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Research Paper

Impact of Treatment Modality (Inpatient vs Outpatient) on Locus of Control among Poly Drug Abusers

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ABSTRACT

Locus of control plays a significant role in substance dependence and recovery outcomes. Individuals with an external locus of control tend to attribute their behavior to external forces, which may increase vulnerability to relapse. The present study examined the impact of treatment modality (inpatient vs outpatient) on locus of control among poly drug abusers. A total of 120 participants were divided into three groups: inpatient (n = 40), outpatient (n = 40), and untreated (n = 40). Locus of control was assessed using a standardized measure, and data were analyzed using one-way ANOVA, chi-square analysis, correlation, and regression techniques. Results revealed a significant difference in locus of control across treatment modalities ($F(2,117) = 3.14$, $p<0.05$). Outpatients demonstrated significantly higher external locus of control (M = 11.30) compared to inpatients (M = 9.53). Chi-square analysis further indicated a higher frequency of external locus of control among outpatients (f = 7) compared to inpatients (f = 1). Regression analysis showed that mental health significantly predicted locus of control ($R^2 = 0.09$, $p<0.01$). The findings suggest that inpatient treatment may be more effective in fostering internal locus of control among poly drug abusers compared to outpatient treatment. Implications for addiction rehabilitation and psychological interventions are discussed.

Keywords: *Locus of control, poly drug abuse, inpatient treatment, outpatient treatment, addiction rehabilitation*

Substance use disorders (SUDs) are increasingly conceptualized not merely as patterns of compulsive consumption but as disorders involving disrupted self-regulation, impaired executive control, and maladaptive reinforcement learning processes (Volkow et al., 2016; UNODC, 2023). Poly drug abuse, in particular, reflects heightened behavioral dysregulation and complex motivational dynamics, often accompanied by psychiatric comorbidity and chronic relapse cycles (Balhara et al., 2025). Contemporary addiction models emphasize that beyond neurobiological vulnerability, cognitive appraisals and perceived agency play a critical role in sustaining or interrupting addictive behavior.

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Addiction involves a dynamic interaction between reward sensitivity, stress reactivity, and cognitive control systems. Individuals must perceive themselves as capable of influencing their outcomes in order to initiate and maintain behavior change. Thus, constructs related to perceived personal control are central to understanding recovery processes. One such construct is locus of control (LOC), which offers a cognitive framework through which individuals interpret reinforcement contingencies.

Locus of Control within Social Learning and Self-Regulation Frameworks

The concept of locus of control, introduced by Julian B. Rotter (1966), emerged from social learning theory, which posits that behavior is a function of expectancy and reinforcement value. Rotter proposed that individuals develop generalized expectations regarding whether outcomes are contingent upon their own actions (internal LOC) or upon external forces such as luck, fate, or powerful others (external LOC). This expectancy system influences motivation, persistence, coping strategies, and behavioral adaptation (Lefcourt, 1982).

Within contemporary self-regulation models, internal LOC aligns closely with constructs such as perceived behavioral control (Ajzen, 1991), self-efficacy (Bandura, 1997), and autonomous motivation (Ryan & Deci, 2000). These constructs converge around the principle that behavior change requires a belief in personal agency. External LOC, in contrast, may reflect diminished perceived control and reliance on external regulation, thereby undermining intrinsic motivation and adaptive coping.

In addiction research, LOC can be understood as a higher-order cognitive schema influencing how individuals interpret substance use episodes, withdrawal experiences, and relapse events. An internal orientation may promote attribution of substance use to modifiable behaviors, thereby facilitating corrective action. Conversely, an external orientation may reinforce helplessness, external blame, and passive coping responses.

External Locus of Control and Addiction Vulnerability: A Mechanistic Perspective

The relationship between external LOC and addiction vulnerability can be interpreted through several complementary mechanisms.

First, from a reinforcement-learning perspective, individuals with an external LOC may overestimate environmental control over outcomes and underestimate behavioral contingency. This distorted expectancy reduces motivation for sustained abstinence efforts. Second, external LOC has been linked to stress sensitivity and maladaptive coping, increasing the likelihood of substance use as an emotion-regulation strategy (Das et al., 2024; Rout et al., 2024). Third, attribution theory suggests that repeated failures in cessation attempts may reinforce external explanations, creating a feedback loop that sustains dependence.

