

Locus of Control and Gender Influence on Relapse Avoidance Among Drug-Dependent Adolescents

Taiye E. Omisola-Adebisi¹, Adebayo O. Adejumo¹, Uthman T. Jamiu², Dare A. Fagbenro*³, Timileyin M. Fashola⁴

¹Department of Psychology, University of Ibadan, Nigeria, ²Department of Psychology, Obafemi Awolowo University, Nigeria, ³Department of Psychology, University of Ilorin, Ilorin, Nigeria,

⁴Department of Industrial Psychology, Faculty of Economic and Management Sciences, University of the Western Cape, Bellville, South Africa

Corresponding author:

Dare A. Fagbenro

fagbenro.da@unilorin.edu.ng

Article History

Submitted :
September 13th, 2025

Final Revised :
October 27th, 2025

Accepted :
October 29th, 2025



This is an open access article under the
CC-BY license
Copyright ©2025 by Author,
Published by Jurnal Psikologi Teori dan
Terapan

Abstract

Background: In Nigeria, few studies have investigated relapse avoidance ability and its antecedents among young adolescents. **Objective:** This study examined the role of locus of control and the influence of gender on relapse avoidance among adolescents undergoing treatment for substance use at the Federal Neuro-psychiatric Hospital, Yaba, Lagos State, Nigeria. **Method:** A cross-sectional survey design was employed to purposively select a sample of 344 adolescents (288 males and 56 females) using the adolescent relapse coping questionnaire and the Terry Pettijohn Locus of Control Scale for data collection. **Results:** Results indicated that Internal locus of control showed a positive effect ($\beta = .17, p < .01$), while external locus of control had a stronger influence ($\beta = .25, p < .01$) on relapse avoidance, together, they accounted for $R^2 = .11\%$. No gender differences exist with relapse avoidance $t(344) = -1.09$ 95% CI (-23.06, 6.61), $p > .05$. **Conclusion:** The study concluded that adolescents' sense of control, rather than gender, plays a central role in relapse avoidance.

Keywords: Drug-dependent adolescents; gender; locus of control; relapse avoidance ability.

Abstrak

Latar Belakang: Di Nigeria, hanya sedikit penelitian yang telah meneliti kemampuan *relapse avoidance ability* dan faktor-faktor yang memengaruhinya di kalangan remaja muda. **Tujuan:** Penelitian ini menelaah peran *locus of control* dan pengaruh gender terhadap kemampuan menghindari kekambuhan pada remaja yang menjalani perawatan penyalahgunaan zat di salah satu rumah sakit, Yaba, Negara Bagian Lagos, Nigeria. **Metode:** Penelitian ini menggunakan desain *cross-sectional survey design* dengan teknik *purposive sampling* untuk memilih sampel sebanyak 344 remaja. Data dikumpulkan menggunakan *Adolescent Relapse Coping Questionnaire* dan *Terry Pettijohn Locus of Control Scale*. **Hasil:** Hasil penelitian menunjukkan bahwa *internal locus of control* memiliki pengaruh positif ($\beta = .17, p < .01$), sedangkan *external locus of control* memiliki pengaruh yang lebih kuat ($\beta = .25, p < .01$) terhadap kemampuan menghindari kekambuhan. Secara bersama-sama, kedua variabel tersebut menjelaskan $R^2 = .11\%$. Tidak ditemukan perbedaan berdasarkan gender terhadap kemampuan menghindari kekambuhan $t(344) = -1.09$, 95% CI (-23.06, 6.61), $p > .05$. **Kesimpulan:** *Sense of control* pada remaja lebih berperan dibandingkan faktor gender dalam kemampuan menghindari kekambuhan.

Kata Kunci: Gender; kemampuan menghindari kekambuhan; lokus kendali; remaja penyalahguna narkoba.

Introduction

The period between ages 10–19 (adolescence) is a critical developmental stage characterized by rapid psychosocial growth, during which experimentation with substances often begins, potentially leading to addiction (Nath et al., 2022). Substance abuse among adolescents remains a major public health concern due to its association with aggression, violence, truancy, and other behavioral problems (Malinao, 2024; Gaolaolwe et al., 2025). Drug-dependent individuals frequently experience strained family relationships, emotional instability, and increased likelihood of engaging in criminal activities (Lipari & Van Horn, 2017; Malik et al., 2023). According to the United Nations Office on Drugs and Crime (UNODC, 2014), children as young as 12 years have been reported to use drugs and receive treatment for substance dependence. Furthermore, between 65% and 85% of adolescents with substance use disorders relapse within one year of treatment (Furzer et al., 2021; Lopes-Rosa et al., 2017).

