



Effectiveness of Modelling Therapy and Cognitive Behaviour Therapy on Aggression among In-School Adolescents who gamble in Lagos Metropolis

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Abstract. Gambling among in-school adolescents has become a major psychological and social concern, affecting academic performance, mental health, and peer relationships. This study examined the effectiveness of Cognitive Behaviour Therapy (CBT) and Modelling Therapy (MT) on aggression among gambling adolescents in secondary schools within Education District II of Lagos State, Nigeria. A descriptive survey design was adopted, with a sample of 250 students selected through stratified random sampling. Data were collected using the Gambling Related Cognition Scale (GRCS) and Verbal Aggressiveness Scale (VAS). Three hypotheses were tested at the 0.05 significance level using mean, standard deviation, and ANCOVA. Findings revealed that gambling significantly influenced aggression, while age had no significant effect. Both CBT and MT were effective in reducing aggression compared to the control group. It was recommended that teachers and school administrators be trained in basic CBT and modelling techniques to identify and manage aggression early. Strict enforcement of age restrictions on physical and online gambling was also advised.

Keywords: Aggression, Cognitive Behaviour Therapy, Modelling Therapy, Gambling, In-school Adolescents

1. Introduction

Adolescence is a developmental period marked by heightened susceptibility to risky behaviours, including gambling (Olasupo, 2022). Studies in Nigeria have shown that gambling behaviour among adolescents is influenced by peer pressure, media, personality traits, distorted gambling cognitions and easy accessibility of betting venues (Omoniyi & Matthew, 2023; Nwamadi, 2022). Aggressive behaviours, including physical and verbal aggression, have negative consequences for the individuals involved, their peers, and the broader school environment, affecting academic performance, social relationships, and future adjustment.

Modelling Therapy based on social learning theory involves exposing adolescents to role models demonstrating non-aggressive behaviour, followed by

guided rehearsal and reinforcement. Meanwhile, CBT works by helping individuals recognise and restructure maladaptive cognitions and regulate emotional and behavioural responses. Both therapies have shown promises for managing conduct problems and aggression in various settings. For example, a randomized controlled trial in Ibadan found that CBT and social skills training considerably reduced symptoms of conduct disorder among in-school adolescents.

Given the co-occurrence of gambling behaviour which can provoke frustration, loss, conflict, distorted thinking and aggression, there is a need to test whether these interventions Modelling Therapy and CBT can reduce aggressive behaviours in adolescents involved in gambling in Lagos schools. Lagos Metropolis, with its large urban population and availability of gambling avenues, represents a critical setting for this investigation.

Aggression among in-school adolescents has emerged as one of the critical psychological and behavioural challenges associated with gambling involvement. Aggression is generally defined as any behaviour intended to harm another individual, either physically or psychologically (Anderson & Bushman, 2021). During adolescence a developmental phase characterized by heightened emotional reactivity and impulsivity, exposure to gambling activities can exacerbate aggressive tendencies due to frustration, financial loss, and peer competition. The stress and tension resulting from gambling outcomes often translate into irritability, anger, and antisocial behaviour in school settings (Olasupo, 2022).

Several studies have linked gambling with aggression among adolescents. Gambling often generates emotional arousal like that found in other risk-taking behaviours such as substance abuse or delinquency (Raisamo et al., 2023). The competitive nature of gambling, coupled with the pressure to win and recover losses, fosters frustration that may manifest as aggression toward peers, teachers, or family members. According to Nwamadi (2022), adolescent gamblers tend to display higher rates of verbal altercations and

physical confrontations than non-gamblers. Similarly, Omoniyi and Matthew (2023) observed that gambling often leads to classroom disruptions, fights, and disciplinary cases in among in-school adolescents.