Empirical findings indicate that external LOC correlates positively with addiction severity and negatively with readiness for change (Rout et al., 2024). Internal LOC, conversely, is associated with higher abstinence self-efficacy and stronger engagement in treatment processes (Das et al., 2024). Thus, LOC may function as both a vulnerability marker and a modifiable cognitive target in rehabilitation.

Importantly, LOC is not fixed. Social learning theory posits that reinforcement environments shape expectancy patterns. Therefore, treatment context may influence control orientation.

Treatment Setting as a Contextual Modifier of Control Beliefs

Addiction treatment modalities differ substantially in structure, environmental exposure, and reinforcement contingencies. Inpatient treatment programs provide structured routines, restricted access to substances, continuous monitoring, and intensive therapeutic engagement. Such environments may recalibrate reinforcement contingencies, strengthening associations between personal effort and positive outcomes. Through repeated experiences of structured goal attainment, individuals may internalize a stronger sense of behavioral contingency.

In contrast, outpatient treatment maintains individuals within their habitual social environments, where stressors, substance-related cues, and peer influences persist. While outpatient programs can be effective and cost-efficient, the diffuse reinforcement environment may attenuate the salience of personal agency and sustain external control beliefs (McLellan et al., 2000; Finney et al., 1996).

From a socio-cognitive perspective, treatment setting functions as an environmental context that either reinforces or challenges control expectancies. However, empirical research has largely focused on abstinence rates and service utilization rather than examining how treatment modality shapes cognitive control schemas such as LOC. Moreover, studies rarely examine poly drug abusers separately, despite their heightened psychological complexity.

Integrative Gap in the Literature

Although existing research establishes that LOC is associated with addiction severity and recovery motivation, several theoretical and empirical gaps remain:

1. Few studies directly compare locus of control across inpatient and outpatient modalities within the same sample framework.
2. Most investigations examine single-substance dependence rather than poly drug abuse, limiting generalizability.
3. Limited research integrates mental health status as a predictive variable influencing control orientation within treatment contexts.

Given that mental health disturbances-particularly anxiety and depressive symptoms-are prevalent among poly drug users, emotional dysregulation may interact with cognitive control beliefs. Understanding whether mental health predicts LOC could clarify whether psychological distress contributes to external control orientation.

Addressing these gaps advances both theory and practice. Theoretically, it extends Rotter's social learning framework into contextual treatment environments. Clinically, it informs whether structured inpatient settings facilitate adaptive shifts in control beliefs that may enhance long-term recovery.

The present study examines whether treatment modality (inpatient vs outpatient vs untreated) significantly influences locus of control among poly drug abusers. Additionally, it investigates the predictive role of mental health in determining locus of control.

By integrating social learning theory with contemporary addiction models of self-regulation, this study aims to elucidate whether treatment context functions as a cognitive modifier of perceived control.

Hypotheses

- **H1:** There will be a significant difference in locus of control among inpatient, outpatient, and untreated poly drug abusers.
- **H2:** Inpatients will show significantly lower external locus of control than outpatients.
- **H3:** Mental health will significantly predict locus of control among poly drug abusers.

METHOD

Research Design

The present study employed a **comparative and correlational research design**. The comparative component examined differences in locus of control among three groups of poly drug abusers based on treatment modality: inpatient, outpatient, and untreated individuals. The correlational component investigated the relationship between mental health status and locus of control, and further examined whether mental health significantly predicted locus of control.

This design enabled simultaneous evaluation of group differences and psychological determinants within a single analytic framework.

Participants

The total sample consisted of **120 poly drug abusers**, with 40 participants in each group: inpatient (n = 40), outpatient (n = 40), and untreated (n = 40). Participants were adults aged 20–45 years who met clinical criteria for poly substance dependence as determined by treatment professionals.

Inclusion Criteria

Participants were included if they:

- Were diagnosed with poly substance dependence,
- Were within the age range of 20–45 years,
- Were able to comprehend and respond to the assessment tools, and
- Had been in treatment for a minimum of three months (for inpatient and outpatient groups).

Exclusion Criteria

Participants were excluded if they:

- Exhibited severe cognitive impairment,
- Presented with acute psychotic symptoms, or
- Had serious neurological conditions that could interfere with assessment.

Participants in the inpatient and outpatient groups were recruited from recognized de-addiction and rehabilitation centers. The untreated group was recruited through community outreach and referral contacts. A purposive sampling technique was used to ensure balanced group representation across treatment modalities.