Although substance use is a global concern, sub-Saharan Africa records some of the highest prevalence rates (Fashola et al., 2025). In Nigeria, relapse rates range from 19.5% among cocaine users (Ajayi et al., 2025) to over 50% among general drug users (Okonkwo et al., 2020). These relapse trends impose significant psychological, social, and economic burdens on individuals and families (Erskine et al., 2014; Sanni et al., 2021). Despite various rehabilitation programs and interventions, relapse remains prevalent among adolescents in Nigeria, highlighting the need to understand psychological mechanisms that enhance relapse avoidance ability, that is, an adolescent's capacity to resist returning to substance use after a period of abstinence. This ability encompasses psychological, behavioral, social, and emotional skills that help individuals manage triggers and cravings without resorting to drugs (Fagbenro et al., 2025).

Based on Rotter's (1966) Locus of Control Theory, individuals differ in how they perceive the control of life events. Those with an internal locus of control believe outcomes result from their own actions, while those with an external locus of control attribute outcomes to luck, fate, or powerful others. In the context of substance use, an internal locus of control may foster stronger relapse avoidance ability because individuals perceive themselves as responsible for recovery and capable of resisting relapse. Conversely, those with an external orientation may view relapse as beyond their control, leading to weaker coping mechanisms.

Prior studies (e.g., Gachara et al., 2018; Fernandes & Mokwena, 2016) suggest that locus of control influences adherence and abstinence, yet few have examined its specific role in relapse avoidance, particularly among adolescents. Moreover, findings on gender differences in relapse outcomes remain inconsistent, with some studies reporting higher vulnerability among males and others finding no significant difference. Therefore, guided by Bandura's Social Learning Theory and Rotter's Locus of Control framework, this study investigates the impact of locus of control and gender on relapse avoidance ability among drug-dependent adolescents in a Federal Neuropsychiatric Hospital, Nigeria. The study aims to fill the empirical gap by examining how personal control beliefs and gender dynamics shape relapse resilience, thereby informing more tailored and effective rehabilitation interventions.

Literature Review

Locus of Control and Relapse Avoidance

Locus of control (LOC) is a personality construct that reflects individuals' beliefs about the relationship between their actions and outcomes (Rotter, 1966). It exists along a continuum, from internal to external orientations. Individuals with a high internal locus of control believe that outcomes are determined by their own behavior and effort, whereas those with a high external locus of control attribute outcomes to external factors such as luck, fate, or powerful others (Singh & Singh, 2011). In the context of addiction, locus of control influences how individuals perceive and respond to relapse triggers. Those with an internal orientation are more likely to take responsibility for recovery, demonstrating stronger relapse avoidance ability, while externally oriented individuals may attribute relapse to uncontrollable circumstances, thus showing weaker coping capacities.

Empirical evidence supports this theoretical link. Patel et al. (2022) found that individuals with higher external locus of control and impulsivity experienced more relapse attempts. Gachara et al. (2019) also reported a negative relationship between internal LOC and alcohol relapse. Similarly, Israel, Aroyewun, & Obi (2024) observed a positive association between external LOC and substance use disorders. Earlier studies (Caputo, 2019; Bavojdand et al., 2011) also found that higher externality is linked to poorer recovery outcomes. Conversely, Silverman (2010) and Linquist (2013) demonstrated that internal LOC is associated with sustained abstinence and longer sobriety durations.

However, while these studies establish a connection between locus of control and relapse or abstinence, little empirical work has directly examined how locus of control predicts relapse avoidance ability,

particularly among adolescents in Nigeria's clinical settings. This constitutes a significant empirical and contextual gap that the present study seeks to address.

Gender and Relapse Avoidance Ability

Gender has also been examined as a factor influencing treatment outcomes, relapse timing, and recovery strength. Minero et al. (2022) reported that females tend to show greater post-treatment growth in psychological strengths, while Muzingili and Taruvunga (2025) found that females had a longer time-to-relapse than males. Conversely, Becker et al. (2016) found that women were more likely than men to relapse following stress or drug-related cues. Other studies (e.g., Lawal et al., 2025; Kalungi et al., 2024) suggest higher risk-taking and relapse tendencies among males.

Nonetheless, findings remain inconsistent, with some research showing no gender differences in relapse rates (Sliedrecht et al., 2019; Nielsen et al., 1996). Given the scarcity of studies directly linking gender with relapse avoidance ability, as opposed to relapse incidence, further research is required to clarify whether gender moderates the psychological processes underpinning relapse avoidance.

