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Article

Personal Recovery in Addictions: Development of a new Assessment Instrument

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ABSTRACT

Background: Identifying the key aspects of personal recovery in addictions is crucial for advancing recovery-oriented services. In Spain, no validated measures capture what service users consider most important for their recovery. This study aimed to design and validate the Personal Recovery Importance Scale (PRIS), an expanded CHIME-based instrument tailored to the addiction context. **Method:** A four-phase mixed-methods design involved experts (N = 13) and people in recovery (N = 1,604). Phase 1 focused on item development; Phases 2 and 3 assessed content and response process validity; and Phase 4 examined psychometric properties. **Results**: 42.4% of the items were revised after expert feedback and 44% following cognitive interviews. Psychometric analysis supported a seven-factor model (Connectedness, Hope, Identity, Meaning in life, Empowerment, Difficulties, and Practical support-CHIME-DP) with robust fit indices, invariance across recovery stages, satisfactory internal consistency, concurrent and discriminant validity, and hypothesis testing with key recovery variables. **Conclusions:** These findings confirm the content, face, and psychometric validity of the PRIS. This tool may be useful for prioritising and designing interventions and represents a first step towards developing PROMs and PREMs measures in Spain.

Recuperación Personal en Adicciones: Desarrollo de un Nuevo Instrumento de Evaluación

Palabras clave:
Recuperación personal
CHIME
Adicciones
Validación
Orientación hacia la recuperación

RESUMEN

Antecedentes: Identificar los aspectos clave de la recuperación personal en adicciones es esencial para avanzar en servicios orientados hacia la recuperación. En España no existen medidas validadas que recojan lo que las personas consideran prioritario en su recuperación. El objetivo fue diseñar y validar la Personal Recovery Importance Scale (PRIS), un instrumento basado en la ampliación del CHIME y adaptado a las adicciones. **Método:** Se empleó un diseño mixto en cuatro fases con la participación de expertos (N = 13) y personas en recuperación (N = 1,604). Fase 1 describió la construcción de ítems; Fases 2 y 3 evaluaron validez de contenido y proceso de respuesta; Fase 4 analizó propiedades psicométricas. **Resultados**: El 42,4% de los ítems se modificaron tras la retroalimentación experta y 44% tras entrevistas cognitivas. El análisis apoyó un modelo de siete factores (Conexión, Esperanza, Identidad, Sentido vital, Empoderamiento, Dificultades y Apoyo práctico-CHIME-DP), con buen ajuste, invarianza entre etapas, consistencia interna adecuada, validez concurrente y discriminante y pruebas de hipótesis con variables clave de recuperación. **Conclusiones**: Los hallazgos confirman la validez de la PRIS. La escala puede ser útil para priorizar intervenciones y representa un primer paso hacia el desarrollo de PROMs y PREMs en España.

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Over the past decade, the recovery-oriented care model has gained increasing prominence in the field of addictions (Bellaert et al., 2024). This approach promotes holistic, person-centred care, grounded in lived experience and oriented towards enhancing quality of life (Slade, 2010; White, 2007). Countries such as the United Kingdom, Belgium, Canada, and Australia have incorporated this paradigm into their care systems, promoting the use of Patient-Reported Outcome Measures (PROMs) and Patient-Reported Experience Measures (PREMs) to evaluate outcomes and experiences from the service user's perspective (Best et al., 2018; Zerrouk et al., 2025).

In Spain, although the approach is gaining visibility, its implementation remains limited (Sampietro et al., 2023). The new Mental Health Strategy of the National Health System (2022–2026) recognises personal recovery as one of its core principles and includes recovery-oriented community care (Ministerio de Sanidad, 2022). Nevertheless, despite these advances, there are still no validated tools to identify which aspects of the addiction recovery process are most important to individuals themselves. This gap limits the design of services that can be tailored to their needs.

The emergence of the recovery-oriented paradigm was marked by the distinction between clinical recovery and personal recovery (Davidson & White, 2007; Slade et al., 2008). Clinical recovery, rooted in professional literature, is conceived as a dichotomous state focused on symptom reduction and return to normal functioning. In contrast, personal recovery emerges from the narratives of people in recovery and is understood as a unique, heterogeneous, and non-linear process that extends beyond symptom remission. It emphasises growth, empowerment, community participation, and the pursuit of a meaningful life. This approach is underpinned by guiding principles such as placing subjective experiences at the centre, recognising individuals as active agents, safeguarding fundamental rights, and working collaboratively to improve quality of life (Vansteenkiste et al., 2024).

Since its introduction, research has devoted considerable attention to identifying the key elements of personal recovery (Kelly & Hoeppner, 2015; McDaniel et al., 2020). One of the most robust and widely recognised conceptual frameworks, demonstrating applicability in the field of addictions, is the CHIME model (Dekkers et al., 2020; Egglestone et al., 2023). Developed by Leamy et al. (2011) through a systematic review and narrative synthesis, CHIME encompasses five core processes: (1) Connectedness: including peer, family, and friendship support, social relationships and a sense of belonging to the community; (2) Hope and optimism about the future: including motivation for change, belief in the possibility of recovery, hope-inspiring relationships, constructive thinking, and goal setting; (3) Identity: including the reconstruction of a positive sense of self, its multiple dimensions, and overcoming stigma; (4) Meaning in life: including making sense of the experience of illness, rebuilding life, assuming meaningful roles, spirituality, and life purpose; (5)Empowerment: including personal responsibility, control over one's life, and a strengths-based approach. Each dimension comprises specific subthemes that operationalise the constructs.

