictive disorders are incorporated, examining the relationships of remission (abstinence), recovery capital, and coping strategies with these positive and negative health indicators.

From the understanding of addiction as a deeply rooted maladaptive operant behaviour (Apud & Romaní, 2016; Heinz et al., 2019; Lewis, 2017; Lüscher et al., 2020; Ruiz Sánchez de León, 2022; Wise & Jordan, 2021), it may be posited that a significant behavioural change, such as ceasing consumption and adopting alternative behaviours, leads to a remission of negative health indices. In turn, eliminating the problem behaviour, developing coping strategies and reducing discomfort all promote positive health in people in recovery. It is thus hypothesized that recovery will evolve towards a state of full health: abstinence and coping strategies will be associated with a reduction of negative mental health indices, which will in turn promote substantial improvements in well-being and quality of life.

The aim of this study is therefore to verify the interconnections between psychological dimensions involved in recovery to achieve a state of positive mental health, formulating a relational model of recovery in a clinical population during abstinence.

Methods

Design

A cross-sectional study was carried out with a clinical sample of abstinent patients diagnosed with alcohol use disorder (AUD). The study included different abstinence durations, and patients were treated either in the psychiatric unit of the Hospital 12 de Octubre or in mutual aid groups in the Community of Madrid.

Participants

A sample of 348 participants diagnosed with AUD in complete sobriety was obtained (range of abstinence durations: 1 month to 28 years). All participants attended abstinence-oriented treatments, either in the alcohol program of the psychiatric unit of the Hospital 12 de Octubre, or in mutual support groups.

Participants with under two years of sobriety attended the Hospital 12 de Octubre program on an outpatient basis. This is a public treatment program (funded and managed by the Spanish public health system) with a two-year duration. For more details on the program, see Rubio

et al. (2018). After this, participation continued in mutual support groups.

To complete the sample, patients with more than two years of sobriety, attending mutual help groups, were invited to participate. More specifically, three associations of the Federation of Alcoholics of the Community of Madrid (FACOMA), which follow the cognitive-behavioural treatment model (FACOMA, 2016), and three from Alcoholics Anonymous (AA), with a 12-step model, participated in the study.

The sample comprised 114 women and 234 men aged between 27 and 75 years (M = 52.71; SD = 9.01). Patients mostly had compulsory (38.79%) or higher education (34.20%), and 39.66% of them were in active employment. The abstinence durations up to the time of assessment ranged from 1 month to 28 years (M = 3.84 years; SD = 4.44), (Table 1).

All patients had been abstinent for at least one month and were not actively using other substances (except coffee and/or tobacco). Patients diagnosed with another psychiatric pathology or neurological condition that could interfere with the assessment were excluded.

Participants provided both spoken and written consent to participate in the study.

Table 1
Sample descriptives

Sociodemographic data		n	M (SD)/ Frequency (%)	Min.-Max.
Age		348	52.71 (9.01)	27-75
Sex	**Male**	234	67.24%	
	Female	114	32.76%	
Level of education	**Compulsory education**	135	38.79%	
	Secondary education	94	27.01%	
	Higher education	119	34.20%	
Employment	**Active**	138	39.66%	
	Unemployed	73	2.98%	
	Sick leave	41	11.78%	
	Student	3	.86%	
	Retired	92	26.44%	
Marital status	**Single**	75	21.55%	
	Married	158	45.40%	
	Divorced	58	16.67%	
	Separated	13	3.74%	
	In a relationship	39	11.21%	
	Widowed	5	1.44%	
Clinical data		**n**	**M (SD)/ Frequency (%)**	**Min.-Max.**
Abstinence duration (in years)		348	3.84 (4.44)	1 month-28 years
Groups by abstinence duration	**Less than 1 year**	98	28.2%	
	1-5 years	164	47.1%	
	More than 5 years	86	24.7%	
Age of alcohol use onset		348	14.55 (4.07)	4 - 47
Smoker	**No**	173	49.71%	
	Yes	172	49.43%	
Prior use of other substances	**No**	206	59.20%	
	Yes	142	40.8%	
Treatment	**Hospital**	164	47.13%	
	FACOMA	129	37.07%	
	AA	55	15.80%	

Note. Means (M) of clinical and demographic measures, standard deviations (SD), frequency values (expressed in %), minimum (Min.) and maximum (Max.) values.

