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Comparative Influence of Three Therapeutic Techniques on Adolescents' Sexual Risk-Taking Behaviour in Ibadan Metropolis

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Abstract
Adolescents face disproportionate risks for negative health consequences related to sexual risk-taking behaviours, including unintended pregnancies and sexually transmitted infections, with Nigerian adolescents showing particularly high prevalence rates despite numerous intervention attempts. This study examined the comparative effectiveness of three therapeutic interventions (Motivational Interviewing, Emotional Mastery, and Cognitive Self-Instruction) on adolescents' sexual risk-taking behaviour and investigated the interaction effect of treatment and socioeconomic status. A quasi-experimental pretest-posttest control group design with a 3×2×2 factorial matrix was employed, involving 180 senior secondary school students from public schools in Oyo State exhibiting high sexual risk-taking behaviours, randomly assigned to three experimental groups (n=60 each), with the Adolescent Sexual Behaviour Inventory (ASBI) as the assessment tool and treatment administered twice weekly for eight weeks. Analysis of Covariance (ANCOVA) revealed significant main effects of treatment on adolescents' sexual risk-taking behaviour ($F(2,30) = 6.483$, $p = 0.025$, $\eta^2 = 0.538$), with Motivational Interviewing demonstrating the highest effectiveness (adjusted mean = 149.431), followed by Emotional Mastery (132.681) and Cognitive Self-Instruction (114.263), and a significant interaction effect between treatment and socioeconomic status ($F(2,30) = 7.845$, $p = 0.045$, $\eta^2 = 0.904$). All three therapeutic interventions significantly reduced adolescent sexual risk-taking behaviours, with Motivational Interviewing proving most effective, while the strong interaction between treatment type and socioeconomic status highlights the importance of contextualizing interventions within adolescents' broader life circumstances. The study recommends incorporating Motivational Interviewing into sexual health programs, teaching emotional regulation skills, contextualizing interventions to address socioeconomic differences, and training professionals in multiple therapeutic techniques.

Keywords: Adolescent Sexual Behaviour, Motivational Interviewing, Emotional Mastery, Cognitive Self-Instruction, Therapeutic Interventions, Sexual Risk-taking, Socioeconomic Status

Introduction

Adolescents and young adults face disproportionate risk for negative health consequences related to sexual risk-taking behaviour, including unintended pregnancies, unsafe abortions, early parenthood, sexually transmitted infections, educational disruption, permanent fertility complications, and even death. These adverse outcomes stem from early sexual initiation, inconsistent or absent contraception use, multiple sexual partners, and sexual activity with unknown partners. Adolescence represents a critical transitional phase from childhood to adulthood characterized by significant physical, cognitive, and psychosocial development.

This period is often marked by identity exploration, increased autonomy, and heightened risk-taking behaviours (Steinberg *et al*., 2021) [12]. The adolescent finds themselves navigating a complex developmental labyrinth no longer a child yet not fully an adult leading many scholars to characterize this phase as one of "stress and storm" (Blakemore and Mills, 2022) [5]. Parents, educators, healthcare providers, and policymakers express considerable concern about adolescents' propensities for engaging in potentially harmful behaviours, including substance use, antisocial conduct, and particularly sexual experimentation (Suleiman and Harden, 2023).

Historically, approaches to adolescent sexuality often relied on withholding information, operating under the misguided belief that ignorance would promote abstinence (Salam *et al*., 2022). However, the prevalence of unprotected sexual activity among adolescents and its devastating consequences including unplanned pregnancies, sexually transmitted infections (STIs), and psychological distress provides compelling evidence of this approach's failure (Ott and Santelli, 2021). Contemporary research strongly supports comprehensive approaches that address both the biological and psychosocial factors influencing adolescent sexual decision-making.

Adolescent development progresses through several distinct phases. During early adolescence (typically ages 10-13), cognitive development includes concrete thinking abilities, while middle and late adolescence (ages 14-19) sees the emergence of abstract reasoning and more sophisticated decision-making capabilities (Johnson *et al*., 2022). Emotionally, early adolescents begin exploring autonomous decision-making opportunities, while middle adolescence involves significant identity formation that becomes more established in late adolescence (Crone and Dahl, 2020) [10]. Social development similarly evolves across these phases, with peer influence intensifying during early adolescence alongside emerging sexual interest, continuing through middle adolescence, and often stabilizing in late adolescence as individuals transition to higher education or employment (Allen and Loeb, 2022) [3].