Following its development, Leamy et al. (2011) emphasised that CHIME was not intended as a rigid model and highlighted the need for further research into its applicability in: (a) specific conditions, (b) different cultural contexts, (c) an ecological framework, and (d) different stages of the recovery process. Such research would contribute to validating and adapting the model to specific groups and contexts.

Since its inception, the CHIME model has been examined across diverse populations and contexts (Egglestone et al., 2023). Despite the extensive support for its validity, a number of recommendations have been proposed (Slade et al., 2012; Brijnath, 2015). These include the diversification of methodological designs (given that the majority of studies have employed qualitative approaches), the adaptation of the model to sociocultural contexts (with the majority of evidence being derived from Anglophone countries), and the adjustment of the model to specific populations (whereby new elements have emerged beyond the original framework). For instance, Bird et al. (2014) identified three additional areas: a) the need for practical support; b) greater attention to diagnosis and medication; and c) a degree of scepticism towards the concept of recovery. Stuart et al. (2017) proposed extending the model to incorporate difficulties (CHIME-D). Participants reported struggles, concerns, and setbacks that were not reflected in the original framework. Carson and Hurst (2021) emphasised the role of creativity (C-CHIME), while Nelson and Ogilvie (2022) added the growth component to address addiction recovery (G-CHIME).

Concurrently, certain challenges must be acknowledged. By focusing on first-person narratives, CHIME places emphasis on individual meanings, which may downplay social and structural factors. The original authors recommend framing the model within an ecological perspective (Leamy et al., 2011). Consistent with this view, several authors have stressed that personal recovery is intertwined with access to relational and material resources. They have also underscored the importance of considering social and structural determinants, such as socioeconomic factors and access to opportunities. (Bellaert et al., 2024; Klevan et al., 2023).

Several systematic reviews have analysed existing instruments to assess personal recovery (Penas et al., 2019; Thongsalab et al., 2022). Collectively, these reviews identify five priority areas for the development of new measures. First, clarifying the recovery dimensions to be measured, given the lack of conceptual clarity and consistency. Second, conducting rigorous psychometric evaluations: Penas et al. (2019) found that only 10 of the 53 reviewed instruments met basic standards. Third, involving people in recovery in the development process. Scheyett et al. (2013) note that tools incorporating service users' perspectives are the most congruent. Fourth, addressing the specific characteristics of each condition and its cultural context. In addition, three major gaps have been identified: (1) Most measures show limited alignment with the CHIME model and do not equally represent its dimensions. This is despite the model's contribution to unifying recovery processes; (2) they focus on assessing recovery markers or service-level principles without exploring in depth which aspects are considered most important by people in recovery; (3) they have largely been developed in Anglophone mental health contexts, with limited applicability to populations with addictive disorders (Ashford et al., 2019).

In Spain, two CHIME-based instruments meet the aforementioned standards: the REE (Dinniss et al., 2007; Uriarte et al., 2020) and INSPIRE (Williams et al., 2015). However, both focus on mental health, lack in-depth cultural adaptation, and do not incorporate the latest recommendations. Consequently, there is a pressing need to develop a specific tool for individuals with

addictive disorders that addresses these challenges and captures elements considered essential for recovery.

In light of the above, the present study aims to design and validate a scale to assess the most important aspects of personal recovery from addiction, based on the CHIME model and integrating the latest recommendations and challenges. The specific objectives are: (1) to describe the item generation process; (2) to examine content and response process validity through the involvement of experts and individuals in recovery; and (3) to assess the psychometric properties (factor structure, measurement invariance, internal consistency, concurrent and discriminant validity, and hypothesis testing). This novel instrument will, for the first time, validate the CHIME model in the field of addictions, highlight the priorities identified by individuals in recovery, and provide a foundation for the future development of PROMs and PREMs in Spain.

This study is part of a broader project preregistered in March 2025 on the Open Science Framework (OSF): https://osf.io/c3x82/?view_only=8e92c6ca282f4c9cb984a715b928ee40. Data, scripts, and supplementary materials are available in the folder *Study 2. Development and Validation of the Personal Recovery Importance Scale (PRIS)*. The scale was integrated into the cross-cultural adaptation of the *Life in Recovery* (LiR) survey in Spain (manuscript under review). This standardised survey was used to identify individuals in recovery and collect psychosocial information. The inclusion of the scale optimised resources and provided additional variables for validity testing.

Method

Following the recommendations of Muñiz and Fonseca-Pedrero (2019) and Boateng et al. (2018), a four-phase mixed-methods design was employed for the development and validation of the scale. This study presents the results of each phase, including item generation, content and response process validation, and psychometric evaluation (see OSF '*Development and Validation Process of the PRIS'*).

Participants

Content validity was assessed by a panel of subject-matter experts. Thirteen experts participated (53.8% male), with more than 10 years of clinical and/or research experience (M = 19.69; SD = 6.87; *Range* = 10–30) and represented different professional profiles (psychologists = 69.2%; social educators = 15.4%; social workers and physicians = 15.4%). They came from different levels of care (61.5% from third-level resources) and autonomous communities (Valencian = 53.8%; Madrid = 30.8%; Asturias = 7.7% and Andalusia = 7.7 %). Recruitment was carried out using snowball sampling, initially contacting key professionals who then recommended other potential experts.