From a psychological perspective, aggression may stem from cognitive distortions developed during gambling, such as the illusion of control, misinterpretation of chance, and external attribution of failure (Calado & Griffiths, 2022). These cognitive distortions often generate anger, resentment, and hostility toward perceived causes of loss. Adolescents with poor emotional regulation skills may find it difficult to process these negative emotions appropriately, leading to aggressive outbursts.

The relationship between gambling and aggression can also be explained through Bandura's Social Learning Theory, which posits that adolescents learn behaviours by observing and imitating models within their environment (Bandura, 1977; expanded by Schunk, 2020). When adolescents observe peers, online influencers, or family members engaging in gambling and displaying aggressive responses to winning or losing, they may internalize such behaviours as acceptable coping mechanisms. Social media platforms and betting advertisements often portray gambling as competitive and masculine, indirectly reinforcing aggressive and risk-oriented attitudes among male adolescents (Okafor & Duru, 2021).

Peer influence is particularly potent during adolescence. According to Agbo and Ojedokun (2023), adolescents who associate with gambling peers are more likely to exhibit aggression, truancy, and defiance towards authority. Peer groups often glorify winning while ridiculing losers, which contributes to aggression and status-seeking behaviours within the group dynamic. Furthermore, adolescents who experience gambling losses may attempt to regain social validation through aggression or delinquent acts such as theft or bullying.

The Frustration Aggression Hypothesis, first developed by Dollard et al. (1939) and extended in later works (Berkowitz, 2019), suggests that aggression is often the result of blocked goals or frustrations. For adolescent gamblers, financial loss or inability to achieve expected wins leads to emotional frustration, which, without proper coping strategies, is displaced onto others as aggression. Olasupo (2022) found that adolescents who frequently gamble exhibit elevated frustration and irritability levels, often expressed as confrontational behaviour toward teachers and peers. Additionally, emotional dysregulation plays a mediating role. Adolescents involved in gambling often have difficulties managing emotions such as disappointment, shame, and guilt after losses (Rogier & Velotti, 2021). These negative emotions may manifest as reactive aggression, especially in environments like schools where social competition and peer judgment are common.

Gender also influences the manifestation of aggression among adolescent gamblers. Studies indicate that male adolescents are more prone to both gambling and aggression than females due to socio-cultural expectations that promote risk-taking and competitiveness among boys (Ade, 2020; Okafor & Duru, 2021). In Nigerian settings, where gambling has become normalized through sports betting and online platforms, male adolescents may perceive gambling as a marker of social identity and dominance, leading to aggressive reactions when their self-esteem is threatened by losses (Omoniyi & Matthew, 2023).

Moreover, environmental stressors such as poverty, family instability, and lack of parental monitoring compound the risk of aggression among adolescents who gamble (Nnamdi & Okeke, 2023). Many students engage in gambling as a means of economic escape or social inclusion, yet the consistent failure to achieve expected outcomes results in frustration and behavioural maladjustment.

The increasing prevalence of aggression linked to adolescent gambling underscores the need for psychological interventions targeting emotional regulation and behavioural control. Evidence from Nigerian and international studies shows that Cognitive Behavioural Therapy (CBT) and Modelling Therapy effectively address aggressive behaviours among adolescents (Koki & Butu, 2022; Sarchiapone et al., 2020). CBT helps adolescents identify and restructure maladaptive thoughts associated with gambling and aggression, while Modelling Therapy provides opportunities for observing and imitating non-aggressive responses. Integrating these therapies into school-based counselling programmes can therefore mitigate the psychological and social consequences of gambling-induced aggression.

1.1 Statement of the Problem

The rise of online gambling among students has become a growing concern, with potential consequences for their academic performance and has also raised concerns about its potential impacts on their overall well-being. Many students are increasingly exposed to gambling platforms through the social media and digital advertisements leading to habits that could interfere with their focus, study habits, study routines, and overall academic achievements. The addictive nature of online gambling may also contribute to time management, financial difficulties, and emotional stress, further impacting their educational outcomes. Despite its growing prevalence, there is limited research exploring how students perceive this influence, creating a gap in understanding the extend of the problem and its implications on education. This study seeks to investigate the perceived influence of online gambling on students' academic performance to provide insights

for educators, policymakers, and stakeholders in the education sector.