Measures

Locus of Control

Locus of control was assessed using the Internal–External (I–E) Scale developed by Julian B. Rotter (1966). The scale is a forced-choice instrument designed to measure generalized

expectancies regarding reinforcement contingencies. The instrument consists of 29 paired statements (including six filler items), where respondents select one statement from each pair that best reflects their belief. Scores range along a continuum from internal to external control orientation, with higher scores indicating greater external locus of control. The Rotter I–E Scale has demonstrated acceptable reliability and construct validity across diverse populations, including clinical and substance-using samples. It remains one of the most widely used measures of generalized control orientation.

Mental Health Measure

The PGI Health Questionnaire N-1 (PGIHQ N-1) developed by S. K. Verma, N. N. Wig, and D. Pershad (1985) was administered to evaluate overall mental health of participants. It is a 38-item self-report screening tool to measure neuroticism. It is designed to differentiate between normal individuals and those with neurotic disorders based on items adapted from the Cornell Medical Index. This variable was used for correlational and regression analyses to examine its association with locus of control.

Procedure

Prior to data collection, institutional permissions were obtained from participating rehabilitation centers and community authorities. The study adhered to ethical guidelines for research involving human participants. Participants were informed about the purpose of the study, confidentiality of responses, voluntary participation, and their right to withdraw at any stage without penalty. Written informed consent was obtained from all participants before assessment. Data were collected individually in a quiet and private setting. For inpatient and outpatient participants, assessments were conducted within the respective rehabilitation facilities. Untreated participants were assessed in community-based settings. Where necessary, instructions were clarified to ensure comprehension. The average duration of assessment ranged from 30 to 40 minutes per participant.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics version 20. Descriptive statistics (means and standard deviations) were computed for all variables. To examine differences in locus of control across the three groups, a one-way analysis of variance (ANOVA) was conducted. Post hoc comparisons using Duncan's Multiple Range Test were performed to identify specific group differences. Pearson product–moment correlation analysis was used to examine the relationship between mental health and locus of control. Linear regression analysis was conducted to determine whether mental health significantly predicted locus of control among poly drug abusers. The level of statistical significance was set at $p < .05$.

RESULTS

Table 1 Mean scores and SDs of three groups of participants for locus of control along with analysis of variance F values

Variables	**Inpatient (A)**		**Outpatient (B)**		**Without Treatment (C)**		**A vs B**	**A vs C**	**B vs C**	***F* (2,117)**
Locus of	Mean	*SD*	Mean	*SD*	Mean	*SD*				
Control	9.53	3.72	11.30	3.72	9.48	3.68	*	-	*	3.14*

*$p<0.05$

Table 1 presents the mean scores and standard deviations of locus of control among three groups of participants - inpatients, outpatients, and untreated poly drug abusers - along with the results of one-way analysis of variance (ANOVA).

The ANOVA revealed a statistically significant difference among the three groups on locus of control, $F(2, 117) = 3.14$, $p < .05$. This indicates that treatment modality significantly influenced locus of control orientation among participants. The mean scores show that the outpatient group ($M = 11.30$, $SD = 3.72$) obtained the highest mean score on locus of control compared to the inpatient group ($M = 9.53$, $SD = 3.72$) and the untreated group ($M = 9.48$, $SD = 3.68$). Since higher scores reflect greater external locus of control, the findings suggest that outpatients exhibited a stronger tendency toward external control beliefs than the other two groups.

Post hoc comparisons indicated significant differences between inpatients and outpatients, as well as between outpatients and untreated participants. However, no significant difference was observed between the inpatient and untreated groups. This pattern suggests that outpatient participants were more likely to attribute life events and outcomes to external factors such as luck, fate, or environmental influences, whereas inpatients and untreated individuals showed relatively lower external control orientation. Overall, the results imply that treatment setting plays a significant role in shaping control beliefs. The higher external locus of control observed among outpatients may reflect continued exposure to environmental stressors and substance-related cues, whereas the structured and supervised environment of inpatient care may contribute to relatively lower external attribution patterns.