Instruments

- Quality of Life Scale (WHOQOL-BREF). The WHOQOL-BREF is an abridged version (27 items) of the original WHOQOL-100 (World Health Organization-Quality of Life, 1998), which measures four domains: A) Physical health, which includes activities of daily living, dependence on medication and medical aids, energy and fatigue, mobility, pain, sleep and work ability; B) Psychological health, which includes body image, negative and positive feelings, self-esteem, spirituality or personal beliefs, learning ability, memory and concentration; C) Social relationships, assessing personal relationships, social support and satisfaction with sexual activity; D) Environment, covering economic resources, physical safety, access to health and social care, home environment, opportunities to acquire new information and skills, participation in leisure activities, and transport. The domains show internal consistency alpha values of .82, .81, .68 and .80, respectively (Skevington et al., 2004). The Spanish version of the WHOQOL-BREF have an internal consistency range of .69 to .77 (Benitez-Borrego et al., 2014).
- *Psychological Well-Being Scale (*PWBS). This is based on Ryff's (1989a, 1989b) multidimensional model of psychological well-being. The 54-item version (van Dierendonck, 2004) used in this study assesses six dimensions: Self-acceptance (feeling good about oneself, recognizing one's own limitations); Autonomy (independence and self-determination); Environmental mastery (ability to choose or create favourable environments); Purpose in life (defining goals that give meaning to life); Personal growth (striving to develop potential) and Positive relationships (maintaining stable and trusting social relationships). The dimensions show internal consistency values of .83, .78, .77, .73, .65 and .80, respectively (van Dierendonck, 2004). The internal consistency of the Spanish version varies between .58 and .71 (Díaz et al., 2006).
- Satisfaction With Life Scale (SWLS). Life satisfaction refers to the overall assessment that people make of their own life, comparing their own life circumstances with the standards considered adequate (Diener et al., 1985). The original version shows an internal consistency of .87 (Diener et al., 1985), with the Spanish version of the SWLS having an internal consistency of .88 (Vázquez et al., 2013).
- Hamilton Anxiety Rating Scale (HAM-A). This self-report measure assesses the severity or intensity of anxiety symptoms. It comprises 14 items defined by both psychological and somatic symptoms. Its internal consistency values range from .79 to .86 (Hamilton, 1959). It has been translated into Cantonese, French and Spanish (Thompson, 2015). Our study used the Spanish version by Lobo et al. (2002).
- Hamilton Depression Scale (HAM-D). This self-report measure assesses the symptomatic profile and severity of depression. The version used consists of 21 items with 5 response options. Internal consistency values range from .76 to .92 (Hamilton, 1960). The Spanish version of HAM-D has an internal consistency of .78 (Bobes et al., 2003).
- Acceptance and Action Questionnaire (AAQ-II). This assesses experiential avoidance and psychological inflexibility. In the present study, the Spanish version of 10 items with 7 Likert-type response options was used. The original scale has an internal consistency of .87 (Bond et al., 2011).
- Litman's Coping Behaviors Inventory (CBI). Identifies the coping strategies used to avoid alcohol when experiencing desires to drink or risky situations. It distinguishes four factors or strategies: A) Positive thinking (reflecting on the positive consequences of abstinence); B) Negative thinking (reflecting on the problematic consequences of drinking); C) Distraction (starting pleasant activities); D) Avoidance (avoiding situations related to drinking). These factors explain 54% of the variance, with internal consistency values of .91, .81, .65 and .75, respectively (Litman et al., 1983). In Spanish samples, internal consistency values reach .90 in alcohol-dependent individuals (García González & Alonso Suárez, 2002).
- Assessment of Recovery Capital (ARC). This assesses 10 domains involved in recovery: substance use and sobriety, global psychological health, global physical health, community involvement, social support, meaningful activities, housing and safety, risk taking, coping and life functioning, and recovery experience (for more information see Groshkova et al. (2013). The original scale shows intraclass correlations between .50 and .73 (Groshkova et al., 2013), and the Spanish adaptation has an internal consistency of .90 (Sion et al., 2022).

Procedure

Sample size was determined in relation to the planned statistical analyses. Given the nature of exploratory factor analysis (EFA), the ratio of participants per element needed to be at least between 5:1 (Gorsuch, 1983) or 10:1 (Velicer & Fava, 1998), with a minimum of 100 participants. Since 19 dimensions (subscale dimensions and each scale's global concepts) were to be assessed, it was established that the minimum sample should comprise 100-190 participants for the EFA. With reference to structural equation modelling (SEM), Kline (2005) and Jackson (2003) recommend at least 200 observations, so in line with these standards, a final sample of 348 participants met all criteria.

A non-probabilistic convenience sampling strategy was used. Voluntary participation was requested from patients treated for AUD at the outpatient treatment program of the alcohol unit of the at the Hospital 12 de Octubre's psychiatric service, and from the mutual aid groups of the FACOMA and AA associations.

Participants from the Hospital 12 de Octubre were recruited in the treatment context. Senior psychiatrists responsible for the programme asked patients to participate in the study. The voluntary nature of participation, and that it would not in any way affect their treatment, was emphasised. Those who agreed to take part in the study were assessed individually at the hospital facilities.

Recruitment of participants from the FACOMA associations was carried out at the FACOMA offices by the psychologist responsible for the treatment groups and psychological support. Recruitment conditions were similar to those mentioned above: participation was to be explicitly voluntary, with no repercussions on treatment, and patients were assessed at each of the FACOMA offices. For AA group members, recruitment was carried out by a representative in charge of the invitation to the study. Those expressing an interest in the study were contacted by a senior psychiatrist from the Hospital 12 de Octubre, who also assessed them at the hospital facilities.