Hypotheses

Based on the review, the following hypotheses were postulated in the present study

H1: Locus of control (internal and external) will significantly predict relapse avoidance ability of drug-dependent adolescents in a selected Federal Neuropsychiatric Hospital in Nigeria

H2: There will be gender difference on relapse avoidance ability of drug-dependent adolescents in a selected Federal Neuropsychiatric Hospital in Nigeria

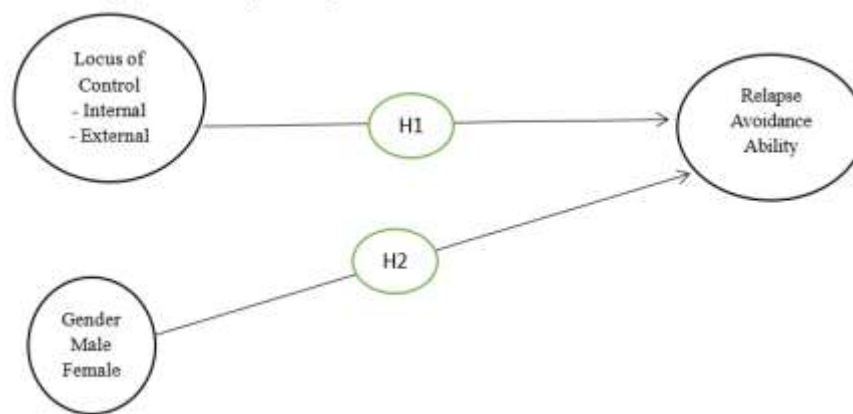


Figure 1. Hypothesized Research Model

Method

This study used a cross-sectional survey design to explore how locus of control and gender influence the ability of drug-dependent adolescents to avoid relapse. A cross-sectional design was appropriate because it allowed the researcher to collect data at a single point in time from adolescents currently undergoing treatment, making it possible to efficiently examine the relationship between locus of control, gender, and relapse avoidance ability. This design also provided a cost-effective and practical means of identifying patterns and associations within the hospital population without the challenges of long-term follow-up.

Sample or Population

The sample of the study consist of 344 adolescents (Mean = 17.25; SD =1.34) randomly selected from a Federal Neuro-psychiatric hospital. They are participants who were receiving treatment for drug dependence. Table 1 below show the demographic characteristics of the sample of the study. The participants were adolescent boys and girls who were receiving treatment for drug addiction at the Drug Addiction Treatment, Education and Research (DATER) Unit of the Federal Neuro-psychiatric Hospital, Yaba, Lagos. Participants included: Adolescents currently receiving treatment at the hospital's Drug Abuse Unit; Those diagnosed with drug dependency only, without any other serious illness; Adolescents who had been in treatment for at least two months; Only those in active recovery, meaning they were stable and under supervised care for over two months.

To determine how many participants were needed, Fischer's statistical method was used (Fisher, 1925). It calculated a minimum sample size of 246, including an estimated 10% dropout rate. However, by the time data collection was completed, more eligible volunteers had joined the study, bringing the final sample size to 344 participants. This increase follows Wade's (2023) recommendation that a larger sample helps

ensure more accurate data. Participants who met the inclusion criteria were chosen through simple random sampling until the target number was reached. Each eligible participant was assigned a number. The numbers were written on pieces of paper, rolled up, and shuffled. Participants picked numbers at random from a box, this method is known as balloting. Selection continued until the required number of participants was obtained from both the inpatient wards and the outpatient clinic. Those selected completed a coded questionnaire that helped identify who would continue to the second phase of the study.

Data Measurement

Data was collected in a federal Neuro-psychiatric hospital in Yaba, Lagos state, Nigeria after ethical clearance have been sought from the Ethics Committee Board of the Federal Neuropsychiatric Hospital, Yaba with ethical number (HREC2022/01/001/014). Prior to the data collection, the researcher sought written informed consent from the participants of the study. The researcher also assured them of their confidentiality of their data as well as voluntary withdrawn from the study without any form of intimidation. No incentive of any form was given to the participants of the study. In all, the study was carried out in accordance with the Declaration of Helsinki on ethical standards and guidelines for research involving human participants. The study used a structured questionnaire that consist of three sections to collect data from the participants. The first section collects background information from the participants. This section included questions about their age, gender, family type, parental socioeconomic status and number of treatments etc. The second section is the Adolescent Relapse Coping Questionnaire developed by Myer and Brown, (1996). It measures how well the adolescents were able to cope and avoid going back to drug use. It looked at how they solved problems, how they thought about themselves, and how focused they were on staying drug-free. The item was scored on a four-point scale ranging from 1-Never to 4-More than five times. High score means high relapse avoidance ability while low score means low relapse avoidance ability.