For the pilot test, individual cognitive interviews were conducted with six people in recovery (M_{age} = 52.40; SD = 14.47; *Range* = 34–72; *male* = 66.7%). The sample was diverse in terms of recovery time and recovery pathways ($M_{time\ in\ recovery}$ = 19.67; SD = 12.34; *Range* = 4–35; professional treatment = 83.3%), primary substance (cocaine = 50%; alcohol = 16.7%; heroin = 33.3%), clinical profile (polydrug use = 50%; use of mental health services = 33.3%), and living conditions (urban = 50%; enough money to cover basic needs = 50%). Purposive sampling was used with the support of key informants. Previously recruited experts and associations recommended and facilitated access to participants.

For the psychometric evaluation of the scale, a total sample of 1,598 individuals in recovery from addictions was used (M_{age} = 46.73; SD = 11.92; 70.8% male; 39.7% single; 42.1% with primary education; 32.4% unemployed). Problematic substances reported were alcohol (50.3%) and cocaine (39.9%), followed by cannabis (10.6%) and opioids (10.1%). Percentages may exceed 100% because participants could report more than one substance. In this line, 60.8% of the sample reported multiple substance use. The mean age at onset of problematic use was 26.46 years (SD = 11.09), and the mean duration of use was 21.19 years (SD = 12.12). A total of 55.5% had experienced relapses, and 60.9% had used mental health services. Regarding recovery, the mean time was 5.5 years (SD = 8.07), classified as early (35.8%), sustained (32.4%), and stable (31.8%). The most common recovery pathways were a combination of formal and informal supports (45.2%) and exclusively formal supports (42.4%). These were followed by exclusively informal supports (6.1%) and natural recovery pathways, without structured support (2.6%). Percentages are based on valid responses, as 3.7% did not answer this item. Full distributions are available in the OSF ('*Descriptive Statistics of the Participants*').

Instruments

Personal Recovery Importance Scale (PRIS) was developed to assess the aspects that individuals in addiction recovery consider most important within their personal process. It includes seven subdimensions aligned with the adapted CHIME model: Connectedness, Hope, Identity, Meaning in Life, Empowerment, Difficulties, and Practical Support. The 25 items are rated on a 10-point Likert scale (1 = *not at all important*, 10 = *extremely important*). Although five- to seven-point formats are often recommended (Lozano et al., 2008), prior studies have shown that well-defined items can remain reliable with up to ten categories (Leung, 2011). Participants in the cognitive interviews found the 10-point scale intuitive and better suited to express subjective importance, consistent with rating practices in Spanish clinical and recovery contexts (De-Sola et al., 2017).

Life in Recovery Survey (LIR; Laudet, 2013). This survey was developed by the US organisation Faces and Voices of Recovery (FAVOR) to collect information on recovery journeys, pathways, and experiences. In the present study, we used the Spanish-adapted version (currently under editorial review). The following sections were employed:

a. Strengths and Barriers Recovery Scale (SABRS) (Best et al., 2020). This scale assesses strengths and barriers experienced before and after the onset of recovery across five key domains (health, legal status, finances, employment, and social relationships). Responses are recorded in a dichotomous format (*yes/no*). Items are grouped into four categories: (1) Recovery strengths in active addiction; (2) Recovery barriers in active addiction; (3) Recovery strengths in recovery; and (4) Recovery barriers in recovery. These categories allow calculation of the perceived change in strength growth and recovery deficits. The Spanish adaptation adjusted the items to the sociocultural context. The original 32-item scale (15 strengths and 17 barriers)

was reduced to 24 items (11 strengths and 13 barriers) while maintaining equivalence. In the present study, the scale showed adequate reliability (α = .785; ω = .786; α = .777; ω = .777; α = .786; ω = .785; α = .628; ω = .616).

b. Time in Recovery. A culturally adapted open-ended question was used: When do you consider you first began your process of change or recovery that led you to where you are now?". Based on participants' responses, they were classified into three recovery stages (Betty Ford Institute Consensus Panel, 2007): early (less than 1 year), sustained (1–5 years), and stable (more than 5 years).

Flourishing Scale (Diener et al., 2010; Checa et al., 2018). This scale measures psychological well-being from a eudaimonic perspective, focusing on personal growth, life purpose, and positive relationships. It consists of eight items rated on a Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). It yields a global score of positive functioning. The scale has been validated in the Spanish context, showing good psychometric properties. In the present study, it showed good reliability (α = .877; ω = .881).

Procedure

Stage 1. Item Generation. The objective was to develop an initial set of items derived from a clearly defined construct. First, the research team conducted an in-depth analysis of the CHIME model, adapting it to the field of addictions and incorporating the main challenges and recommendations. A preliminary set of items was then drafted, ensuring a minimum of two items per subdimension. Subsequently, a review committee was established to evaluate the items through iterative rounds. In each round, the committee assessed clarity, representativeness, and redundancy. Finally, those items considered most significant and representative for each subdimension were selected.

Stage 2. Content Validity. A structured expert judgement process was conducted. First, a fillable PDF version of the scale was prepared and sent to each expert (see OSF '*Guidelines for the Expert Panel'*). Each expert independently rated the clarity and relevance of the items on a scale from 1 (not clear/relevant) to 4 (very clear/relevant) and provided qualitative comments. The responses were then analysed and summarised in a comparative table, which served as the basis for decision-making.