In all cases, once the study had been explained to them and each participant had signed the informed consent, they completed the questionnaires. These were administered in a single session (approximately 90 minutes), alongside a brief semi-structured interview to record sociodemographic and clinical data. The questionnaires were completed digitally using the RedCap platform with the support of the researchers. The responses to the questionnaires were entered into a database in SPSS for subsequent analysis.

All procedures were approved by the Ethics Committee of the Hospital 12 de Octubre, guaranteeing that the study and the methodology used met the essential ethical standards and deontological criteria governing the centre (CEIm 19/086).

Data analysis

First, a descriptive analysis was performed to explore the sociodemographic (e.g., age, gender, education level, employment status) and clinical characteristics (e.g., abstinence duration, previous treatments, age at onset of use) of the sample. A descriptive analysis of the questionnaire scores was also performed. Next, the questionnaire scores were compared according to the self-help group that the participants attended, adjusting for age and abstinence duration, using a MANCOVA analysis.

Third, correlations were calculated between abstinence duration (direct score in months) and the Z scores of the different scales and subscales. The Spearman coefficient (Spearman's rho) was used due to the lack of normality in some variables, as determined by the Kolmogorov-Smirnov test, and/or because the Likert-type scale had fewer than six options. Only those variables showing significant correlations with abstinence duration were considered for further analysis.

The variables transformed into Z scores that showed significant correlations with abstinence duration were used in a structural equation model (SEM). SEMs allow effects and relationships between multiple variables to be estimated on the based on the correlations existing in a sample in a cross-sectional manner (Ruiz et al., 2010), thereby making the model particularly suitable for this study. SEM assessment was carried out in two steps, taking into account that a valid measurement model is necessary prior to assessing the structural component (Orgaz Baz, 2008). Thus, an acceptable measurement model was first sought, before the structural component was assessed.

Although a preliminary hypothesis regarding the underlying dimensions was available, there was no sufficiently consolidated theory to specify a confirmatory model, so an exploratory factor analysis (EFA) was carried out. This approach allows the number and nature of latent factors to be identified without imposing a predetermined structure, in accordance with the recommendations of Ferrando and Anguiano-Carrasco (2010) in situations where the underlying theory is not yet fully developed. Unweighted least squares (ULS) was used as the estimation method, following the guidelines of Lloret-Segura et al., (2014), and Oblimin for factor rotation. The Kaiser rule was used to determine the number of factors.

Once the factors for guiding the measurement model were identified using EFA, the proposed theoretical model was assessed with the structural model. An advantage of SEM is that it makes it possible to propose the type and direction of the relationships expected to be found between the various variables contained in it, so that the parameters specified by the relationships proposed at a theoretical level can then be estimated (Ruiz et al., 2010). The theoretical specification of the model allows relational structures to be proposed between the variables, with some having an effect on others, thus creating concatenations of effects and allowing the path of influence between multiple variables to be measured (Escobedo Portillo et al., 2016).

The purpose of this specific model was to explain the variability in the factor identified in the positive mental health EFA, composed of quality-of-life, hedonic and eudaimonic well-being measures. This factor was selected as a dependent variable due to its presence in most current definitions of recovery, which emphasize said positive health indicators (Ashford et al., 2019; Best et al., 2016; Substance Abuse and Mental Health Services Administration, 2011; Witkiewitz et al., 2020). To this end, the scores of the other two factors identified in the EFA were used, alongside abstinence duration, in line with

our hypothesis. We were thus able to test our theoretical model and establish the direct and indirect contribution of sobriety and the identified factors to the variability of positive mental health. The ULS method was used for parameter estimation, appropriate for the type of variables used (Morata-Ramírez et al., 2015). The fit of the models was estimated using the indicators provided by the AMOS v.26 program: RMR (root mean square residual), SRMR (standardized root mean square residual), AGFI and GFI as absolute fit indices, as well as NFI (normed fit index) and RFI (relative fit index) as incremental indices. The criteria for the interpretation of these indicators were: AGFI, GFI, NFI and RFI > .95, and RMR and SRMR close to zero (Byrne, 2016; Hu & Bentler, 1999). The model is presented graphically, indicating the standardized regression weights and marginal measures. In addition, tables detailing the standardized total and indirect effects are provided, offering a comprehensive view of the interrelations between the variables studied.

All analyses were performed using the statistical software SPSS v.26 (IBM, 2019) and AMOS v.26, with the level of significance set at $p < .05$.

Results

Table 2 shows the descriptive analysis of the questionnaire scores, including subscales. When comparing the scores on the different scales according to the mutual aid group in which treatment was received, statistically significant differences ($p < .05$), adjusted for abstinence duration and age, were found only in the Environment subscale of the WHOQOL-Bref questionnaire ($F = 6,27$; $p = .014$; $hp2 = 0.04$), (Table 2). AA participants had higher scores in the subjective assessment of their environment than those from FACOMA. In the other variables, no statistically significant differences were found when comparing the mutual aid group attended for treatment.