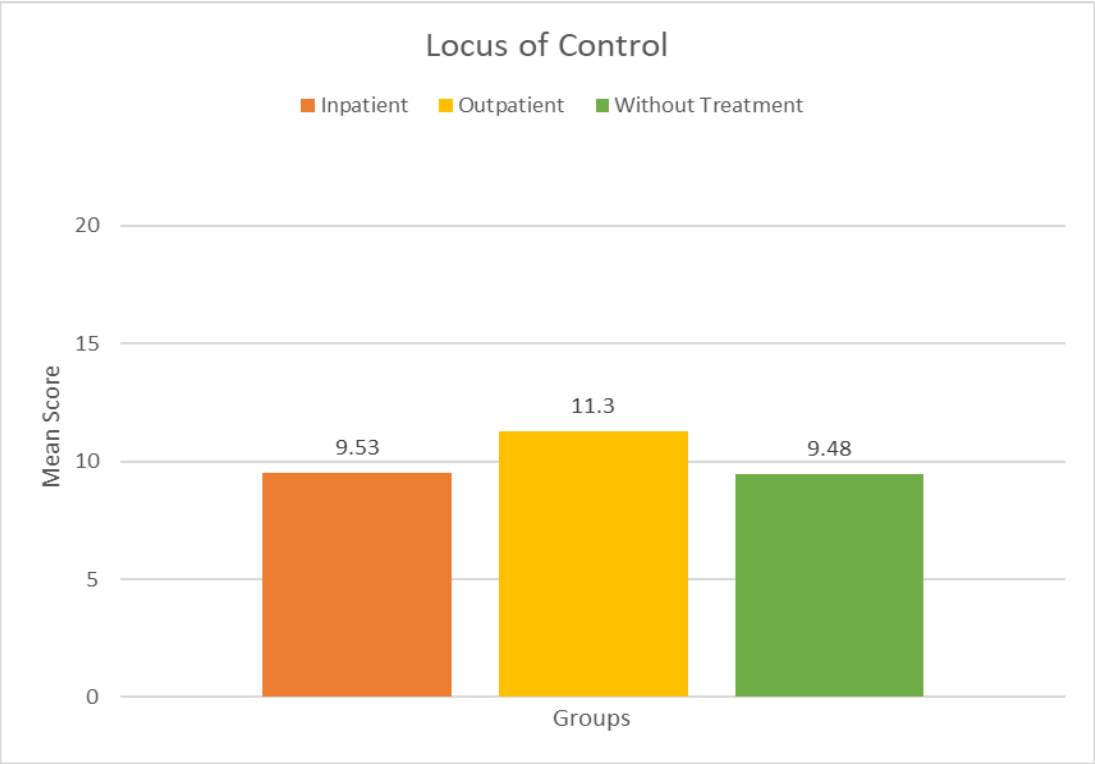

Figure 1. Mean scores for locus of control among participants of three groups

Table 2 Chi square value for locus of control of inpatient, outpatient and untreated poly drug abusers

Locus of Control	Internal	Moderate	External	χ^2
Inpatient	13	26	1	11.07
Outpatient	10	23	7	11.14
Without Treatment	16	20	4	10.69

Table 2 presents the distribution of locus of control categories (internal, moderate, and external) among inpatient, outpatient, and untreated poly drug abusers, along with the chi-square (χ^2) values for each group.

The chi-square analysis indicates a statistically significant association between treatment modality and locus of control orientation for the inpatient group (χ^2 = 11.07), outpatient group (χ^2 = 11.14), and untreated group (χ^2 = 10.69), suggesting that the observed distribution of internal, moderate, and external locus of control within each group was not due to chance.

In the inpatient group, the highest frequency was observed in the moderate category (f = 26), followed by internal locus of control (f = 13), while only one participant fell into the external category (f = 1). This pattern suggests that individuals undergoing inpatient treatment tend to demonstrate relatively adaptive control orientations, with minimal external attribution tendencies. Among outpatients, although moderate locus of control also had the highest frequency (f = 23), a noticeably higher number of participants fell into the external category (f = 7) compared to inpatients (f = 1). This indicates a comparatively stronger external control orientation among outpatients. In the untreated group, the highest frequency was observed in the internal category (f = 16), followed by moderate (f = 20) and external (f = 4). Although untreated participants demonstrated relatively higher internal control beliefs, they still showed more external orientation than inpatients but less than outpatients.

Overall, the findings suggest that treatment modality is associated with differences in locus of control distribution. Inpatient participants exhibited the least external locus of control, whereas outpatients showed a greater tendency toward external attributions. These results support the view that structured residential treatment may contribute to more adaptive control beliefs compared to outpatient treatment settings.

