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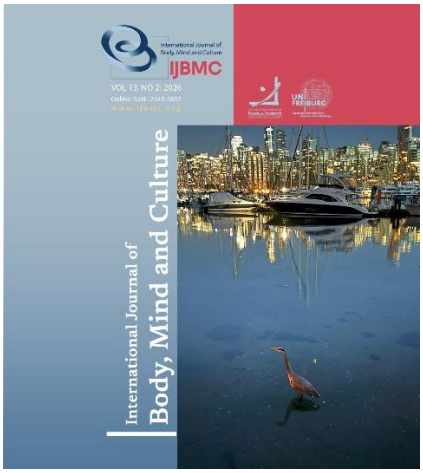
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Prediction of Substance Use Relapse through Structural Modeling: Self-Transcendence and Personal Growth Initiative

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ABSTRACT

Objective: To examine whether self-transcendence and personal growth initiative (PGI) predict substance use relapse among opioid-dependent adults, and to evaluate the measurement and structural model using variance-based structural equation modeling.

Methods and Materials: In a descriptive–correlational study, 207 treatment-seeking individuals from addiction rehabilitation centers in Bam County, Iran, were recruited via convenience sampling. Measures included Wright's Relapse Prediction Scale, the Adult Self-Transcendence Inventory, and the Personal Growth Initiative Scale. Given the non-normality of several variables, analyses were conducted using SmartPLS. Reliability (Cronbach's alpha and composite reliability), convergent validity (average variance extracted, AVE), discriminant validity (Fornell–Larcker), global model fit (SRMR), explained variance (R^2), and structural paths with standard errors and t-values (bootstrapping) were assessed.

Findings: The measurement model demonstrated acceptable properties (alpha and composite reliability > .70; AVE > .50). Global fit was adequate (SRMR = .05). The structural model accounted for substantial variance in relapse (R^2 = .74). PGI showed a negative, statistically significant path to relapse (β = −.15, SE = .05, t = 2.77, p = .01), indicating that higher growth initiative relates to lower relapse risk. In contrast, self-transcendence exhibited a positive, significant association with relapse (β = +.75, SE = .05, t = 16.69, p < .001), with effects driven particularly by facets consistent with self-alienation.

Conclusion: Among opioid-dependent adults in Bam County, greater personal growth initiative appears protective against relapse, whereas higher self-transcendence—especially its alienation-related aspects—is associated with elevated relapse risk. Longitudinal research is warranted to clarify mechanisms and test generalizability across treatment modalities.

Keywords: Substance use relapse, Self-transcendence, Self-alienation, Personal growth.

Introduction

Over the past three decades, the prevalence of substance use disorders—particularly opioid use—has shown an upward trend, becoming a major public health and social concern (del Palacio-Gonzalez et al., 2024; Mohmad et al., 2022). Addiction is recognized as a chronic and relapsing disease, and relapse after substance cessation is considered a natural part of the recovery process rather than a treatment failure (Blanco & Volkow, 2019; Turner et al., 2021). Conceptually, relapse refers to a return to previous levels of behavior associated with the disorder's symptoms. Related constructs, such as "lapse," are sometimes categorized within the broader context of relapse. A "lapse" refers to an initial or partial return to substance use, whereas "relapse" is typically defined as a more severe and persistent return to previous levels of use (Guenzel & McChargue, 2019).

Studies show that relapse after treatment—especially within the first three months—remains a major challenge in the path to recovery. Despite advances in understanding the neurobiological underpinnings of opioid addiction and the availability of effective pharmacological treatments, psychosocial interventions are still considered a cornerstone of relapse prevention. This is because completing treatment and withdrawing from substance use is an extremely stressful and challenging experience for individuals with substance dependency (Malik et al., 2023; Sureshkumar et al., 2021).

One key factor in the tendency toward substance use and the risk of relapse is self-transcendence Kolahi Hamed et al. (2018). Self-transcendence refers to going beyond the self and focusing on the world, others, and the greater existence. It includes a commitment to family, community, values, and social participation, which contributes to enhanced self-efficacy and a sense of security (Sørensen & Lien, 2022). In patients undergoing rehabilitation, self-transcendence is considered a vital part of the recovery process. It is associated with finding meaning, reinforcing values, and directing attention toward family and altruistic involvement in society. These elements help reduce the severity of use and lower the risk of relapse (Sørensen & Lien, 2022). Despite its significance, no prior studies in Iran have examined the role of self-transcendence in predicting relapse.