The third section was the locus of control scale developed by Pettijohn (1992). This scale included 20 questions that helped determine whether the adolescents believed they were in control of their own lives or if they thought their lives were mostly controlled by outside forces like luck or other people. Items on the scale was scored in a 'True' or 'False'. Scores above the mean imply high external locus of control while scores below the mean indicates high internal locus of control.

To ensure the research tools were appropriate for the study, a pilot test was carried out at the Drug Addiction Treatment, Education and Research (DATER) unit of the University of Ilorin Teaching Hospital. During this phase, adolescent drug users in recovery participated completed the research instruments. The Adolescent Relapse Coping Questionnaire (ARCQ), originally developed by Myers and Brown (1996) was subjected to a reliability test and the three components of the scale got a moderate to high levels of reliability, with Cronbach's alpha values of 0.82, 0.80, and 0.78 respectively, indicating the scale's ability to measure each construct consistently. The instrument among a general population also shown a strong reliability of cognitive and behavioural problem-solving ($\alpha = 0.92$) and abstinence-focused coping ($\alpha = 0.86$), and self-critical thinking ($\alpha = 0.54$). The overall reliability score for the ARCQ was 0.88, suggesting strong consistency across the entire scale. The factor analysis using the Principal Component Analysis (PCA) was also conducted, and the results indicated that the three key factors of the ARCQ explained 57.76% of the total variance. The PCA showed Eigenvalues ranging from 1.61 to 15.76, and factor loadings ranged between 0.33 and 0.86, confirming that the items aligned well with their respective components. To assess the construct of locus of control in this study, the instrument developed Pettijohn(1992) was adopted. The scale consists of 20 items and was originally based on Julian Rotter's foundational work on locus of control. The locus of control was also subjected to a reliability test and it yielded a Cronbach's alpha of 0.76. Past studies that apply the Pettijohn scale in diverse populations have reported reliability scores ranging from 0.72 to 0.81, reinforcing the scale's consistency across different samples. The item analysis showed that each item meaningfully contributed to the overall scale, with item-total correlations falling within the acceptable range.

Data Analysis

Descriptive and inferential statistics was used to analyse the data with the IBM Statistical package for the Social Sciences (version 27) software. Descriptive statistics such as means, frequencies and percentages were used to analyse the respondent's socio demographic factors. Inferential statistic such as Pearson Product Moment Correlation (PPMC) was used to examine the relationships of variables while multiple regression and t-test for independent measure was used to test Hypothesis 1 and 2 respectively with a significant level of 0.05. Prior to testing the hypotheses, preliminary analysis such as data screening, testing for the assumptions of multivariate analysis: normality, homoscedasticity, linearity and multi-collinearity were checked and all assumptions were met accordingly (Hair et al., 2010).

Result

Table 1. Sample Characteristics of Respondents (N = 344)

Variables	Frequency	Percentage (%)
Age		
10-15years		19.20
16-19years		80.80
Gender		
Male	288	83.70
Female	56	16.30
Family type		
Monogamous	225	65.40
Polygamous	76	22.10
Divorce	22	6.40
Others	21	6.10
Parental socioeconomic status		
High	58	16.90
Low	55	16.00
Moderate	231	67.20
Number of treatments		
Yes	225	65.40
No	107	31.10
Not sure	12	3.50

The sample consisted of 344 adolescent participants receiving treatment for drug dependence. A majority of the respondents, about 80.8%, were between the ages of 16 and 19, while only 19.2% were aged 10 to 15. In terms of gender, there was a clear imbalance, with males making up 83.7% of the sample and females only 16.3%. This reflects a much higher rate of drug-related treatment among male adolescents within the hospital setting. Most of the respondents came from monogamous families, representing 65.4% of the sample, while those from polygamous families accounted for 22.1%. A smaller number came from divorced families (6.4%) or other family arrangements (6.1%). Regarding parental socioeconomic status, the majority of the participants, 67.2%, fell into the moderate category. Those from high socioeconomic backgrounds made up 16.9%, and 16.0% came from low-income homes. When asked whether they had undergone drug treatment before, 65.4% said yes, 31.1% had not, and 3.5% were unsure. These characteristics help provide context for understanding how family background, economic status, and treatment history may relate to the adolescents' ability to avoid relapse and how this may differ by gender and their sense of personal control.