Stage 3. Cognitive Interview-Based Pilot Study. Cognitive interviewing is one of the most recommended techniques for conducting pilot testing (Boateng et al., 2018). Individual, in-person, voluntary, and anonymous interviews were conducted with people in recovery. Each session lasted an average of 60 minutes, was guided by a team member with clinical experience, and was recorded for subsequent transcription and analysis. A structured protocol was used, incorporating "think-aloud" and "verbal probing" techniques (see OSF *'Cognitive Interview Script'*). Participants read the items aloud and verbalised their reasoning. The interviewer then asked targeted questions to explore comprehension, interpretation, clarity of instructions, and suitability of the response format. The responses were subsequently analysed and compiled into a comparative table to inform decision-making. Items were presented grouped by dimension to enhance comprehension and reduce cognitive load among participants with heterogeneous educational and clinical backgrounds. Although this format may increase context-related covariance, it was considered appropriate for ensuring accessibility and response clarity.

Stage 4. Psychometric Evaluation. The instrument was tested by assessing its structure through exploratory and confirmatory factor analyses, measurement invariance, internal consistency, concurrent and discriminant validity, and hypothesis testing. A multi-strategy approach was planned and implemented to recruit a heterogeneous sample of people in recovery (Subbaraman et al., 2015). First, dissemination materials were designed (posters, leaflets, messages for social media). A database of addiction services in Spain was then compiled. Dissemination took place through four channels: (a) contact with experts and organisations using convenience sampling, (b) promotion via social media, (c) dissemination at specialised conferences, (d) telephone contact with addiction services to request participation and disseminations. Various synonyms for "in recovery" were used to capture the diversity of experiences, as recommended by Vitellone et al. (2022). Inclusion criteria were: (1) currently undergoing or having undergone a process of change or recovery from a substance use problem; or currently attempting or having succeeded in overcoming a substance addiction problem, (2) aged 18 years or older, (3) residing in Spain. Recruitment took place between September 2024 and March 2025. The survey was administered both digitally (via the LimeSurvey platform) and on paper, adapting to the circumstances of each service. Voluntary participation and anonymity were ensured, and informed consent was obtained.

The study was conducted following the Declaration of Helsinki and approved by the ethical committee of the University of Valencia (3332693). Before participating, all individuals received full information about the study objectives and gave their informed consent.

Data Analysis

Content validity was examined using the Item-level Content Validity Index (I-CVI; Lynn, 1986). Qualitative feedback was organized into comparative tables to refine item wording. Cognitive interview data were analysed using framework analysis (Bryman & Burgess, 1994), with emphasis on response comprehension. Analyses were conducted using Microsoft Excel and Word (version 2506, build 18925.20158).

Prior to psychometric testing, data were screened for missing responses (< 5% per item) and no systematic patterns were detected. Missing data were handled through Full Information Maximum Likelihood (FIML) in Mplus 8 (Enders, 2022). A classical item analysis was then conducted to assess item performance. Means, standard deviations, response distributions and corrected item-total correlations were examined following standard criteria (DeVellis & Thorpe, 2022). Items with correlations above .30 and without floor or ceiling effects (> 15%; Terwee et al., 2007) were retained.

Structural validity was assessed using a sequential factor-analytic approach. Parallel Analysis and the Hull Method were first conducted in JASP 0.18 to determine the optimal factor number (Lorenzo-Seva et al., 2011). The sample was randomly divided into two subsamples. An Exploratory Factor Analysis (EFA) was performed on the first subsample (n = 668) using Mplus 8 (Muthén & Muthén, 1998–2017), with a polychoric correlation matrix and the WLSMV estimator, robust to non-normality (Holgado-Tello et al., 2010). Factor retention was guided by statistical criteria and

theoretical interpretability within CHIME (Lloret-Segura et al., 2014). A Confirmatory Factor Analysis (CFA) was subsequently conducted in the second subsample to test model stability, with fit assessed using χ^2, CFI, RMSEA, and SRMR (Kline, 2023). Acceptable fit thresholds were considered as CFI > .90 and RMSEA/SRMR < .08 and < .05.

Measurement invariance across recovery stages was examined through configural, metric, and scalar multigroup models. Internal consistency was evaluated using Cronbach's α (Cronbach, 1951), McDonald's ω (McDonald, 1999), and the Composite Reliability Index (CRI; Hair et al., 2010), and their 95% confidence intervals. Coefficients ≥ .70 were considered acceptable for research purposes (Kline, 2015).

Concurrent validity was examined through correlations between PRIS scores and Strengths Growth, Recovery Deficits, Recovery Time, and the Flourishing Scale., Positive correlations were expected with recovery time, strengths, and flourishing, and negative correlations with deficits (Kaskutas et al., 2014; Parker et al., 2018). Discriminant validity was assessed using the Heterotrait–Monotrait ratio (HTMT; Hair et al., 2021), calculated via Henseler's online tool (https://www.henseler.com/htmt.html). Values < .90 indicated adequate discriminant validity.

Finally, hypothesis testing was performed using Spearman's correlations between PRIS dimensions, age, and abstinence time, and Mann–Whitney *U* tests to compare genders. Based on previous research, we expected women to score slightly higher in Connectedness, Hope, and Empowerment (McQuaid & Dell, 2018; Abreu Minero et al., 2022), minimal age effects (Slade et al., 2012; Kelly et al., 2018), and positive associations with abstinence time (Keith et al., 2022; Knapp et al., 2024).