A personal growth initiative (PGI) includes components such as readiness for change, planning, resource utilization, and goal-directed behavior. It represents not just a form of willpower but also concrete action that leads to self-improvement, development, and personal growth. Individuals with higher levels of personal growth cope better with life's challenges (Robitschek et al., 2012). Personal growth initiative is negatively associated with the likelihood of relapse among individuals with substance dependence (Naqvi, 2022). This variable plays a crucial role in empowering individuals to face life's challenges, psychological stressors, and various changes (Verdoodt et al., 2024; Weigold et al., 2024). Hence, enhancing personal growth can be a potential strategy in designing relapse prevention interventions, as it strengthens psychological resources and coping strategies, increasing an individual's capacity to maintain recovery.

Relapse remains one of the most critical challenges in the treatment and rehabilitation of substance users. Despite significant progress in therapeutic approaches, relapse rates among recovered individuals remain high. This highlights the importance of identifying psychological factors that can effectively prevent relapse. While earlier research has mainly focused on risk-based factors such as anxiety, depression, and stress, recent years have seen a growing emphasis on positive psychological resources as reinforcing elements for sustained recovery.

Therefore, the current study seeks to answer the question: Can self-transcendence and personal growth initiative predict relapse among individuals dependent on opioids, and what is the structural relationship between these variables as modeled by structural equation modeling (SEM)?

Methods and Materials

Study Design

The present research was a descriptive-correlational study with an applied aim. The study was conducted in person among all individuals with opioid substance

dependence undergoing treatment at addiction rehabilitation centers under the supervision of the Welfare Organization in Bam County, with a total population of 1,023 individuals in the year 1403 (2024–2025). Considering that for structural equation modeling, a minimum sample size of 200 is recommended Habibi & Adanvar (2017), 210 individuals from the statistical population were selected using a convenience sampling method, based on the inclusion criteria (1- willingness to participate, 2- minimum literacy in reading and writing, 3- diagnosis of substance use disorders based on the DSM-5, 4- history of opioid substance use, 5- absence of severe psychological disorders such as psychosis) and the exclusion criteria (1- presence of severe psychological illness, 2- incomplete responses to the questionnaires). Three individuals were excluded for incomplete questionnaire responses, and the analysis was conducted on the remaining 207 participants.

Instruments

Relapse Prediction Scale (RPS): A 45-item self-report scale developed by Wright et al. (2001). The items are scored on a scale from 0 (none) to 4 (very strong), with higher scores indicating greater craving and likelihood of substance use. The Cronbach's alpha coefficient of this questionnaire in the present study was 0.94.

Adult Self-Transcendence Inventory (ASTI): This questionnaire was developed by Levenson et al. (2005). It consists of 18 items. The items are scored on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree). Items 4, 8, 9, and 14 are reverse-scored. The developers of this scale reported a Cronbach's alpha coefficient of 0.75 (Levenson et al., 2005).

Personal Growth Initiative Scale (PGIS): Developed by Robitschek et al., (2012), this scale consists of 16 items and includes four subscales: 1- Readiness for Change (Items 3, 8, 11, 10), 2- Planning (Items 1, 3, 5, 10, 13), 3- Use of Resources (Items 6, 12, 14), 4- Intentional Behavior (Items 4, 7, 9, 15). Each item is scored on a scale from 1 (strongly disagree) to 6 (strongly agree). The Cronbach's alpha coefficient for this questionnaire in the present study was calculated as 0.91.

Procedure and Ethical Considerations

The implementation process of this research was as follows: To investigate the study variables, after receiving an introduction letter from the university, the research team visited the Welfare Organization in Bam County, Kerman Province, to obtain permission to conduct the study in addiction treatment camps under the organization's supervision. After explanation and coordination with the managers of these centers, individuals with a history of opioid use were identified. After explanations of the study's objectives, participants' trust in the confidentiality of the results, and their informed consent were obtained. Participants were then asked to carefully respond to the questionnaires on relapse prediction, self-transcendence, and personal growth initiative. The questionnaires and structured clinical interviews were conducted individually to ensure that the participants did not have other psychological disorders. The university's ethics committee approved this research.

Findings and Results

In the present study, most participants were aged 31 to 40 years (81 individuals, 39.1%), while the fewest (2 individuals, 1%) were under 20 years of age. Among them, 147 individuals (71%) were male, and 60 individuals (29%) were female. In terms of education level, the majority (102 individuals, 49.3%) had less than a high school diploma, and the fewest (3 individuals, 1.4%) had a master's degree. Regarding marital status, the highest number (119 individuals, 57.5%) were married, while the lowest (2 individuals, 1%) were separated. In terms of employment status, the majority (162 individuals, 78.3%) were self-employed, and the fewest (11 individuals, 5.3%) were employees. Regarding the duration of abstinence, the largest group (78 individuals, 37.7%) had been abstinent for 1 to 3 months, while the smallest group (11 individuals, 5.3%) had been abstinent for 6 to 10 years or more than 10 years.