1.2 Research Hypotheses

The following research hypotheses were tested in the study:

- Aggression will not significantly differ among in-school adolescent who gamble that are exposed to modelling therapy, cognitive behaviour therapy and control group.
- There will be no significant interaction between treatment type and apartment type on aggression among in-school adolescents who gamble.
- There will be no significant gender difference in aggression among in-school adolescents who gamble across experimental groups based on gender.

2. Research Methodology

2.1 Research Design

The research design adopted for the study was a descriptive survey research design. This was chosen because it involves using structured questionnaire in the researcher variable of interest as it investigated the effectiveness of modelling therapy and cognitive behaviour therapy on aggression among in-school adolescents who gamble in Lagos metropolis.

2.2 Population

The population of the study comprised of all senior secondary school 2 students in Education District II of Lagos state.

3. Results

Hypothesis 1: Aggression will not significantly differ among in-school adolescent who gamble that are exposed to modelling therapy, cognitive behaviour therapy and control group.

Table 1: Descriptive Analysis of Aggression among gambling in-school adolescent across the Experimental Groups

Experimental Groups	N	Pre-test Mean	Pre-test Std. Dev.	Post-test Mean	Post-test Std. Dev.	Mean Difference
Modelling Therapy	30	61.87	10.25	54.67	4.69	-7.20
Cognitive Behaviour Therapy	32	65.97	7.30	56.06	4.86	-9.91
Control Group	35	60.69	6.16	60.14	6.01	-0.54
Total	97	62.79	8.23	57.10	5.71	-5.69

Table 1 summarizes the pre-test mean aggression scores: Modelling Therapy (61.87), Cognitive Behaviour Therapy (65.97), and Control (60.69). Post-test results showed reductions across groups, with mean scores of 54.67, 56.05, and 60.14, respectively. Cognitive Behaviour Therapy produced the largest decrease (-9.91), followed by Modelling Therapy (-7.20), while the Control group showed minimal change (-0.54). ANCOVA was used to test the differences and the result is presented in Table 2.

2.3 Sampling and Sampling Technique

The sample for this study comprised 250 students from three randomly selected secondary schools in Education District II. The sampling techniques employed in the selection of participants were the stratified, and simple random techniques respectively.

2.4 Instruments

The instruments for data collection were the Gambling Related Cognition Scale, (GRCS) and Verbal Aggressiveness Scale (VAS). GRCS is a 23-item questionnaire. The items were adopted with a 4-point Likert scale method. This includes, Strongly Agreed=SA, Agree=A, Disagree=D., Strongly Disagree=D. and Verbal Aggressiveness Scale (VAS), was also adopted to collect data on the students' verbal aggressiveness as a personality trait which reflects their individual's tendency to attack others self-concept rather than, addressing their position during communication with a 5-point: Likert scale.

2.5 Data Collection

The researcher first visited the schools to become acquainted. Later, the researcher, accompanied by a research assistance, returned to administer the research instruments to the students. The data was thus collected for analysis.

2.5 Data Analysis

Data collected was analysed using mean, standard deviation, and analysis of covariance (ANCOVA).

Table 2: ANCOVA for Aggression among in-school adolescent who gamble across the Experimental Groups

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	652.03	3	217.34	8.14	0.000
Intercept	3473.33	1	3473.33	130.10	0.000
Covariate	115.89	1	115.89	4.34	0.040
Groups	601.83	2	300.91	11.27	0.000
Error	2482.94	93	26.70		
Total	319429.00	97			
Corrected Total	3134.97	96			

Table 2, shows a significant group effect on adolescents’ gambling-related aggression, $F(2, 93) = 11.27, p < .005$, at 0.05 level of significance. Mean scores differed significantly across treatments, leading to rejection of the null hypothesis. Post-hoc results identifying specific group differences are presented in Table 3.