Relationships among Variables

Table 2. Descriptive Statistics, Correlation Matrix

Variables	Mean	SD	1	2	3	4
1. Gender	1.16	.36	-			
2. Internal locus of control	37.12	6.97	-.08	-		
3. External locus of control	18.08	7.66	.09	.19**	-	
4. Relapse avoidance ability	145.18	51.68	.05	.22**	.29**	-

Note. Gender (dummy coded '1'-male, '0'-female); SD = (Standard deviation) ** = significant at 0.01(two-tailed)

Results of the intercorrelation matrix in Table 2 indicated that gender is did not have any association with relapse avoidance ability ($r = .05$, $p > .05$). There was significant positive association between internal locus of control and relapse avoidance ability ($r = .22$, $p < .05$). There was also significant positive link between external locus of control and relapse avoidance ability ($r = .29$, $p < .05$).

Hypothesis Testing

In H1, Locus of control will significantly predict relapse avoidance ability of drug-dependent adolescents in a selected Federal Neuropsychiatric Hospital in Nigeria. The hypothesis was tested using multiple regression and the analysis presented in Table 3.

Table 3. Multiple Regression Analysis of Relapse Avoidance Ability by Locus of Control

Predictor Variables	Standardized Coefficients		Sig.	95.0% Confidence Interval (CI)	
	β	t		Lower Bound	Upper Bound
Internal locus of control	.17	3.39	.00	.55	2.06
External locus of control	.25	4.98	.00	1.05	2.43

$R=.34$, $R^2=.11$, $F(2,341) = 22.40$

Dependent Variable: Relapse avoidance ability

Table 3 revealed that internal locus of control significantly predicts relapse avoidance ability among drug-dependent adolescents ($\beta = .17$, $t = 3.39$, 95% CI = [.55, 2.06] $P < .05$). The result also revealed that external locus of control significantly predicts relapse avoidance ability ($\beta = .25$, $t = 4.98$, 95% CI = [1.05, 2.43]. The independent variable (locus of control) contributed jointly with an ($R^2=0.11$). This shows that 11% of the total variance of relapse avoidance ability was accounted for by the linear combination of the independent variable. H1 was therefore accepted.

In H2, There will be gender difference on relapse avoidance ability of drug-dependent adolescents in a selected Federal Neuropsychiatric Hospital in Nigeria. The hypothesis was tested using t-test for independent measure and the analysis presented in Table 4 and Table 5.

Table 4. Independent Sample T-test Between Male and Female on Relapse Avoidance Ability

t	df	p-value	95% Confidence Interval	Cohen's d
-1.09	342	.277	[-23.06, 6.61]	-0.15

Table 5. Descriptive Statistics of Relapse Avoidance Ability by Gender

Gender	N	Mean (M)	Standard Deviation (SD)
Male	288	143.84	50.98
Female	56	152.07	7.35

The results above indicate that male ($M=143.84$, $SD= 50.98$) and female ($M=12.32$, $SD= 5.49$) reported the same level of relapse avoidance ability. The level of differences is not statistically significant $t(344) = -1.09$ 95% CI (-.23.06, 6.61), $p>.05$). The Cohen's d shows a small effect size. This implies that male and female have the same level of relapse avoidance ability. H2 is therefore rejected.

Discussion

The study is the first to explore the role of locus of control and the influence of gender on relapse avoidance ability among drug dependents adolescents in Nigeria. Two hypotheses were postulated to guide this study.

The first hypothesis stated that locus of control would significantly predict relapse avoidance ability among drug-dependent adolescents. The findings confirmed this, as both internal and external locus of control significantly predicted relapse avoidance, with external locus of control showing a stronger influence. This result aligns with the study of Patel et al. (2022) who found that Patients with high external locus of control and more impulsivity had more relapses (more numbers of attempts to quit alcohol). The study was also in line with Gachara et al. (2019) who found that there was a negative relationship between internal and external locus of control and abstinence from alcohol. Israel et al. Obi (2024), who reported that external locus of control was positively associated with substance use disorder among psychiatric outpatients. Similarly, earlier works by Caputo (2019), Bavojan, et al. (2011), also support this finding by showing that individuals with higher externality were more vulnerable to substance misuse and poorer recovery outcomes. The study was also similar with Silverman (2010) who discovered that high internal locus of control is linked to sustained abstinence and prevention of relapse in United States. Theoretically, this study extends the locus of control theory, by empirically supporting that drug addicts' ability to have the relapse avoidance ability can be built by individual own action and behaviour as well as external factors such as peers, religious leaders and family members. These consistent findings suggest that adolescents who perceive greater personal control over their

lives (internal orientation) are more capable of maintaining abstinence, while those who rely on external forces such as support from friends and caregivers are less likely to cope effectively. This strengthens the argument that relapse avoidance is not only in the individual mind but also outside the individual.