Correlation analysis between abstinence duration and scale scores revealed statistically significant correlations ($p < .05$) between abstinence duration and scores on all scales and subscales (Table 3), except for the environment-related quality of life subscale (WHOQOL-Bref), the psychological well-being subscale regarding positive relationships (PWBS), and avoidance strategy use (CBI). These were therefore excluded from subsequent analyses.

Exploratory factor analysis (EFA) identified three factors which explained 54.95% of the total variance. The sampling adequacy criteria, reflected by the Kaiser-Meyer-Olkin test (KMO = .871), as well as Bartlett's sphericity criteria were met (Chi2 = 2128,19; $p < ,05$), indicating that the data were suitable for factor analysis. Factor 1, Positive Mental Health, included variables related to psychological or eudaimonic well-being, quality of life, and life satisfaction. Factor 2, Functional Discomfort, included the scales of depression, anxiety, experiential avoidance, and recovery capital, the latter with negative loadings. Factor 3, Coping, comprised coping skills (see Table 4). The commonalities between variables and factors were greater than 15%, and the factor weights exceeded the .40 threshold recommended for samples larger than 150 participants, except for the life satisfaction variable, which had a factor loading of .364 on one factor and .361 on the other.

Based on these EFA results, the SEM measurement model was constructed with the three identified and correlated factors, and the validity of the model with adequate fit indices (GFI = .975; AGFI = .964; RMR = .074; SRMR = .074; NFI = .963; RFI = .955) was confirmed. Coping, Functional Discomfort, and Positive Mental Health were thus used as latent dimensions.

Relationships between these latent factors as well as abstinence duration were established following the working hypothesis, and the structural model was built. Thus, the SEM shown in Figure 1 reflects the relational hypothesis by which abstinence duration is associated with the use of coping strategies, which are in turn related to a decrease in functional discomfort, contributing to the increase in positive mental health. The model explained 85% of the variance in Positive Mental Health (R2 = .85) with adequate fit indices (GFI = 1.00; AGFI = 1.00; RMR = .136; SRMR = .137; NFI = .999; RFI = .999).

Coping had a statistically significant impact on both Functional Discomfort (standardized total effect = -.392; $p < .001$) and Positive Mental Health (standardized total effect = .876; $p < .001$). In turn, Functional Discomfort also had a statistically significant effect on Positive Mental Health (standardized total effect = -.731; $p < .001$), (see Table 5).

In line with the working hypothesis, abstinence duration also had a direct and statistically significant effect on Coping (standardized total effect = .772; $p = .02$). However, no statistically significant effect of abstinence on Positive Mental Health was found (Total standardized effect = .296; $p = .145$). It should be noted here that, while the direct effect of abstinence duration on Positive Mental Health was negative (standardized direct effect = -.381), the indirect effect was positive and stronger (standardized indirect effect = .677), (see Table 6).

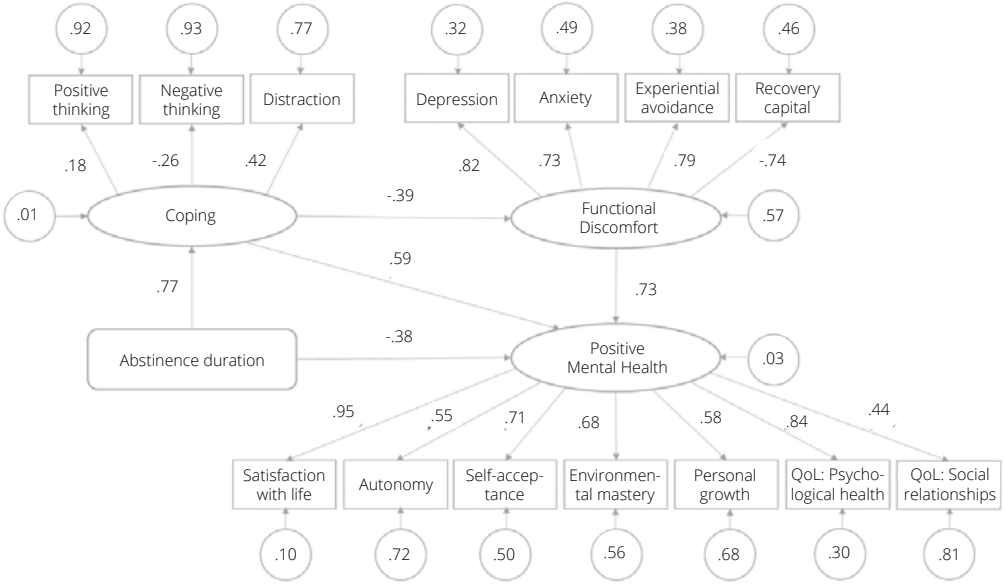
Finally, as Figure 1 shows, the regression weights of the scores on the different scales and subscales on the corresponding factors exceeded .40, and the commonalities exceeded 15%, with the exception of positive and negative thinking strategies, the latter also having a negative regression weight.