Results

Stage 1. Item Generation

The research team expanded and adapted the CHIME model to the context of addictions. Two new dimensions were added: one addressing difficulties (maintaining abstinence, accepting the problem, and managing symptoms) and another covering key structural aspects (meeting basic needs and accessing social resources and opportunities). Several subthemes from the original model were also adjusted: in Connectedness, relationships with individuals who do not use drugs and mutual support were included; in Identity, self-reconstruction was added; and in Empowerment, personal rights and values were incorporated. The resulting model was named CHIME-DP and comprised seven dimensions: Connectedness, Hope, Identity, Meaning in life, Empowerment, Difficulties, and Practical Support. An initial pool of 124 items was then generated and reviewed over eight rounds. During this process, 86 items were eliminated, 6 were merged, 37 were revised, and 1 was reclassified. The final set was reduced to 33 items. OSF '*Results of the Iterative Round-Based Process'* provides the actions taken in each review round.

Stage 2. Content Validity

Content validity was assessed by calculating the Item-Level Content Validity Index (I-CVI), complemented by qualitative evaluations. Full scores, actions, and reason for change are detailed in the OSF '*Results of the Expert Review'*. A total of 84.85% of items exceeded the .80 threshold for clarity, and 81.82% did so for relevance. Specifically: (a) 11 items were retained (I-CVI > .85); (b) 10 items were revised to improve linguistic and conceptual clarity; (c) 3 items were reformulated to better capture the intended subdimension; (d) 1 item was reclassified due to misalignment with the expected dimension; and (e) 8 items were eliminated due to low scores (I-CVI < .78) and lack of specificity. After these modifications, the final scale consisted of 25 items.

Stage 3. Cognitive Interview-Based Pilot Study

The results of the cognitive interviews and the actions taken are detailed in the OSF '*Results of the Cognitive Interviews'*. Of the 25 items analysed: (a) 14 items were retained, confirming their comprehension and interpretation; (b) 8 items were revised to improve conceptual precision and linguistic clarity, including the replacement of terms with more everyday language; and (c) 3 items were adjusted to clarify their content. In addition, the instructions were simplified, and it was ensured that responses referred specifically to the recovery process. Finally, agreement was reached with participants on using a 1-to-10 response scale, due to its clarity and familiarity. OSF *'Results of the Item Transformation'* provides the entire item transformation process.

Stage 4. Psychometric Evaluation

Preliminary Analyses

Before testing the factorial structure, descriptive statistics, reliability estimates, and classical item analyses were conducted to assess item quality and discrimination of items. As shown in OSF, '*Classical Item Analysis Results and Plot Distributions'* item means ranged from 7.78 to 9.36 (*SD* = 1.37-2.59), distributions were unimodal with negative skew, and all corrected item-total correlations exceeded .30 (*range* = .36-.71) supporting adequate variability and homogeneity (DeVellis & Thorpe, 2022). No floor effects were observed (≤ 0.4% across all factors). Ceiling effects ranged from 26.7% to 50.2% at the subscale level, reflecting high endorsement of positive recovery experiences, but remained below 15% for the total PRIS score (14.1%).

Structural Validity

Parallel Analysis was conducted to determine the optimal number of factors to retain as a complementary procedure to the Exploratory Factor Analysis (EFA). Results showed that the seven-factor configuration provided the best balance between empirical adequacy and theoretical interpretability. Real-data factor eigenvalues exceeded the simulated FA eigenvalues for the first seven factors, supporting a 7-factor solution (See OSF '*Results of the Parallel Analysis*'). Sampling adequacy was excellent (KMO = .949; Bartlett's χ^2 (206) = 1606.93, p <. 001). Promax rotation was applied to allow factor correlations. Although some items displayed secondary loadings in conceptually related dimensions (e.g., items 7, 9, 14, and 19), this pattern was theoretically consistent with the interrelated nature of CHIME components (Vogel et al., 2020). Item allocation was therefore guided by theoretical coherence and content validity rather than exclusively by statistical criteria. Standardised

factor loadings from the rotated solution are available in the OSF '*Fit of the 1 to 8 Factor Models and Standardized Saturations in the EFA'*. A Confirmatory Factor Analysis (CFA) was subsequently conducted based on the established factor structure. The model demonstrated good fit (χ^2 (254) = 659.931, p < .01, CFI = .915, RMSEA = .046 [90% CI .042–.050], SRMR = .039). Standardised loadings are shown in Table 1, and factors correlations in Table 2.

Table 1
Standardized Loadings on the Confirmatory Factor Analysis (CFA)

Item	F1	F2	F3	F4	F5	F6	F7
I1	.612						
I2	.555						
I3	.729						
I4		.575					
I5		.648					
I6		.592					
I7		.622					
I8			.725				
I9			.720				
I10			.686				
I11				.685			
I12				.671			
I13				.642			
I14				.752			
I15					.545		
I16					.718		
I17					.837		
I18					.694		
I19						.728	
I20						.878	
I21						.839	
I22						.820	
I23							.706
I24							.566
I25							.719

Note. I= Item; F1= Difficulties, F2= Connectedness, F3= Hope, F4=Identity, F5=Meaning in life, F6=Empowerment, F7=Practical Support.