The second hypothesis predicted that there would be a significant gender difference in relapse avoidance ability among drug-dependent adolescents. The findings, however, showed no significant difference between male and female adolescents, indicating that gender did not play a major role in their coping ability. The finding was similar to study done by Sliedrecht et al. (2019) who found no statistically significant relationship between gender and recurrence rates. This result contrasts with studies such as Lawal et al. (2025) and Kalungi et al. (2024), which reported higher prevalence and risk-taking behaviour among male adolescents compared to females, suggesting males might be more prone to substance use and relapse. The study was also not in line with Minero et al. (2022) who discover that gender plays an important role in having insights on how individuals progress through the treatment, relapse, and recovery cycle. Also, not in line with the study result, Muzingili and Taruvinga (2025) found that females had a longer time-to-relapse than their males' counterpart. Also, the result finding not in accordance with Minero et al. (2022) found that females show greater growth in strengths, despite females reporting fewer recovery strengths during active addiction than males, and males have greater reductions in barriers to recovery compared to female. Becker et al. (2016) also found that Women in Alcohol use disorder were found to be more likely than men to relapse following a stressful event or a drug-related cue. The reason for this finding maybe unconnected to the fact that both male and female adolescents in Nigeria are faced with similar psychosocial challenges of life and this may trigger both genders to go into constant and continuous abuse of substance.

Despite the new insights this study has provided in the extant literature, it still has some few limitations that need to be kept in mind while making inferences for the current study. First, participants were selected from only one neuro-psychiatric hospital in Nigeria, thereby making the sample unbalance to generalize the findings to other drug addicts in other neuro-psychiatric hospitals and rehabilitation centres in Nigeria and outside Nigeria. Second, cross-sectional design was used which limit causality among the study variables. Finally, only quantitative method of data collection was utilized which raises concern on common method bias (Podsakoff & Organ, 1986).

Conclusion

Based on the findings of the study, it was concluded that internal and external locus of control predict relapse avoidance ability among drug dependent adolescents which also extended locus of control theory. This means adolescents own behaviour and that of external factors such as friends, family and clinicians can help build a formidable relapse avoidance ability that can make them resist drug. The study also concluded that male and female drug dependent have the same level of relapse avoidance ability. Based on this conclusion, we recommend that clinical psychologists and therapists should boost adolescents' sense of personal responsibility and decision-making power as well as incorporate some external individual's peculiar to each individual case in the drug recovery relapse avoidance programs. This is important because both internal and external factors may have caused while these adolescents are addicted into drug. Author recommend that relapse prevention efforts should be applied equally across genders, while still being sensitive to the unique emotional or social challenges each group may face. Also, treatment programs should include structured sessions that help adolescents build a stronger internal locus of control. This could involve one-on-one counselling, group discussions, and activities that teach decision-making, goal setting, and self-reflection. Therapists and caregivers should pay close attention to how adolescents view their role in their own recovery and challenge beliefs that everything is out of their hands. It is also recommended that hospitals and mental health centres regularly assess locus of control as part of treatment, so they can identify adolescents at greater risk of relapse and offer additional psychological support.

It is important to acknowledge that the identified limitations in the study, can be addressed by future studies, for instance future studies may increase the number of participants and use many other neuro-psychiatric hospitals for more nuisance and robust result generalization. Future studies can also incorporate a longitudinal study that will give a deeper understanding of how locus of control can be a form of intervention that can enhance relapse avoidance ability. Finally, the use of qualitative method of data collection such as interview, focus group discussion may also give a clearer insight on how locus of control may influence relapse avoidance ability.

Acknowledgment

The authors express sincere gratitude to the participants who took time to participate in this study. Also, the authors express appreciation to Drug Addiction Treatment, Education and Research (DATER) Unit of the Federal Neuropsychiatric Hospital, Yaba, Lagos.