Table 2
Descriptives of scale scores and MANCOVA by mutual aid program (MAP)

Scales					MANCOVA by MAP		
	M	SD	Min.	Max.	F	p	μ^2_p
Depression (HAM-D)	11.76	8.15	1.00	47.00	0.095	.758	.001
Anxiety (HAM-A)	9.03	6.85	1.00	42.00	0.684	.410	.005
Satisfaction with life (SWLS)	21.33	6.47	5.00	35.00	0.027	.870	.000
Autonomy (PWBS)	37.60	6.68	17.00	51.00	0.052	.820	.000
Relationship with others (PWBS)	39.87	7.73	20.00	54.00	0.120	.729	.001
Self-acceptance (PWBS)	35.61	8.29	10.00	53.00	2.676	.104	.018
Environmental mastery (PWBS)	38.70	8.22	16.00	54.00	3.869	.051	.027
Purpose (PWBS)	37.05	7.52	13.00	54.00	1.082	.300	.008
Growth (PWBS)	37.66	7.96	15.00	53.00	0.987	.322	.007
Physical health (WHOQOL)	13.67	1.88	8.00	17.71	2.817	.095	.019
Psychological health (WHOQOL)	14.04	2.25	6.67	18.00	0.009	.925	.000
Social relationships (WHOQOL)	13.56	3.01	5.00	20.00	0.365	.547	.003
Environment (WHOQOL)	15.40	2.08	9.00	20.00	6.256	.014*	.042
Experiential avoidance and psychological inflexibility (AAQ-II)	32.37	11.14	11.00	64.00	0.251	.617	.002
Positive thinking (CBI)	28.90	4.53	10.00	37.00	2.402	.123	.017
Negative thinking (CBI)	17.34	5.39	0	24.00	1.085	.299	.008
Distraction (CBI)	16.89	6.66	0	30.00	0.084	.773	.001
Avoidance (CBI)	9.03	3.06	0	15.00	0.097	.756	.001
Total Recovery Capital (ARC)	43.55	6.68	8.00	50.00	0.004	.949	.000

Note. (*) p < .05. Means (M) of the scale scores, standard deviations (SD), minimum (Min.) and maximum (Max.) values. MANCOVA of the questionnaire scores by type of mutual aid program (FACOMA vs AA), adjusting for age and abstinence duration.

Figure 1
Structural equation model of AUD recovery



Note. Rectangles represent observable variables. Ovals represent unobservable (latent) variables. Circles represent marginal measures. Straight arrows represent structural effects, originating in the predictor variable and ending at the arrowhead in the dependent variable. The parameters of the standardized direct effects of the model are shown on the corresponding arrow.

Table 3
Spearman correlation between abstinence duration and scale scores

Scale	Abstinence duration
Depression (HAM-D)	-.283**
Anxiety (HAM-A)	-.245**
Satisfaction with life (SWLS)	.275**
Autonomy (PWBS)	.167**
Positive relationships (PWBS)	.066
Self-acceptance (PWBS)	.203**
Environmental mastery (PWBS)	.214**
Purpose in life (PWBS)	.108*
Personal growth (PWBS)	.255**
Physical health (WHOQOL-Bref)	.148**
Psychological health (WHOQOL-Bref)	.302**
Social relationships (WHOQOL-Bref)	.132*
Environment (WHOQOL-Bref)	.067
Experiential avoidance and psychological inflexibility (AAQ-II)	-.361**
Recovery capital (ARC)	.248**
Positive thinking (CBI)	.160**
Negative thinking (CBI)	-.193**
Distraction (CBI)	.366**
Avoidance (CBI)	.090

Note. Spearman's Rho correlation values between Z scores on the subscales and abstinence duration. *p < .05; **p < .01.

Table 4
Reduction of recovery indicators to dimensions. EFA: Rotated loading matrix and commonalities

Variables	Factor			Commonalities
	1	2	3	
Self-acceptance (PWBS)	.850			.725
Psychological health (WHOQOL)	.692			.583
Autonomy (PWBS)	.686			.399
Environmental mastery (PWBS)	.574			.672
Personal growth (PWBS)	.568			.426
Social relationships (WHOQOL)	.411			.379
Life satisfaction (SWLS)	.364	-.361		.469
Depression (HAM-D)		.913		.784
Anxiety (HAM-A)		.689		.544
Recovery capital (ARC)		-.627		.661
Experiential avoidance and psychological inflexibility (AAQ-II)	-.340	.486		.557
Negative thinking (CBI)			.709	.504
Positive thinking (CBI)			.700	.619
Distraction (CBI)	.340		.594	.372

Note. Rotated loading matrix (weights under .30 are omitted). ULS parameter estimation method. Rotation method: Oblimin. Commonalities after extraction.

Table 5
Structural model hypothesis: Non-standardized effect and test results

Predictor	Dependent	Coefficient estimation	S.E.	C.R.	p
Abstinence duration	Coping	.002	.001	2.333	.020
Coping	Functional Discomfort	-.258	.062	-4.167	<.001
Functional Discomfort	Positive Mental Health	-.541	.057	-9.541	<.001
Coping	Positive Mental Health	.116	.033	3.472	<.001
Abstinence duration	Positive Mental Health	.001	.000	1.458	.145

Note. S.E. (Standard error of the coefficient), C.R. (Critical value).