One important prerequisite for using parametric statistics is that the sample distribution is normal. According to the results of the Kolmogorov–Smirnov test for assessing

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the distribution of variables, all variables except self-transcendence did not follow a normal distribution. Therefore, the SmartPLS software was used to test the research hypotheses.

Table 1

Descriptive Statistics of the Research Variables

Statistic	Likelihood of Use	Self-Transcendence	Personal Growth Initiative
Mean	41.82	57.57	62.33
Median	34.00	58.00	64.00
Standard Deviation	36.62	8.75	11.25
Skewness	0.56	-0.01	-0.88
Kurtosis	-0.86	-0.07	0.56

The model fit was evaluated across three components: the measurement model, the structural model, and the overall model. The results of the measurement model analysis indicated that the validity and reliability indices were acceptable. Based on the Average Variance Extracted (AVE) values—all greater than 0.5—convergent validity was confirmed. Furthermore, according to the Fornell-Larcker criterion, the square root of AVE in each construct was greater than the correlation coefficients between constructs, confirming discriminant validity. For reliability, both Cronbach's alpha and composite reliability were reported to be above 0.7 for all constructs, indicating acceptable internal consistency. In the structural model section, the coefficient of determination (R^2) for the endogenous variable "substance use relapse" was 0.74, indicating a strong and acceptable model fit. The SRMR index, used to evaluate the overall model fit, was 0.05, indicating a very good fit.

Table 2

The prediction of substance use relapse based on personal growth initiative

Relationship	Path Coefficient	Standard Error	t-value	p-value
Personal Growth Initiative → Relapse	-0.15	0.05	2.77	0.01

The results in Table 1 indicated that personal growth initiative had a significant and inverse effect on substance use relapse among individuals dependent on opioids in Bam County, with a path coefficient of -0.15 and a significance level of 0.01. This means that a one-standard-deviation increase in personal growth initiative is associated with a 0.15-standard-deviation decrease in the likelihood of substance use relapse.

Table 3

The prediction of substance use relapse based on the self-transcendence construct.

Relationship	Path Coefficient	Standard Error	t-value	p-value
Self-Transcendence → Relapse	0.75	0.05	16.69	<0.001

The results in Table 2 indicated that the self-transcendence construct had a significant and positive effect on substance use relapse among individuals dependent on opioids in Bam County, with a path coefficient of 0.75 and a p-value less than 0.001. This means that a one standard deviation increase in self-transcendence leads to a 0.75 standard deviation increase in the likelihood of substance use relapse. Figure 1 presents the revised structural model of

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the research. After revisions, all outer loadings were acceptable.

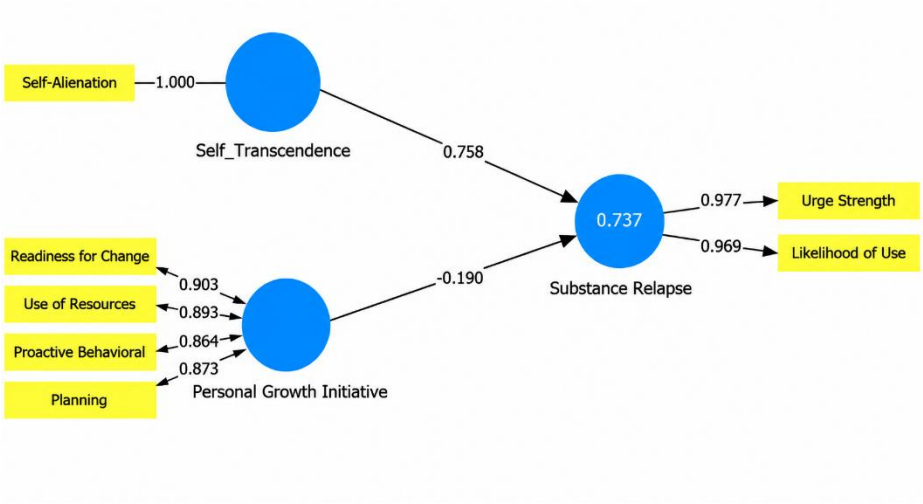


Figure 1

Revised Structural Model of the Study

Discussion and Conclusion

The present study aimed to predict substance use relapse based on self-transcendence and personal growth initiative among individuals dependent on opioid substances. The findings showed that self-transcendence could predict substance use relapse, which aligns with studies by Moniz-Lewis (2024), Grandits (2020), Chen (2010), Sørensen & Lien (2022), and Polak et al. (2022). Self-transcendence refers to going beyond oneself and focusing on the world, others, and the totality of existence. When individuals gain the ability to adopt a broader, more objective perspective on themselves and their environment, they can better understand themselves and more clearly pursue their personal growth goals (Reischer et al., 2021). Recent research has shown that this construct, as one of the positive psychological components, involving connection to values, goals, and higher meanings in life, can play a key role in recovery and relapse prevention. Moreover, self-transcendence resources, such as a sense of meaning, connection with others, and belief in a higher power, increase hope and self-efficacy in patients with substance use disorders. These factors ultimately help reduce the likelihood of substance use relapse (Sørensen & Lien, 2022).