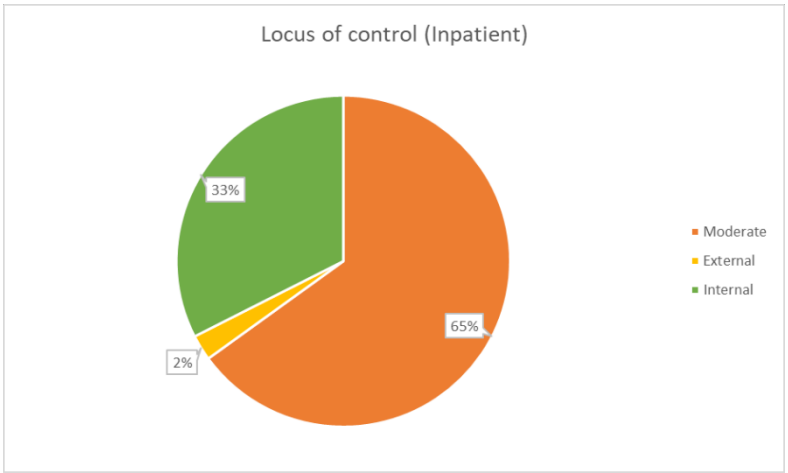

Figure 2. Frequency distribution for locus of control of inpatient

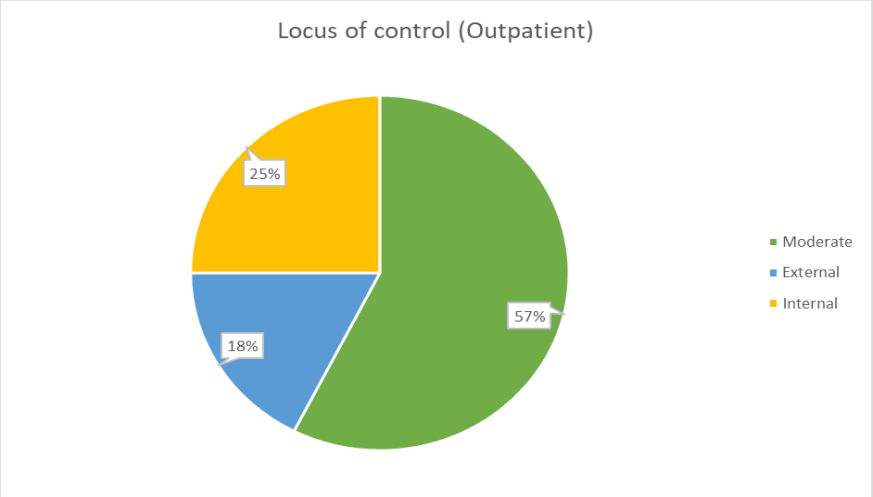

Figure 3. Frequency distribution for locus of control of outpatient

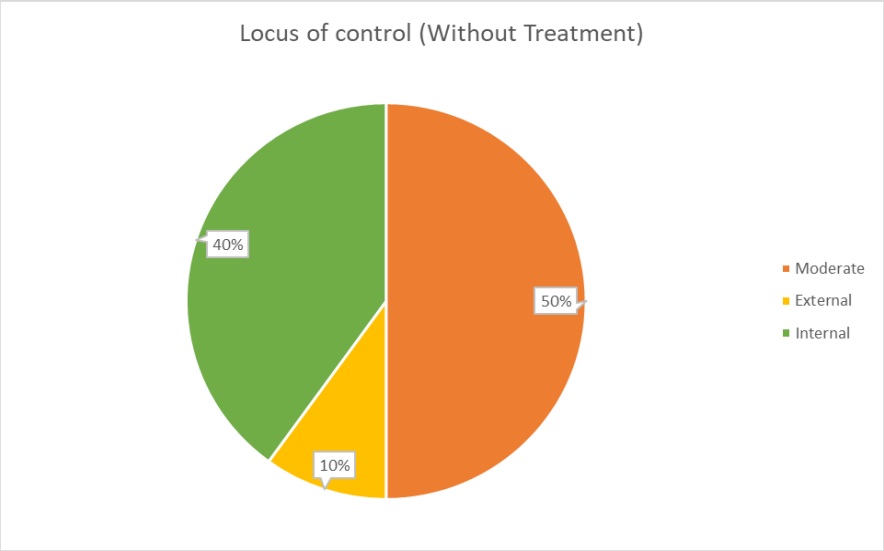

Figure 4. Frequency distribution for locus of control of untreated patients

Table 3 Regression analysis of mental health as a predictor of locus of control (N = 120)

Dependent Variable – Locus of Control				
Variable	**R^2**	**Adjusted R^2**	**B**	**β**
Mental Health	0.09	0.08	8.18**	0.30

***p<0.01*

Table 3 presents the results of the regression analysis examining mental health as a predictor of locus of control among poly drug abusers.