Table 6
Standardized total and indirect effects

	Standardized total effects		
	Abstinence duration	**Coping**	**Functional Discomfort**
Coping	.772		
Functional Discomfort	-.302	-.392	
Positive Mental Health	.296	.876	-.731
	Standardized indirect effects		
	Abstinence duration	**Coping**	**Functional Discomfort**
Functional Discomfort	-.302		
Positive Mental Health	.677	.286	

Note. Values represent regression weights.

Discussion

Current definitions suggest that recovery from AUD is a holistic, dynamic, self-directed, and prosocial process leading to improvements in health and well-being (Esteban Rodríguez et al., 2024b). Our study identified three dimensions involved in recovery from AUD: i) Coping; ii) Functional Discomfort; iii) Positive Mental Health. Based on these dimensions, we constructed a relational model that provides a comprehensive framework for understanding recovery in a more comprehensive way. According to the model obtained, recovery in the clinical AUD population can be understood as a broad, dynamic, and multifaceted process, where abstinence duration prompts behavioural changes and the implementation of coping strategies. In turn, these actions lead to an improvement in negative emotionality and a growing availability of personal and social resources, which in turn contribute to increased well-being and quality of life. This study is the first initiative in Spain to present a clinical model of recovery focused on well-being and supported by rigorous methodological evidence. The proposed model provides indicators for recovery process monitoring, highlights the dimensions which need to be addressed in order to achieve recovery towards a state of complete health, and offers considerable potential for guiding treatment interventions.

Although the assessed mutual aid programs use different approaches, statistical differences were only found in the scores on the environment-related quality of life subscale. The absence of differences among the rest of the variables across the mutual aid groups (MAGs) could be due to the fact that, while diverse, the treatment approaches focus on personal growth during recovery (Arias et al., 2023). Previous studies have shown similar results, with no significant differences in the functioning of participants between 12-step-based MAGs and those following cognitive-behavioural approaches (Kelly et al., 2023). This suggests that the programs may offer comparable benefits, so future research on the role of the components or approaches used by MAGs would be of interest in studying factors that may influence the recovery process.

Identified dimensions of recovery in AUD: Coping, Functional Discomfort and Positive Mental Health

The Coping dimension groups the strategies of the coping skills inventory of Litman et al. (1983). This dimension captures the responses, attitudes and strategies used to prevent relapses (Litman et al., 1983). Different theoretical models, such as Litman et al. (1984), the relapse prevention model of Marlatt and Gordon (1985) or stress and coping theory (Folkman, 1984), have confirmed the influence of these strategies. These models posit that the acquisition and effective implementation of active coping strategies promote self-efficacy, which is why they constitute a relevant component of recovery (Hasking & Oei, 2008; Larimer et al., 1999; Laudet, 2008; Laudet et al., 2002; Marlatt & Gordon, 1985; Marlatt, 1996; Monti & Rohsenow, 1999; Witkiewitz & Marlatt, 2007). Most treatment programs for addictive disorders currently include relapse prevention, the effectiveness of which has been widely confirmed (Hasking & Oei, 2008; Larimer et al., 1999; Marlatt, 1996; Monti & Rohsenow, 1999; Witkiewitz & Marlatt, 2007). These strategies, ranging from the identification of risk situations to the implementation of adaptive coping techniques, have the potential to empower individuals during recovery and strengthen their resources when facing challenges to avoid relapses (Hasking & Oei, 2008; Litman et al., 1984; Witkiewitz & Marlatt, 2007).

The Functional Discomfort dimension refers to difficulties in meeting the demands of daily life, encompassing emotional distress and deficits in available resources.

This dimension can be understood from the perspective of the dual-factor model of mental health (Greenspoon & Saklofske, 2001) as the decrease in negative indicators or dysfunction, since it includes symptoms of depression, anxiety and experiential avoidance. It also includes the personal and social resources available to the individual (social support, leisure activities, family environment, etc.), broadening the distress beyond psychopathology. In the context of recovery from addictive disorders, this dimension can be compared to "essential recovery," proposed by Kaskutas et al. (2014), which refers to the basic elements necessary for maintaining significant changes in substance use. It should be noted that, although it seems critical, this dimension is not sufficient for understanding recovery and health in its entirety. This is because the Functional Discomfort dimension focuses on changes in clinical measures of harm and the vital resources available that support recovery, but this is not equivalent to recovery.

The literature on addictive disorders and recovery from them has stressed the importance of pathological negative affect and poor management of negative emotionality as risk factors in predicting relapse, underlining their role in clinical recovery (Marlatt & Gordon, 1985; Pandina et al., 1992; Stasiewicz & Maisto, 1993). For its part, the recovery capital assessment (Groshkova et al., 2013; Sion et al., 2022) considers the availability of resources to meet basic needs in different areas of life and associates them with the clinical course of addiction, as well as with the likelihood of starting and maintaining recovery. There is a ceiling effect of this recovery capital measure in patients who seek treatment for alcohol addiction and who are in recovery (Sion et al., 2022), so lower scores on this scale may indicate a deficit in the normal resources at the disposal of the Spanish population. In this way, it is understood as more of a negative indicator of health than as an indicator related to well-being, since limited recovery capital is detrimental to the individual. Thus, the Functional Discomfort or Functional Recovery dimension addresses the need highlighted by Groshkova et al. (2013) for a joint assessment of symptom profiles with recovery capital to predict the course of recovery.