References

- Ajayi, O. C., Esangbedo, A. E., Lawal, A. A., Ojo, T. I., Gbadegesin, A. O., & Olusegun, J. O. (2025). Relapse rates and admission correlates among patients admitted for a substance use disorder to the Federal Neuropsychiatric Hospital Yaba: A retrospective cross-sectional study. *Nigerian Journal of Medicine*, 34(1), 30–37. https://doi.org/10.4103/njm.njm_92_24
- Bavojdan, M. R., Towhidi, A., & Rahmati, A. (2011). The relationship between mental health and general self-efficacy beliefs, coping strategies and locus of control in male drug abusers. *Addiction & Health*, 3(3–4), 111–118. <https://pubmed.ncbi.nlm.nih.gov/24494125/>
- Becker, J. B., McClellan, M., & Reed, B. G. (2016). Sociocultural context for sex differences in addiction. *Addiction Biology*, 21(5), 1052–1059. <https://doi.org/10.1111/adb.12383>
- Caputo, A. (2019). Addiction, locus of control and health status: A study on patients with substance use disorder in recovery settings. *Journal of Substance Use*, 24(6), 609–613. <https://doi.org/10.1080/14659891.2019.1632948>
- Fagbenro, D. A., Idemudia, E. S., & Boehnke, K. (2025). Relationship between perceived material living conditions and subjective health and wellbeing as moderated by personal attributes in a representative sample of Nigerians. *Frontiers in Psychology*, 16, 1530302. <https://doi.org/10.3389/fpsyg.2025.1530302>
- Fashola, T. M., Adebisi, T. E., Ibrahim, L., & Obisesan, O. A. (2025). Socio-environmental predictors of substance abuse among out-of-school adolescents. *Open Access Library Journal*, 12, e13447. <https://doi.org/10.4236/oalib.1113447>
- Fernandes, L., & Mokwena, K. (2016). The role of locus of control in nyaope addiction treatment. *South African Family Practice*, 58(4), 153–157. <https://doi.org/10.1080/20786190.2016.1223794>
- Fisher, R. A. (1925). *Statistical methods for research workers* (14th ed.). Hafner.
- Furzer, B., Rebar, A., Dimmock, J. A., More, A., Thornton, A. L., & Wright, K. (2021). Exercise is medicine... when you enjoy it: Exercise enjoyment, relapse prevention efficacy, and health outcomes for youth within a drug and alcohol treatment service. *Psychology of Sport and Exercise*, 52, 101800. <https://doi.org/10.1016/j.psychsport.2020.101800>
- Gachara, G., Wasanga, C., & Olaly, W. (2019). Relationship between locus of control and adherence to Alcoholics Anonymous meetings among persons recovering from substance abuse in Nairobi County, Kenya. *International Journal of Education and Research*, 7(6), 23–36.
- Gaolaolwe, W., Moagi, M. M., Kovane, G. P., & Sehularo, L. A. (2025). A substance use relapse prevention programme for youth with substance use problems in Botswana. *Health SA Gesondheid*, 30, a2965. <https://doi.org/10.4102/hsag.v30i0.2965>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Pearson.
- Israel, U. N., Aroyewun, B. A., & Obi, L. (2024). Locus of control and impulsivity as correlates of substance use disorder among outpatients in a psychiatric hospital. *IFE Psychologia: An International Journal*, 32(1), 30–39.
- Kalungi, H., Kamacooko, O., Lunkuse, J. F., Namutebi, J., Naluwooza, R., Price, M. A., & Mayanja, Y. (2024). Prevalence and factors associated with illicit drug and high-risk alcohol use among adolescents living in urban slums of Kampala, Uganda. *BMC Public Health*, 24(1), 1709. <https://doi.org/10.1186/s12889-024-19250-x>
- Lawal, A., Abdullahi, B., Olorukooba, A., Hamza, K., Usman, U., Abdulkadir, A., ... & Abubakar, A. (2025). Prevalence and factors associated with substance abuse among adolescents in public and private secondary schools in Katsina State, Nigeria. *BMC Public Health*, 25(1), 531. <https://doi.org/10.1186/s12889-025-21739-y>
- Linquist, D. (2013). *Locus of control, self-efficacy, and spiritual coping style among members of Alcoholics Anonymous* (Master's thesis). University of San Francisco.
- Lipari, R., & Van Horn, S. (2017). *The CBHSQ report: Children living with parents who have a substance use disorder*. SAMHSA. https://www.samhsa.gov/data/sites/default/files/report_3223/ShortReport-3223.pdf