The regression model yielded an R^2 value of .09, indicating that mental health accounts for approximately 9% of the variance in locus of control. The adjusted R^2 value of .08 suggests that, even after controlling for potential estimation bias, mental health remains a meaningful predictor of locus of control. Although the proportion of explained variance is modest, it is statistically and practically relevant in behavioral research contexts.

The unstandardized regression coefficient (B = 8.18, p < .01) indicates that mental health significantly predicts locus of control. The standardized beta coefficient (β = .30) reflects a moderate positive effect size, suggesting that higher mental health scores are associated with higher locus of control scores. Given that higher locus of control scores represent greater external control orientation, this finding implies that poorer mental health is associated with stronger external locus of control tendencies among poly drug abusers. Overall, the regression analysis demonstrates that mental health plays a statistically significant role in shaping control beliefs. The results suggest that psychological distress may contribute to the development or maintenance of external attribution patterns, highlighting the importance of addressing mental health concerns in addiction treatment programs to foster more adaptive control orientations.

DISCUSSION

The present study examined differences in locus of control (LOC) across treatment modalities (inpatient, outpatient, and untreated) and evaluated mental health as a predictor of LOC among poly drug abusers. The findings revealed significant group differences in LOC, with outpatients demonstrating higher external control orientation than inpatients and untreated participants. Additionally, mental health significantly predicted LOC, accounting for 9% of its variance. These findings underscore the combined influence of environmental structure and psychological distress on attributional orientation in substance dependence.

Treatment Modality and Locus of Control

The one-way ANOVA revealed significant differences among groups, $F(2, 117) = 3.14$, $p < .05$, with outpatients reporting higher mean LOC scores than inpatients and untreated participants. Because higher scores indicate greater external orientation, outpatients appeared more likely to attribute outcomes to external forces such as fate, chance, or powerful others.

These findings are consistent with the social learning framework proposed by Julian B. Rotter (1966), which suggests that control expectancies develop through reinforcement contingencies. In structured inpatient settings, consistent routines, supervised schedules, and clearly defined consequences may strengthen associations between personal behavior and outcomes, thereby fostering internal control beliefs. In contrast, outpatient participants remain embedded in real-world environments characterized by stressors, drug cues, and unstable contingencies, which may reinforce perceptions of limited personal agency.

The chi-square analysis further supported this pattern. Inpatients showed the lowest frequency of external LOC, whereas outpatients demonstrated a comparatively higher proportion of external orientation. Previous research has linked external LOC with poorer treatment engagement, lower coping efficacy, and increased relapse vulnerability (Haskins et al., 2020). From a behavioral perspective, residential programs may provide corrective reinforcement experiences that gradually reshape attributional patterns (Timko et al., 2020). Interestingly, untreated individuals did not exhibit the highest level of external orientation. This suggests that treatment exposure alone does not automatically alter control beliefs; rather, the structural intensity and environmental containment characteristic of inpatient settings may be critical factors. The findings therefore highlight the role of contextual reinforcement mechanisms in shaping cognitive expectancies during recovery.

Mental Health as a Predictor of Locus of Control

Regression analysis indicated that mental health significantly predicted LOC ($R^2 = .09$, $\beta = .30$, $p < .01$), explaining 9% of its variance. The positive standardized beta coefficient suggests that poorer mental health was associated with greater external control orientation.

This finding aligns with the learned helplessness model advanced by Martin Seligman (1975), which proposes that repeated exposure to uncontrollable stressors fosters passive coping and external attributions. Psychological distress - including depressive and anxiety symptoms - may undermine perceived agency and self-efficacy, thereby strengthening beliefs that outcomes are determined by external forces. Empirical evidence has consistently shown that individuals experiencing greater psychological distress report lower perceived control and higher relapse risk (Magill & Ray, 2021).