Table 3: Post-Hoc Analysis of Aggression among gambling in-school adolescent across the Experimental Groups

(I) Experimental Groups	(J) Experimental Groups	Mean Difference (I-J)	Sig. ^a
Modelling Therapy	Cognitive Behaviour Therapy	-0.83	0.540
	Control Group	-5.64*	0.000
Cognitive Behaviour Therapy	Modelling Therapy	0.83	0.540
	Control Group	-4.82*	0.000
Control Group	Modelling Therapy	5.64*	0.000
	Cognitive Behaviour Therapy	4.82*	0.000

Based on estimated marginal means

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

*. The mean difference is significant at the .05 level.

The post-hoc analysis revealed that the differences between the Control group and both the Modelling Therapy ($t = 5.64, p < .05$) and Cognitive Behaviour Therapy ($t = 4.82, p < .05$) groups were statistically significant.

Hypothesis Two: There will be no significant interaction between treatment type and apartment type on aggression among in-school adolescents who gamble.

Table 4

Descriptive Analysis of Treatment Types and Type of Apartment among in-school adolescent who gambling across the Experimental Groups

Experimental Groups	Type of Apartment	of N	Pre-test Mean	Pre-test Std. Dev.	Post-test Mean	Post-test Std. Dev.	Mean Difference
Modelling Therapy	Private	13	64.54	11.29	56.08	5.82	-8.46
	Public	17	59.82	9.20	53.59	3.41	-6.24
	Total	30	61.87	10.25	54.67	4.69	-7.20
Cognitive Behaviour Therapy	Private	13	64.77	7.76	55.23	5.69	-9.54
	Public	19	66.79	7.07	56.63	4.27	-10.16
	Total	32	65.97	7.30	56.06	4.86	-9.91
Control Group	Private	19	61.21	5.69	59.42	5.78	-1.79
	Public	16	60.06	6.82	61.00	6.36	0.94
	Total	35	60.69	6.16	60.14	6.01	-0.54
Total	Private	45	63.20	8.21	57.24	5.95	-5.96
	Public	52	62.44	8.30	56.98	5.56	-5.46
	Total	97	62.79	8.23	57.10	5.71	-5.69

Table 4 presents pre-test aggression scores by apartment type. Adolescents living in private apartments scored 64.54 (Modelling Therapy), 64.77 (Cognitive Behaviour Therapy), and 61.21 (Control), while their public apartment counterparts scored 59.82, 66.79, and 60.06, respectively. At post-test, private apartment participants recorded 56.08,

55.23, and 59.42, whereas public apartment participants scored 53.59, 56.63, and 61, respectively. The mean reductions indicate that adolescents in Cognitive Behaviour Therapy experienced greater decreases in aggression (private: -9.54; public: -10.16) compared to those in Modelling Therapy (private: -8.64; public: -6.24). ANCOVA was conducted to assess the significance of these differences, with results shown in Table 5.

Table 5: ANCOVA of Treatment Type and Type of Apartment (ToA) for in-school adolescent who gamble across the Experimental Groups

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	713.42	6	118.90	4.42	0.001
Intercept	3452.97	1	3452.97	128.33	0.000
Covariate	94.85	1	94.85	3.53	0.064
Groups	593.21	2	296.60	11.02	0.000
ToA	2.52	1	2.52	0.09	0.760
Groups * ToA	56.95	2	28.47	1.06	0.351
Error	2421.55	90	26.91		
Total	319429.00	97			
Corrected Total	3134.97	96			

Table 5 shows that the interaction effect of treatment type and apartment type on aggression scores was not significant, $F(2, 90) = 0.35127$, $p > .05$, at the 0.05 level. Therefore, the null hypothesis was retained, indicating no significant interaction between experimental conditions and type of apartment among in-school adolescents who gamble.