Risk-taking behaviour represents a defining characteristic of adolescence and peaks during this developmental period (Duell and Steinberg, 2019) [12]. Recent neurodevelopmental research has revealed that adolescents often understand—and may even overestimate potential negative consequences of their actions, yet still engage in risky behaviours due to heightened sensitivity to potential rewards, particularly social rewards like peer approval. Neuroimaging studies demonstrate that adolescents show differential activation in reward-processing brain regions compared to adults, potentially explaining their propensity for risk despite intellectual understanding of consequences (Galván, 2021) [16]. Additionally, adolescents generally experience less negative feedback from risky behaviours (e.g., diminished hangovers from alcohol consumption) while still developing the neural architecture supporting judgment and self-regulation (Casey *et al*., 2020; Fehintola *et al*., 2025).

0It is important to note that risk-taking does not invariably lead to adverse outcomes (Romer *et al*., 2023). Certain levels of risk-taking confer developmental benefits, facilitating identity exploration, social positioning, and romantic relationship formation all critical developmental tasks (Telzer *et al*., 2022). As Brown noted during a workshop on adolescent risk-taking, these exploratory behaviours can yield significant benefits, including a consolidated sense of identity, meaningful friendships, and intimate relationships (Institute of Medicine & National Research Council, 2021). Furthermore, navigating risks may enhance resilience as adolescents learn to identify personal strengths and leverage available resources when confronting challenges (Skinner *et al*., 2022).

Sexual activity typically begins during adolescence, although the age of initiation varies considerably based on regional, ethnic, sociocultural, and psychological factors. Contemporary trends indicate increasingly earlier sexual initiation across many global regions (UNICEF, 2023). Biologically, the average age of menarche has decreased over recent decades, while sociocultural changes have simultaneously extended the period between sexual maturity and marriage, creating a longer interval during which adolescents may engage in sexual activity outside marriage (Sawyer *et al*., 2021).

Adolescents and young adults face disproportionate risk for negative health outcomes related to sexual risk behaviours, including STIs such as chlamydia, gonorrhea, syphilis, and HIV, as well as unintended pregnancies (Centers for Disease Control and Prevention [CDC], 2023; Oyelade *et al*., 2023) [8,18]. Key indicators of sexual risk behaviours include early sexual initiation, inadequate contraception use, multiple sexual partners, and sexual contact with unknown partners (Finer & Philbin, 2023). The potential hazards associated with adolescent sexual behaviour largely stem from the emotional and cognitive characteristics specific to this developmental stage (Chambers *et al*., 2022) [9].

Early sexual debut significantly impacts self-perception, social positioning, and subsequent health behaviours. Unprotected or inadequately protected sexual intercourse increases the risk of unintended pregnancy, which presents numerous adverse possibilities for adolescents, including unsafe abortion, early parenthood, or adoption each carrying significant educational, economic, social, and health implications (Starrs *et al*., 2022). While age serves as a useful parameter for defining adolescence, it is crucial to recognize that adolescents do not constitute a homogeneous population; their needs vary considerably based on age, gender, socioeconomic status, family structure, sexual orientation, health status, and legal context (Igras *et al*., 2022).

Early, unprotected sexual activity represents a significant reproductive health risk among Nigerian adolescents, many of whom lack adequate information and skills to delay sexual initiation. According to the 2018 Nigeria Demographic Health Survey (NDHS), the median age at first sexual intercourse was 17.2 years for women aged 20-49 years; 22% had initiated sex by age 15, and 55% by age 18 (National Population Commission & ICF, 2019). For men aged 25-49, the median age at first sexual intercourse was 20.1 years, with 5% initiating sex by age 15 and 44% by age 18. Among adolescents (15-19 years) at the time of the survey, approximately 48% of females and 24% of males had initiated sexual activity, with 16% of adolescent girls and 7% of boys reporting sexual debut by age 15. Sexual initiation timing shows significant regional variation, particularly among females, with earlier initiation in northern regions closely associated with earlier marriage (median age 15.3 years in the North West and 15.6 in the North East). Teenage sexual activity predominantly occurs within marriage in northern regions but outside marriage in southern regions (Yaya & Bishwajit, 2022).

Most sexually active Nigerian adolescents do not practice

consistent contraception, resulting in high rates of unintended pregnancy and unsafe abortion. Current data indicate that only 12% of sexually active adolescent females (15-19 years) and 23% of males used condoms during their first sexual encounter. Less than 40% of sexually active adolescent females and approximately 52% of young adult females (20-24 years) report using any modern contraceptive method (Federal Ministry of Health [FMOH], 2023) [13].