In summary, Functional Discomfort or Functional Recovery considers risk factors of risk as well as of protection in AUD improvement. It recognizes the premorbid situation of available resources that can ameliorate or exacerbate the impact of adverse situations, thus affecting resilience and coping (Cloud & Granfield, 2008; Kelly & Hoeppner, 2015), and can help to mitigate and reduce the stress associated with adjusting to sobriety (Laudet & White, 2008).

The Positive Mental Health dimension includes variables relating to quality of life, eudaimonic well-being and satisfaction with life. These factors are recognized in research on the dual-factor model of mental health as positive indicators of mental health (Magalhães, 2024). They also feature in the current definitions of enriched recovery as fundamental dimensions of the process (Kaskutas et al., 2014). In the AUD context, many studies show improvements in well-being and quality of life during abstinence maintenance or consumption reduction in people receiving treatment (Donovan et al., 2005), from cross-sectional results with long periods of abstinence (Kelly et al., 2018; Rubio et al., 2023), to follow-ups of up to seven years (Frischknecht et al., 2013).

Among the dimensions constituting this factor, those that showed the greatest shared variance in the factor analysis were self-acceptance and environmental mastery. Self-acceptance, in the psychological well-being scale (PWBS; Ryff, 1989b; Ryff & Keyes, 1995), has been suggested as exerting a core influence on the other dimensions of the psychological well-being network (Blasco-Belled & Alsinet, 2022). Feeling proud, confident and positive about oneself, valuing both one's present life and accepting one's past life, can be a key element of recovery in the programs considered in this study (12 steps and help yourself – help us). These dimensions have been highlighted in the study of user-oriented recovery; specifically, the meta-synthesis of Klevan et al. (2021) highlights self-acceptance and control as essential components in personal recovery. Moreover, the Positive Mental Health dimension includes aspects such as personal growth, satisfaction with relationships and autonomy, corresponding to those proposed by Kaskutas et al. (2014), identified from the perspective of people involved in the recovery process.

In this sense, the Positive Mental Health factor is in line with contemporary definitions of enriched recovery and with evidence accumulated to date (Ashford et al., 2019; Betty Ford Institute Consensus Panel, 2007; SAMHSA, 2011; UKDPC, 2008; Witkiewitz et al., 2020). It could be considered that the goal of the recovery process should not be limited exclusively to sobriety, but rather to achieve optimal levels of health. While this aim is long-term, as observed in previous studies, it is an achievable goal (Kelly et al., 2018; Rubio et al., 2023). The evidence suggests that not only is there an improvement in positive mental health, but the magnitude of the improvement is such that those immersed in the process of AUD recovery can achieve levels of well-being and quality of life comparable to the general population over time (Rubio et al., 2023).

Relational model of recovery in AUD

The results obtained support the view of recovery as a process with differentiated stages, where the interruption of the problem behaviour (alcohol use) favours the development of alternative behaviours. This relationship contributes to a reduction of the affective symptoms characteristic of AUD and to the construction of recovery capital. Distraction-based coping strategies act as mediators

in the relationship between sobriety and the decrease in functional discomfort. Thus, improved use of distraction skills boosts the relationship between sobriety and the management of negative emotionality and the increase in recovery capital. This reduction in functional discomfort in turn influences positive mental health or enriched recovery, to the extent that the effects of sobriety on positive mental health are present only if there is an improvement in functional discomfort. This model has presented good fit indices (Pérez et al., 2013), with a GFI of 1,00 and an SRMR of 0.137, which supports its validity and coherence in explaining the recovery process in AUD contexts.

The coping strategy that emerged in our study with the greatest relevance is distraction. This measure covers a wide range of distracting activities, both individual (walking or going to work) and social (establishing contact with friends). It involves making a conscious decision in at-risk situations, making a choice between the known behaviour (drinking alcohol) and a constructive alternative. This approach corresponds with the principles of behavioural activation, since implementing a different behaviour is reinforcing for several reasons. First, it prevents alcohol use, which strengthens the feeling of self-efficacy in abstinence. Second, it offers alternative reinforcers to drinking, enriching the environment, which supports the view of recovery from the perspective of operant theories and environmental enrichment.

According to classic behavioural theories of choice, the presence of competing reinforcers in the environment predicts reductions in both consumption and seeking behaviour (Bickel et al., 1995; Vuchinich & Tucker, 1988, 1996). Some of the most powerful effects in the treatment of substance use disorder have been demonstrated by behavioural treatments, exploiting operant learning procedures with the purpose of consolidating desired behaviours (Carroll & Onken, 2005). Likewise, distraction can also be achieved through social contact, which provides the natural reinforcement of social relationships (McNamara et al., 2021; Thoits, 2011) and consequently social control, and motivates people to assume responsible behaviours and abstain from problematic behaviours, such as alcohol abuse (Hirschi, 2004; Thoits, 2011).