Hypothesis Three: There will be no significant gender difference in aggression among in-school adolescents who gamble across experimental groups based on gender.

Table 6: ANCOVA of Treatment Type and Gender for in-school adolescent who gamble across the Experimental Groups

Experimental Groups	Gender of Participants	N	Pre-test Mean	Pre-test Std. Dev.	Post-test Mean	Post-test Std. Dev.	Mean Difference
Modelling Therapy	Male	26	62.96	10.47	54.96	4.85	-8.00
	Female	4	54.75	4.99	52.75	3.40	-2.00
	Total	30	61.87	10.25	54.67	4.69	-7.20
Cognitive Behaviour Therapy	Male	19	67.95	6.74	57.16	5.57	-10.79
	Female	13	63.08	7.38	54.46	3.13	-8.62
	Total	32	65.97	7.30	56.06	4.86	-9.91
Control Group	Male	18	59.89	6.01	60.83	5.72	0.94
	Female	17	61.53	6.39	59.41	6.39	-2.12
	Total	35	60.69	6.16	60.14	6.01	-0.54
Total	Male	63	63.59	8.79	57.30	5.78	-6.29
	Female	34	61.32	6.95	56.74	5.66	-4.59
	Total	97	62.79	8.23	57.10	5.71	-5.69

Table 6 presents the analysis of aggression based on gender. During the pre-test phase, male adolescents scored 62.96 in Modelling Therapy, 67.95 in Cognitive Behaviour Therapy, and 59.89 in the Control group. Their female counterparts scored 54.75, 63.08, and 61.53, respectively. At post-test, male adolescents recorded scores of 54.96, 57.16, and 60.83, while female adolescents scored 52.75, 54.46, and 59.41, respectively. The mean reductions show that adolescents undergoing Cognitive Behaviour Therapy experienced larger decreases in aggression (male: -10.79; female: -8.62) than those in Modelling Therapy (male: -8; female: -2). An ANCOVA was performed to determine the significance of these differences, with the findings presented in Table 7.

Table 7: ANCOVA of Treatment Type and Gender for in-school adolescent who gamble across the Experimental Groups

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	712.49	6	118.75	4.41	0.001
Intercept	3419.26	1	3419.26	127.03	0.000
Covariate	85.60	1	85.60	3.18	0.078
Groups	547.70	2	273.85	10.17	0.000
Gender	43.34	1	43.34	1.61	0.208
Groups * Gender	2.11	2	1.05	0.04	0.962
Error	2422.48	90	26.92		
Total	319429.00	97			
Corrected Total	3134.97	96			

Table 7 shows that the effect of the experimental conditions and gender on aggression scores was not significant, $F(2, 90) = 0.962, p > .05$, at 0.05 level of significance. Therefore, the null hypothesis was retained, indicating no significant difference in aggression scores among in-school adolescents who gamble across experimental groups based on gender.

4. Discussion of Findings

Hypothesis One: Aggression scores will not significantly differ among in-school adolescents who gamble and are exposed to Modelling Therapy, Cognitive Behaviour Therapy, and the Control group.

The hypothesis was rejected, as results ($F(2,93) = 11.27, p < .05$) showed significant differences in aggression across groups. Both Cognitive Behaviour Therapy (CBT) and Modelling Therapy (MT) effectively reduced aggression compared to the control group.

The CBT group showed the greatest reduction (mean = -9.91), followed by MT (-7.20), while the control showed little change (-0.54). Post-hoc tests indicated significant differences between treatment and control groups, but not between CBT and MT.

CBT proved slightly more effective due to its focus on cognitive restructuring and self-control, helping adolescents replace irrational, aggressive thoughts (Beck, 2011). MT was effective as well, enabling learners to adopt non-aggressive behaviours through observation and imitation of positive models (Bandura, 1977).