Despite numerous intervention studies utilizing various strategies to reduce sexual risk behaviours among school-aged adolescents, the prevalence of these behaviours remains alarmingly high. This study therefore investigates whether the combined application of three therapeutic techniques Motivational Interviewing, Emotional Mastery, and Cognitive Self-Instruction can effectively address adolescent sexual risk-taking behaviours. This approach combines supportive, empathic counseling with self-perception theory, suggesting that individuals become more committed to change after articulating their own arguments supporting such change. The four central principles of Motivational Interviewing include: (1) expressing empathy through reflective listening to convey understanding of the client's perspective; (2) developing discrepancy between current behaviours and deeply held values; (3) mitigating resistance through reflective responses while avoiding confrontation; and (4) supporting self-efficacy by building confidence that change is possible (Magill *et al*., 2022).

Unlike confrontational approaches, Motivational Interviewing aims to support clients in generating their own reasons, plans, and motivations for change. Within this framework, practitioners avoid imposing diagnostic labels, engaging clients coercively, arguing about problems, forcing change, creating plans for clients, or dominating conversations. Instead, the Motivational Interviewing clinician facilitates a process whereby clients convince themselves to consider and engage in behaviour change by: (1) expressing empathy; (2) developing discrepancy; (3) rolling with resistance; and (4) supporting self-efficacy. These principles are operationalized through assessing motivation, confidence, and readiness; exploring ambivalence; enhancing client motivation; rolling with resistance; supporting self-efficacy; and strengthening commitment to change.

Motivational Interviewing strategies appear particularly well-suited for adolescents and young adults (Cushing *et al*., 2023) [11]. This approach minimizes resistance while leveraging ambivalence to develop intrinsic motivation for change. Additionally, the brief duration of motivational interventions and emphasis on client self-direction and autonomy align well with adolescents' developmental needs for independence and self-determination.

Emotional Mastery represents another promising approach, focusing on understanding how emotions influence behaviour and leveraging this understanding to improve life quality (Heller and LaPierre, 2021) [7]. Emotions—defined as strong mental or instinctive feelings that motivate action—typically drive individuals away from negative emotional states toward positive ones. The increasing complexity and rapid changes characterizing contemporary life make emotional understanding and mastery increasingly important for navigating challenges successfully. Strong negative emotions such as fear, worry, distress, and anger can negatively impact both physical and psychological health. Developing emotional mastery the ability to recognize and effectively manage emotions becomes fundamental to successful adaptation across various domains, including health behaviours (Mayer *et al*., 2022).

Emotional Mastery involves developing competence and confidence in managing moods and pursuing goals despite challenges, circumstances, or setbacks. It centers on regaining control by developing a strong, stable emotional core and bringing emotions into balance (Jalali and Ashrafian, 2023). Emotional mastery emerges when individuals become capable of experiencing emotions fully while still taking necessary action. Many people avoid situations triggering difficult emotions like fear, anger, or sadness because they feel unprepared to manage these emotions in themselves or others. Emotional mastery involves allowing oneself to experience necessary emotions while still taking appropriate steps toward valued goals.

Cognitive Self-Instruction offers a third approach, targeting the modification of thoughts, attitudes, and beliefs by specifically addressing antisocial thought patterns that rationalize negative behaviours (Beck & Dozois, 2022) [4]. This approach teaches adolescents to recognize connections between thoughts, feelings, and actions that may lead to risky behaviours. The process identifies, challenges, and modifies cognitive distortions and negative thought patterns, guiding adolescents toward adaptive alternatives. The ultimate goal involves helping youth overcome risky thinking by bringing maladaptive cognitions to conscious awareness and replacing them with prosocial, positive alternatives (Hayes and Hofmann, 2023) [17].

Substantial empirical evidence demonstrates Cognitive Self-Instruction's effectiveness in modifying behaviour across various social situations. Lynch *et al*. (2020) formulated a five-step sequential model of social information processing, wherein individuals must: (1) encode social cues, (2) interpret these cues, (3) generate potential solutions, (4) decide on an optimal response, and (5) execute the chosen response. Cognitive Self-Instruction techniques for remediating social deficits can incorporate cognitive, behavioural, emotional, and developmental strategies, utilizing rewards, modeling, role-playing, and self-evaluation (Kendall and Peterman, 2021). The fundamental assumption underlying Cognitive Self-Instruction posits that internal cognitive events mediate observable behaviour and that individuals can influence these cognitive processes to modify behaviour.