Table 2
Bivariate Correlations

	F1	F2	F3	F4	F5	F6	F7
F1 Difficulties	1	.689	.572	.597	.625	.533	.515
F2 Connectedness		1	.880	.878	.783	.758	.754
F3 Hope			1	.861	.819	.754	.757
F4 Identity				1	.880	.887	.820
F5 Meaning in life					1	.845	.801
F6 Empowerment						1	.752
F7 Practical Support							1

Note. F1= Difficulties, F2= Connectedness, F3= Hope, F4=Identity, F5=Meaning in life, F6=Empowerment, F7=Practical Support.

Invariance Based on Stage of Recovery

In order to assess for invariance, configural, metric, and scalar invariance were tested across the three recovery stages. The initial configural invariance model showed a good but not fully acceptable fit (χ^2 (834) = 1779.610, p < .001, CFI = .890, TLI = .882, RMSEA = .050, SRMR = .070). Consequently, the model and modification indices were carefully examined and a meaningful correlation among the items 5 and 9 was discovered. As this correlation was theoretically meaningful and justified, a correlation between the residuals of these items was added to the model. The revised model demonstrated a meaningful improvement in fit, with notable increases in CFI and TLI and a reduction in RMSEA (χ^2 (831) = 1538.816, p < .001, RMSEA = .043 [90% CI .040–.047], CFI = .916, TLI = .909, SRMR = .068). Therefore, configural invariance was established. The metric invariance model constrained factor loading to be equal across stages, while allowing intercepts, residuals, and factors means (in non-reference groups) to vary. This model also showed an acceptable fit (χ^2 (853) = 1580.234, p < .001, RMSEA = .043 [90% CI .039–.046], CFI = .913, TLI = .908, SRMR = .072). Changes in fit indices compared to the configural model were minimal (ΔCFI = −.003, ΔRMSEA = 0.000), supporting equivalence in item–factor relationships across groups. The scalar invariance model, constraining both factor loadings and item intercepts to equality across the three groups, showed an acceptable fit (χ^2 (845) = 1576.400, RMSEA = .044 [90% CI .040–.047], CFI = .914, TLI = .908, SRMR = .078). Fit indices were virtually unchanged (ΔCFI ≈ 0, ΔRMSEA ≈ 0), supporting scalar invariance and allowing for meaningful latent mean comparisons. The residual correlation between item 5 and 9 remained statistically meaningful, consistent with stable item-specific shared variance across groups. Standardised loadings for all three groups are shown in Table 3.

Table 3
Standardized Loadings of the Latent Variables for the Scalar Invariance Model

Factors and items	λ (Stage 1)	λ (Stage 2)	λ (Stage 3)
F1 Difficulties	-	-	-
I1	.548	.664	.656
I2	.551	.578	.612
I3	.685	.812	.778
F2 Connectedness	-	-	-
I4	.555	.568	.574
I5	.648	.549	.655
I6	.661	.610	.681
I7	.596	.632	.700
F3 Hope	-	-	-
I8	.700	.783	.697
I9	.612	.657	.722
I10	.661	.760	.715
F4 Identity	-	-	-
I11	.611	.716	.707
I12	.655	.669	.695
I13	.599	.684	.666
I14	.719	.762	.781
F5 Meaning in life	-	-	-
I15	.560	.580	.545
I16	.674	.753	.726
I17	.778	.815	.800
I18	.682	.698	.670
F6 Empowerment	-	-	-
I19	.704	.743	.714
I20	.843	.868	.844
I21	.762	.794	.787
I22	.733	.814	.785
F7 Practical Support	-	-	-
I23	.693	.757	.765
I24	.664	.646	.547
I25	.724	.759	.759

Note. Stage 1 = early recovery (less than 1 year), Stage 2 = sustained recovery (1–5 years), Stage 3 = stable recovery (more than 5 years).

Internal Consistency

Three complementary reliability indices were calculated: Cronbach's alpha, McDonald's omega, and the Composite Reliability Index (CRI) (See Table 4). Results indicated good internal consistency, particularly for factors F3 to F6, which showed high values across all indicators. Factor F1 showed the lowest values (α = .687; ω = .691; CRI = .669), close to the lower limit of acceptability. Additionally, the standardized factor loadings for F1 items, although significant, were moderate (ranging from .555 to .729). This results in a lower proportion of explained variance. Nevertheless, the reliability of F1 can be considered acceptable for research purposes.

Discriminant Validity

Discriminant validity was assessed using Pearson bivariate correlations among factors and the Heterotrait–Monotrait (HTMT) ratio of correlations. Pearson correlations ranged from .515 to .887, indicating moderate to strong relationship among factors (see Table 2). HTMT values ranged from .59 to .90, no confidence internal included 1, indicating that all constructs roughly meet the recommended .90 criterion for conceptually related constructs, and most also meet the more conservative .85 threshold. (See OSF '*HTMT Results'*).

Concurrent Validity

Concurrent validity was examined by correlating the PRIS scale with growth in strengths, recovery deficits, recovery time, and flourishing (See Table 5). All factors showed small to moderate positive associations with growth in strengths and flourishing, and negative associations with recovery deficits. Recovery time was positively associated with Difficulties (F1) and Connectedness (F2), and negatively with Practical Support (F7).