In the context of poly drug abuse, repeated cycles of relapse, social stigma, and interpersonal instability may reinforce feelings of helplessness. Over time, these experiences may consolidate maladaptive attributional styles. The present findings therefore suggest that mental health functions not merely as a comorbid condition but as a cognitive vulnerability factor influencing control orientation.

Although the proportion of explained variance was modest, this is consistent with the multifactorial nature of LOC. Attributional style is shaped by dispositional, environmental, developmental, and neurobiological influences. Nonetheless, a 9% variance contribution in behavioral research is meaningful, particularly given the complex determinants of substance dependence.

Integrative Interpretation

When considered together, the findings suggest a dual-mechanism explanation of LOC in addiction recovery:

1. **Environmental Structure Effect** - Inpatient settings may promote internal control beliefs through structured reinforcement, accountability, and behavioral monitoring. These mechanisms align with social learning theory and contemporary recovery models (Timko et al., 2020).
2. **Psychological Distress Effect** - Poor mental health independently predicts greater external orientation, consistent with helplessness-based frameworks (Seligman, 1975). Distress may impair cognitive appraisal processes and reduce perceived control over substance use behavior.

These mechanisms may operate simultaneously. Treatment modality may directly influence LOC through environmental contingencies while indirectly shaping it via improvements in psychological well-being. Although mediation was not tested in the present study, future research using structural equation modeling could examine whether mental health mediates the relationship between treatment modality and control orientation.

The findings are also consistent with contemporary neurobiological models of addiction emphasizing impaired executive control and stress responsivity in substance use disorders (Volkow & Blanco, 2021). Perceived loss of control may reflect both cognitive attribution patterns and underlying dysregulation in self-regulatory systems.

CONCLUSION

The present study demonstrates that treatment modality significantly influences locus of control among poly drug abusers. Outpatients exhibited higher external control orientation compared to inpatients, while untreated individuals showed intermediate patterns. Furthermore, mental health significantly predicted locus of control, explaining 9% of its variance. These findings indicate that both environmental structure and psychological distress contribute to attributional orientation in addiction. Structured inpatient environments may promote relatively more adaptive control beliefs, whereas outpatient settings may require enhanced cognitive and psychological support mechanisms. Addressing mental health symptoms and integrating attribution-focused interventions into outpatient care may strengthen perceived personal control and potentially reduce relapse vulnerability. Overall, locus of control emerges as a clinically relevant cognitive construct that bridges treatment environment, psychological well-being, and recovery processes.

Limitations and Future Directions

Despite its contributions, several limitations should be acknowledged.

- First, the cross-sectional design limits causal interpretation. It cannot be determined whether treatment modality caused differences in LOC or whether pre-existing differences influenced treatment placement. Longitudinal studies are required to examine changes in LOC over time.
- Second, the study relied exclusively on self-report measures, which may introduce response bias. Future research could incorporate behavioral indicators of agency and executive functioning.
- Third, the regression model explained 9% of the variance in LOC, indicating that additional variables such as self-efficacy, severity of dependence, social support, and personality traits may also contribute significantly.
- Fourth, the sample size (N = 120) and equal group allocation strengthen comparability but limit broader generalization. Replication across diverse populations and treatment settings is necessary.

Future research should:

- Employ longitudinal designs to assess causal directionality
- Test mediation and moderation models statistically
- Examine whether changes in LOC predict relapse outcomes
- Explore interaction effects between mental health and treatment structure
- Compare additional psychological constructs such as resilience and self-efficacy

Such research would clarify the mechanisms through which treatment environments and psychological variables influence recovery trajectories.

Clinical Implications

External LOC has been repeatedly associated with poorer recovery outcomes. Individuals who attribute lapses to uncontrollable forces may demonstrate reduced persistence in coping efforts following relapse (Magill & Ray, 2021). The present findings therefore suggest that outpatient programs may benefit from explicitly incorporating attributional retraining and cognitive restructuring modules designed to enhance perceived agency. Cognitive-behavioral interventions that target maladaptive beliefs about control have demonstrated effectiveness in strengthening self-efficacy and reducing relapse risk. Additionally, integrating mental health treatment within substance use programs may indirectly foster more internal control beliefs by reducing depressive and anxiety symptoms.

From a policy perspective, the findings support the value of structured treatment environments during early recovery phases. Residential programs may provide corrective learning experiences that recalibrate control expectancies before individuals transition back to community settings.

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Conflict of Interest

The author(s) declared no conflict of interest.

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