Recent studies indicate that high levels of self-alienation, as a dimension of self-transcendence, are positively associated with substance use disorders and can increase the risk of relapse (Chen, 2010). Self-transcendence, as one of the profound outcomes of mindfulness, plays an important role in reducing substance use relapse. In fact, experiencing self-transcendence during mindfulness treatment increases the sense of love and global connection, which, in turn, is associated with reduced cravings and desire for opioid use and decreased relapse probability in long-term follow-ups. Therefore, self-transcendence can act as an effective protective mechanism against relapse through the regulation of emotional and neurobiological processes related to addiction (Garland & Jinpa, 2024).

The results also showed that personal growth initiative was able to predict substance use relapse. This finding is consistent with the studies of del Palacio-Gonzalez et al. (2024), Naqvi (2022), and Niles et al. (2022). A personal growth initiative is an active, goal-directed change process in which individuals are committed to and engaged in their personal growth. It includes four dimensions: readiness for change, planning, resource utilization, and purposeful behavior, and is potentially associated with enhanced self-belief in quitting substance use. This means individuals

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become confident in their ability to control or stop substance-related behaviors. This sense of efficacy enables them to employ constructive and adaptive coping strategies in stressful or high-risk situations rather than relapse (Niles et al., 2022).

Without engaging in personal growth, individuals may struggle to achieve their goals because they lack the knowledge and tools to improve their performance and outcomes. Therefore, personal growth emerges as a psychological phenomenon in which individuals must select appropriate strategies and consider all factors influencing positive development toward the set goal (Prisniakova et al., 2023). The process of personal growth increases self-awareness, instills a sense of purpose, and serves as a strategy for individuals seeking continuous improvement and performance enhancement across various domains. An individual who achieves inner and spiritual harmony and a clear life goal can manage complex problems without making hasty and incorrect decisions (Onipko, 2021).

Purposeful personal growth strategies lead to profound changes in behavior and attitudes toward the surrounding world and enhance one's ability to effectively face everyday challenges, solve problems, and improve self-evaluation. One of the key advantages of personal growth is that it transforms one's attitude toward difficulties: obstacles are no longer seen as barriers to success but as opportunities for learning, progress, and the fulfillment of aspirations (Andreyeva, 2016). Additionally, personal growth initiatives often require active readiness for change—meaning the individual is not merely willing to change but takes practical and purposeful steps toward achieving it. Evidence from a recent systematic review (2023) indicates that readiness for change is among the strongest psychological predictors of reduced relapse risk (del Palacio-Gonzalez et al., 2024). Focusing on personal growth can enhance hope and improve an individual's ability to avoid substance use (Gutierrez, 2019).

Although the findings of this study highlight the role of self-transcendence and personal growth initiative in predicting substance use relapse, they do not imply that these variables are the only predictors. Future studies could explore mediating psychological and social factors to understand these relationships better. Comparing different groups—cultural, age-based, gender-specific, and substance-type-based—could also provide broader insights. Designing and evaluating intervention programs based on self-transcendence, as well as managing personal growth initiatives, are other important areas for research. Long-term follow-up studies could determine the sustainability of the effects of these factors on substance use relapse. Additionally, interdisciplinary collaboration with experts in sociology and medical sciences could help provide a more comprehensive picture of the role of self-transcendence and personal growth initiative in relapse and facilitate future research.

The findings of this study indicate that self-transcendence (specifically the self-alienation subscale) has a direct and significant impact on substance use relapse among individuals dependent on opioids. As a protective factor, this concept can help individuals overcome challenges related to addiction and move toward personal and social recovery. On the other hand, personal growth initiative is inversely related to substance use relapse, meaning that the more individuals engage in personal growth, the less likely they are to relapse. These results underscore the importance of focusing on developing self-transcendence programs and enhancing personal growth initiatives to reduce relapse. Therefore, future research should further investigate these relationships and develop appropriate interventions to help improve the quality of life of individuals dependent on opioid substances.

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Declaration of Interest

The authors of this article declared no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Declaration of Helsinki, which provides guidelines for ethical research involving human participants. Ethical considerations in this study were that participation was entirely optional.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contribute to this study.

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