Hypothesis Testing

Bivariate correlations indicated small positive associations between age and Difficulties, Connectedness, Identity, and Empowerment, with no significant associations for Hope, Meaning, or Practical Support (ρ = .125 to .025). Abstinence time showed a similar pattern, with small positive associations for all dimensions except Hope and Practical Support (ρ = .197 to -.027). Regarding gender, women scored significantly higher across all seven PRIS dimensions (See OSF '*Hypothesis Testing Results'*)

Discussion

This study presents the design and validation of a new measure to assess the most important aspects of personal recovery in the context of addiction, based on the revised CHIME model. All phases of the process are detailed with the participation of experts and people in recovery. One of the key aspects was the need to precisely define the construct to be evaluated. The literature highlights that this step is often underdeveloped, leading to a lack of clarity and conceptual confusion (Bowen et al., 2022; Thongsalab et al., 2022). In this study, the CHIME model provided the theoretical framework for operationalising the construct, offering clearly differentiated subdimensions. Its use, however, went beyond uncritical reproduction: major challenges were incorporated (Bellaert et al., 2024), key gaps were addressed (Penas et al., 2019), and adaptations were made to the specific features of addiction (Dekkers et al., 2020, 2021). This adaptation allows progress not only in measurement, but also in the conceptualisation of personal recovery.

On the other hand, the multiple changes made during the process confirm the importance of a structured approach that integrates qualitative techniques and the active participation of experts and people in recovery to ensure adequate content and face validity (Bowen et al., 2023). Contributions from experts

Table 4
Internal Consistency Indices for Each Factor

Item	α	95% CI α	ω	95% CI ω	CRI	95% CI CRI
F1 Difficulties	.687	[0.633, 0.741]	.691	[0.663, 0.719]	.669	[0.593, 0.739]
F2 Connectedness	.712	[0.677, 0.748]	.717	[0.695, 0.743]	.703	[0.658, 0.750]
F3 Hope	.733	[0.687, 0.780]	.736	[0.712, 0.760]	.754	[0.704, 0.801]
F4 Identity	.772	[0.741, 0.803]	.780	[0.763, 0.801]	.782	[0.747, 0.817]
F5 Meaning in life	.760	[0.723, 0.797]	.763	[0.742, 0.783]	.796	[0.760, 0.828]
F6 Empowerment	.859	[0.834, 0.883]	.861	[0.851, 0.875]	.890	[0.829, 0.872]
F7 Practical Support	.752	[0.715, 0.787]	.756	[0.734, 0.777]	.704	[0.652, 0.751]

Note. F= Factor; α = Cronbach's alpha; ω = McDonald's omega; CRI= Composite Reliability Index.

Table 5
Correlations Between the PRIS Scale and Key Recovery Variables

	Growth In Strengths	Recovery Deficits	Recovery Time	FS-Flourishing Scale
F1 Difficulties	.119**	-.040	.073**	.207**
F2 Connectedness	.175**	-.048	.081**	.337**
F3 Hope	.122**	-.027	-.040	.361**
F4 Identity	.133**	-.058*	.033	.256**
F5 Meaning in life	.147**	-.064*	.023	.284**
F6 Empowerment	.136**	-.041	.022	.311**
F7 Practical Support	.097**	-.041	-.061*	.204**

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

helped refine the technical content (42.4% of the items were revised), while those from service users were essential to adapt the scale to their context and real-life experience (44% of the items revised). Altogether, these findings highlight the value of this participatory approach in ensuring ecological validity.

Regarding the psychometric evaluation, preliminary analysis indicated good item functioning. Some factors that showed slight ceiling effects. This pattern is consistent with previous studies using instruments grounded in the CHIME framework, which explicitly assess the importance attributed to recovery components. Skar-Fröding et al. (2021) reported that most service users rated these components as highly important (66%–91%), supporting the expectation of negatively skewed distributions toward higher scores in recovery-oriented measures.

Regarding factor structure, analyses confirmed a seven-factor structure that offers the best balance between statistical fit and theoretical interpretation. This structure is supported by a solid theoretical framework and a participatory process, thus addressing several of the limitations noted in the literature (Penas et al., 2019; Thongsalab et al., 2022). The standardised loadings indicated good alignment of the items with their factors, with most above .60 or .70 (Kline, 2023). However, some items fell within the acceptable range, warranting potential revision in future research. Correlations among subscales were consistent with the CHIME model (Shanks et al., 2013), showing stronger relationships among the five original dimensions and comparatively lower relationships with the two extended dimensions. These results reflect the structure of CHIME, in which specific sub-processes remain conceptually interconnected, increasing statistical interdependence (Williams et al., 2015). It also suggests that the extended dimensions represent broader contextual elements that are somewhat more distal from the individual perspective.

Regarding invariance, the results showed that the instrument maintains the same conceptual configuration, unit of measurement, and equivalence across different stages of recovery. This finding confirms that the theoretical structure of the CHIME model is consistent and applicable at various points in the recovery process. In addition, metric and scalar invariance will allow for rigorous comparisons of factors and items across groups. This is essential for identifying specific needs and optimising the design of interventions (Leamy et al., 2011). Finally, items 5 and 9 were found to share common variance, which may indicate some conceptual overlap. It would be advisable to examine this aspect to adjust or better differentiate these items, as they are theoretically distinct.

Regarding internal consistency, α, ω, and CRI coefficients met recommended standards for research use (≥ .70; Nunnally & Bernstein, 1994), although further evidence in independent samples would help confirm their robustness for applied or clinical decision-making. The only factor with slightly lower values was Difficulties (F1), placing it at the acceptable threshold. This lower consistency was expected, as it is a dimension composed of only three items and encompasses heterogeneous subcomponents, which may affect internal cohesion (Schmitt, 1996). Nonetheless, future research could explore its expansion or refinement.