The relationship between maintaining abstinence and improved emotional management and recovery capital has been the subject of extensive research (Cloud & Granfield, 2008; Granfield & Cloud, 1999; Pandina et al., 1992; Stasiewicz & Maisto, 1993; White, 2008). However, our data highlight an indirect relationship between the two, mediated by the use of coping strategies. This supports a treatment approach that involves alternative activities, since changes in behaviour can lead to transformations in thoughts and emotional states. Behavioural activation has been shown to be effective in reducing depressive symptoms, negative affect, and experiential avoidance in populations with substance use disorder (Daughters et al., 2008; Vujanovic et al., 2017). This strategy would allow the motivation for change to be based not only on eliminating a problematic behaviour, but also to be aimed at promoting more adaptive behaviours and environmental enrichment. Taken together, these findings highlight the importance of distraction as a key strategy in the recovery process, offering behaviours and reinforcers alternative to alcohol use.

Finally, our results indicate that the impact of abstinence on positive mental health is only positive indirectly, that is, through increased use of coping strategies and reduced functional discomfort. This is in line with the mechanism proposed by Carlon et al. (2022), who argue that improvements in quality of life during recovery in individuals who have reduced drinking or achieved sobriety are based on the reduction of stress and negative affect. While several studies have shown that quality of life improves in both conditions (Dawson et al., 2005), this is more pronounced in those who are abstinent (Donovan et al., 2005; Subbaraman & Witbrodt, 2014). Thus, sobriety appears to be better for optimal long-term quality of life (Subbaraman & Witbrodt, 2014), which, based on our results, is explained by its indirect effect on positive mental health. Thus, in order for abstinence to be beneficial for positive health indicators and act as an enhancer of treatment success, it is also essential to focus on emotional management and recovery capital during treatment.

Limitations

Although this study has important implications for clinical practice by highlighting, for example, the importance of considering abstinence, consolidating coping strategies, managing negative emotionality, and building recovery capital, its inherent limitations must be noted. The cross-sectional design is valuable for identifying associations between variables, but it does not allow causal and temporal inferences to be drawn. Elucidating temporal relationships would require longitudinal research addressing the temporal sequence of the phenomena studied. Nevertheless, the cross-sectional design has allowed different dimensions of recovery to be examined at different times, including patients with very long periods of sobriety, seeing recovery as a long-term process, and this would be complicated with a longitudinal study.

Moreover, the recovery model proposed is preliminary and is based on one specific study, which poses challenges for generalization to diverse populations and contexts. Although the sample proved sufficient to obtain statistically robust results, it may not fully represent the diversity of alcohol addiction. Individual and cultural factors, including gender issues, could modulate the interactions between the identified dimensions and the established relationships.

Added to this is the wide range of abstinence periods and the geographical limitation of the sample, exclusively comprising residents of the Community of Madrid (Spain). Although the sample covers three different types of treatment approach, two of them belong to the associative environment and involve very long periods of sobriety, making it difficult to compare with the group from the hospital environment, whose maximum period of abstinence is 2 years, the limit of the program. In addition, all participants were involved in abstinence-oriented treatments, which may contribute to the perception of alcohol use cessation as an integral part of recovery. The fact that these treatments were chosen voluntarily by the participants may also affect the generalizability of results. It would be interesting to replicate the model in populations in treatments using different approaches or even in individuals who have not received treatment.

Despite the inclusion of dimensions relevant to the recovery process, it is recognized that substance use disorders are multifactorial and complex. Additional aspects, such as reductions in stigma and self-stigma or cognitive changes, could enrich future research and the model presented.

Therefore, it is important to complement this study with other research and other types of study design, for example, longitudinal studies that consider the proposed variables from an intra-subject perspective, in order to obtain a more complete and robust understanding of the recovery process in AUD contexts.

All in all, the proposed model offers a valuable conceptual framework that can guide intervention and assessment in AUD treatment, providing improvement in these areas.

Conclusions

The three dimensions identified (Coping, Functional Discomfort, and Positive Mental Health) have a strong theoretical basis as core components in AUD recovery for attaining a complete state of health. However, much of the literature has focused on analyzing separately the relationship of each dimension with abstinence or alcohol-use reduction. The fundamental innovation of this study lies in presenting a relational model that encompasses the dimensions of Positive Mental Health, Functional Discomfort, and Coping. Our holistic approach provides a theoretical and empirical framework that highlights the interconnection of these dimensions over long periods of recovery. This model suggests that abstinence is the starting point but not the goal, as its influence extends through the implementation of coping strategies, the gains in affective symptomatology and recovery capital, and finally, the attainment of greater well-being and quality of life, as reflected in positive mental health.

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Conflict of interests

The authors declare that the research was conducted with no commercial or financial relationships that could be construed as a potential conflict of interest.

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