These findings agree with Ede & Ugwuegbulam (2023), Chukwu & Nwankwo (2022), and Adewusi & Alao (2020), who found that cognitive and modelling approaches reduce aggression and improve self-regulation among adolescents. The rejection of the null hypothesis confirms that CBT and MT are effective in reducing aggression among gambling adolescents, supporting Cognitive and Social Learning Theories.

Hypothesis Two: There will be no significant interaction between treatment type and apartment type on aggression among in-school adolescents who gamble.

The hypothesis was retained, as shown in Table 5. The interaction between treatment type and apartment type on aggression was not significant, $F(2,90) = 1.06, p > .05$. This indicates that the effectiveness of Cognitive Behaviour Therapy (CBT) and Modelling Therapy (MT) in reducing aggression was not influenced by housing type (private or public).

Although slight mean differences were observed—public apartment adolescents under CBT showing slightly greater reduction (-10.16) than those in private apartments (-9.54)—these were statistically insignificant. Thus, both therapies are universally effective, irrespective of living conditions.

This finding supports Omotosho & Ijeoma (2021) and Adebayo (2020), who found that environmental factors did not significantly moderate therapeutic outcomes among adolescents. It implies that psychological interventions remain effective across diverse socio-environmental contexts, with success determined more by the therapy content than by the living environment.

Hypothesis Three: There will be no significant gender difference in aggression scores among in-school adolescents who gamble across the experimental groups.

The hypothesis was retained, as ANCOVA results in Table 7 showed no significant interaction between treatment type and gender on aggression, $F(2,90) = 0.962, p > .05$. This means both male and female adolescents benefitted equally from Cognitive Behaviour Therapy (CBT) and Modelling Therapy (MT).

Although males initially showed higher aggression and slightly greater post-intervention reductions, the differences were not statistically significant. This suggests that both genders respond similarly to

behavioural interventions targeting gambling-related aggression.

The finding aligns with Adebayo & Musa (2020) and Okafor & Bello (2022), who reported that gender does not significantly influence outcomes of psychological therapies for aggression or risk behaviours. Thus, CBT and MT are gender-inclusive and can be effectively applied in mixed-gender settings.

5. Conclusion

Based on the findings of this study, the following conclusions were drawn:

- Cognitive Behaviour Therapy (CBT) and Modelling Therapy (MT) were both effective in reducing aggression among in-school adolescents who gamble, compared to those in the control group.
- Cognitive Behaviour Therapy produced the greatest improvement, suggesting that cognitive restructuring and behaviour modification have a stronger impact on regulating aggression linked to gambling tendencies.
- The type of apartment (living environment) did not significantly influence treatment outcomes, indicating that therapeutic benefits are consistent across socio-environmental conditions.
- Gender did not significantly affect the intervention outcomes, implying that both male and female adolescents respond similarly to CBT and Modelling Therapy in managing aggression.
- Overall, the study underscores that structured psychotherapeutic interventions can effectively reduce aggressive behaviours among adolescents who engage in gambling activities.

6. Recommendations

Based on the findings and conclusions, the following recommendations are made:

- School Counsellors and Psychologists should integrate Cognitive Behaviour Therapy and Modelling Therapy into school-based intervention programs aimed at curbing aggression and other maladaptive behaviours associated with adolescent gambling.
- Teachers and school administrators should be trained in basic principles of CBT and modelling techniques to help identify and address early signs of aggression among students.
- Government and education stakeholders should provide funding and policy support for the inclusion of psychological interventions within school counselling curricula, especially for high-risk students involved in gambling activities.
- Parents and guardians should collaborate with school counsellors to reinforce positive behavioural models at home, ensuring continuity of therapeutic gains outside the school environment.
- Future researchers should explore other moderating factors such as socio-economic status, peer influence, or

family structure that may affect the effectiveness of CBT and Modelling Therapy on aggression and related psychological challenges.

- Since gender and apartment type did not significantly affect therapy outcomes, interventions should focus more on universal prevention and treatment models rather than gender- or environment-specific programs.

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