The concurrent correlations were small in magnitude but theoretically coherent, consistent with the subjective and experiential nature of personal recovery (Leamy et al., 2011) and align with prior work reporting modest associations between value-based recovery indicators and behavioural outcomes (Williams et al., 2015; Van Weeghel et al., 2019). Positive associations with strengths, reduced barriers, and flourishing suggest consolidation of core recovery processes. Regarding subdimensions, Difficulties (F1) showed a positive association with recovery despite being expected to decrease. This may reflect that the dimension encompasses deeper processes (problem acceptance, maintenance of abstinence, and overcoming relapses) (Kaskutas et al., 2014) and that stage-based temporal categories may not capture the non-linear nature of recovery. Practical support decreased with time in recovery, supporting the hypothesis of recovery as a dynamic process that transitions from urgent needs towards deeper transformations (Dekkers et al., 2021). Future studies should examine recovery profiles beyond time-based classifications.

Regarding discriminant validity, some inter-factor correlations were high (≥ .80), a pattern that is theoretically coherent with the CHIME model (Leamy et al., 2011), in which the core dimensions are mutually reinforcing. Psychometric studies of CHIME-based instruments frequently report substantial inter-factor correlations, reflecting the systemic and holistic nature of personal recovery (Shanks et al., 2013; Penas et al., 2020).

In the hypothesis testing, small associations were observed with age, gender, and abstinence duration, as expected. Regarding gender, women scored higher across all PRIS dimensions, consistent with the influence of gendered stigma, caregiving responsibilities, and trauma exposure on recovery trajectories (McQuaid & Dell, 2018; Abreu Minero et al., 2022), suggesting effects beyond relational, hope, and empowerment processes. Age showed weak and heterogeneous associations, in line with previous studies (Slade et al., 2012; Kelly et al., 2018), likely mediated by relational and contextual factors. Abstinence time showed associations with most factors, except Hope and Practical Support, possibly reflecting the consolidation of identity- and meaning-related processes and reduced instrumental needs in later recovery stages.

This study presents some limitations that should be considered. First, although the 10-point response format was supported by participant feedback, such formats may inflate reliability estimates. Therefore, reliability results should be interpreted cautiously, and future studies should compare shorter formats using Item Response Theory. Second, internal consistency coefficients were based on a single administration and do not capture temporal stability, underscoring the need for longitudinal designs to examine test–retest reliability and sensitivity to change. Third, grouping items by dimension may have introduced context-related covariance and contributed to overestimated internal reliability, warranting alternative configurations in future work. Lastly, further refinement is recommended in the less robust dimensions, including expansion of item content and longitudinal examination of factorial stability and Minimal Detectable Change to better assess clinically meaningful variation in recovery.

Despite these limitations, this study represents a significant contribution to the field of recovery in addictions. First, the PRIS is the first tool developed and validated in the Spanish context to assess the key aspects of personal recovery in addictions. Second, the CHIME model is expanded by incorporating structural and

difficulties dimensions, addressing some of the main theoretical and empirical challenges highlighted in the literature. Finally, this work constitutes an initial step toward implementing recovery-oriented approaches within the new Mental Health Strategy of the National Health System (2022–2026) in Spain.

This study presents the first tool to assess the most important aspects of personal recovery in addiction, supported by a solid theoretical foundation, content and face validity, psychometric validity, and invariance across recovery stages. It also integrates a critical analysis of the CHIME model, incorporating relational, structural, and difficulties-related aspects to address recovery from an ecosystemic framework. Altogether, this makes it particularly useful for identifying the priorities of people in recovery according to their trajectories and living conditions. It also supports the incorporation of the lived experience perspective into service planning. Furthermore, it represents a first step towards developing PROM and PREM measures in the field of addictions and implementing the recovery-oriented model in Spain.

Author Contributions

Lucas Serrano-Pastor: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Visualization, Writing - Original draft. **Sylvia Georgieva:** Data curation, Formal analysis, Methodology, Software, Visualization, Writing - Original draft, Writing – Review & editing. **Alfredo Zarco-Alpuente:** Conceptualization, Data curation, Investigation, Methodology, Visualization, Writing – Review & editing. **Paula Samper-García:** Conceptualization, Investigation, Methodology, Project administration, Supervision, Writing – Review & editing. **Guillermo Blanco-Bailac:** Conceptualization, Investigation, Resources, Visualization. **Teresa Bobes-Bascaran:** Conceptualization, Investigation, Resources, Visualization. **Pedro Gómez-Linares:** Conceptualization, Investigation, Resources, Visualization. **José Miguel Martínez-González:** Conceptualization, Investigation, Resources, Visualization. **José Antonio Molina-Peral:** Conceptualization, Investigation, Resources, Visualization. **Francisco Pascual-Pastor:** Conceptualization, Investigation, Resources, Visualization. **José-Antonio Giménez-Costa:** Conceptualization, Investigation, Methodology, Project administration, Supervision, Writing – Review & editing.

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Conflict of Interest

The authors declare that there are no conflicts of interest.

Data Availability Statement

This study is part of a broader project preregistered in March 2025 on the Open Science Framework (OSF): https://osf.io/c3x82/?view_only=8e92c6ca282f4c9cb984a715b928ee40. Data, Scripts, supplementary materials and other resources are available in the folder *Study 2. Development and Validation of the Personal Recovery Importance Scale (PRIS)* on the same OSF page. The dataset can be requested from the corresponding author for research purposes and will be released after the remaining planned publications are completed.

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