- Lopes-Rosa, R., Kessler, F. P., Pianca, T. G., Guimarães, L., Ferronato, P., & Pagnussat, E. (2017). Predictors of early relapse among adolescent crack users. *Journal of Addictive Diseases*, 36(2), 136–143. <https://doi.org/10.1080/10550887.2017.1295670>
- Malik, N. I., Saleem, S., Ullah, I., Rehan, S. T., De Berardis, D., & Atta, M. (2023). Psychosocial factors affecting drug relapse among youth in Punjab, Pakistan. *Journal of Clinical Medicine*, 12(7), 2686. <https://doi.org/10.3390/jcm12072686>
- Malinao, D. (2024). A concurrent analysis of drug relapse risk, drug avoidance self-efficacy, and aftercare experiences among aftercare program clients. *Technium Social Science Journal*, 57, 134–182.
- Minero, V., Best, D., Brown, L., Patton, D., & Vanderplasschen, W. (2022). Differences in addiction and recovery gains according to gender: Gender barriers and specific differences in overall strengths growth. *Substance Abuse Treatment, Prevention, and Policy*, 17(1), 21. <https://doi.org/10.1186/s13011-022-00444-8>
- Muzingili, T., & Taruvinga, R. (2025). Gender as a predictor of relapse risk after adolescent drug and substance rehabilitation in Zimbabwe: A survival analysis approach. *Journal of Substance Use*, 30(1), 45–56. <https://doi.org/10.1080/14659891.2025.2516517>
- Myers, M. G., & Brown, S. A. (1996). The Adolescent Relapse Coping Questionnaire: Psychometric validation. *Journal of Studies on Alcohol*, 57(1), 40–46. <https://doi.org/10.15288/jsa.1996.57.40>
- Nath, A., Choudhari, S. G., & Dakhode, S. U. (2022). Substance abuse amongst adolescents: An issue of public health significance. *Cureus*, 14(11), e31193. <https://doi.org/10.7759/cureus.31193>
- Nielsen, A. L., Scarpitti, F. R., & Inciardi, J. A. (1996). Integrating the therapeutic community and work release for drug-involved offenders: The CREST program. *Journal of Substance Abuse Treatment*, 13(4), 349–358. [https://doi.org/10.1016/S0740-5472\(96\)00112-2](https://doi.org/10.1016/S0740-5472(96)00112-2)
- Okonkwo, C. C., Onyedibe, M. C., Okeke, A. N., & Agoha, B. C. (2020). Prevalence and socio-demographic factors of relapse among patients with substance use disorder in Lagos, Southwest Nigeria. *Nigerian Journal of Psychology Research*, 16(1), 1–8.
- Patel, N., Sharma, H., Mahida, A., & Mistry, H. (2022). Relationship of alcohol use pattern with locus of control and impulsivity: A cross-sectional study in hospitalized alcohol use disorder patients in Western India. *Journal of Family Medicine and Primary Care*, 11(3), 987–993. <https://doi.org/10.4103/jfmpe.jfmpe.1181.21>
- Pettijohn, T. F. (1992). *Psychology: A concise introduction*. Dushkin/McGraw-Hill.
- Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12(4), 531–544. <https://doi.org/10.1177/014920638601200408>
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80(1), 1–28. <https://doi.org/10.1037/h0092976>
- Sanni, M., Bolu-Steve, N., Durosaro, A., & Adigun, A. (2021). Prevalence of drug relapse among clients in rehabilitation centres in North Central Nigeria: Implications for school counsellors. *Canadian Journal of Family and Youth*, 13(2), 14–25.
- Silverman, M. J. (2010). The effect of a lyric analysis intervention on withdrawal symptoms and locus of control in patients on a detoxification unit: A randomized effectiveness study. *The Arts in Psychotherapy*, 37(3), 197–201. <https://doi.org/10.1016/j.aip.2010.04.001>
- Singh, A., & Singh, D. (2011). Personality characteristics, locus of control and hostility among alcoholics and non-alcoholics. *International Journal of Psychological Studies*, 3(1), 99–105. <https://doi.org/10.5539/ijps.v3n1p99>
- Slidrecht, W., de Waart, R., Witkiewitz, K., & Roozen, H. G. (2019). Alcohol use disorder relapse factors: A systematic review. *Psychiatry Research*, 278, 97–115. <https://doi.org/10.1016/j.psychres.2019.05.038>
- United Nations Office on Drugs and Crime (UNODC). (2014). *World drug report 2014*. United Nations Publications.
- Wade, G. (2023). Minimum sample size estimation: The inverse square root and gamma-exponential methods. *Information Systems Journal*, 28(1), 227–261