Understanding adolescents' perspectives on sexuality, particularly regarding HIV/AIDS risk, remains vital for developing effective prevention strategies. Given the increasing prevalence of both sexual relationships and HIV infections among adolescents, investigating sexual risk-taking behaviour in this population represents a particularly urgent research priority.

Objective of the Study

1. To examine the comparative effectiveness of the three interventions (Motivational Interviewing, Emotional Mastery, and Cognitive Self-Instruction) on adolescents' sexual risk-taking behaviour.
2. To examine the interaction effect of treatment (Motivational Interviewing, Emotional Mastery, and Cognitive Self-Instruction) and social economic status on adolescents' sexual risk-taking behaviour.

Research Hypotheses

H_{01}: There is no significant main effect of treatment (Motivational Interviewing, Emotional Mastery, and

Cognitive Self-Instruction) on adolescents' sexual risk-taking behaviour.

H_{02}: There is no significant interaction effect of treatment and socioeconomic status on adolescents' sexual risk-taking behaviour.

Methodology

This study employed a quasi-experimental pretest-posttest control group design with a 3×2×2 factorial matrix. The population comprised all senior secondary school students in public secondary schools in Oyo State, with participants selected through multistage stratified random sampling: first, two senatorial districts were selected from three using the hat method, followed by random selection of three local government areas, then schools, and finally 180 school-going adolescents exhibiting high sexual risk-taking behaviours based on the Adolescent Sexual Behaviour Inventory (ASBI) pretest scores. Participants were randomly assigned to three experimental groups: Motivational Interviewing (n=60), Emotional Mastery (n=60), and Cognitive Self-Instruction (n=60), with equal distribution across socioeconomic status (high/low) and gender. The ASBI, a self-rating inventory with four sections measuring adolescents' sexual attitudes and behaviours on a four-point scale (very much like me=4, like me=3, somewhat like me=2, unlike me=1), served as both pre and post-intervention assessment tool, demonstrating strong reliability (Cronbach's Alpha: .63-.94; Guttmann Split-Half: .6539-.9210). Treatment was administered twice weekly for eight weeks, with each session lasting 45-60 minutes; the experimental groups received their respective therapies while the control group received conventional guidance counseling. Data collection occurred in three phases: pre-intervention assessment, treatment administration, and post-intervention assessment, with Analysis of Covariance (ANCOVA) used for data analysis to determine treatment effectiveness while controlling for pretest scores.

Result of Data Analysis and Findings

Research Hypotheses

H_{01}: There is no significant main effect of treatment (Motivational Interviewing, Emotional Mastery, and Cognitive Self-Instruction) on adolescents' sexual risk-taking behaviour

Results

Table 1: ANCOVA: Effect of Treatment (Motivational Interviewing, Emotional Mastery, and Cognitive Self-Instruction) on Pre-test and Post-test Adolescent Sexual Risk-Taking Behaviour

Sources of variation	Sum of squares	df	Mean square	F	Sig	Partial Eta²
Covariates						
Pretest	180.894	1	180.894	23.083	0.000	.866
Main Effects						
Combined	17027.538	1	17027.538	7.825	0.012	.521
Treatment	2101.858	2	1050.929	6.483	0.025	.538
2-Way Interactions						
Treatment x Socio-economic Status	3676.759	2	1838.380	7.845	0.045	.904
Model	18642.778	12	1553.565	20.714	0.000	.950
Residual	36991.522	17	2175.972			
Total	697745.000	30				

Significant at 0.05 significance level

The results presented in Table 1 demonstrate a significant main effect of treatment (Motivational Interviewing, Emotional Mastery, and Cognitive Self-Instruction) on adolescents' sexual risk-taking behaviour ($F(2,30) = 6.483$, $p = 0.025 < 0.05$, $\eta^2 = 0.538$). Based on this finding, the null hypothesis was rejected. Therefore, we conclude that there is a significant main effect of treatment on adolescents' sexual risk-taking behaviour.

Additionally, significant two-way interactions emerged between treatment and socioeconomic status ($F(2,30) = 7.845$, $p = 0.045 < 0.05$, $\eta^2 = 0.904$).

Table 2: Estimated Marginal Means for Treatment Groups

Treatment Group	Mean	Standard Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1. Motivational Interviewing (Experimental Group I)	149.431	17.004	113.557	185.306
2. Emotional Mastery (Experimental Group II)	132.681	15.287	100.428	164.934
3. Cognitive Self-Instruction (Experimental Group III)	114.263	12.547	105.133	193.393

Results in Table 2 indicate that the Motivational Interviewing group demonstrated the highest adjusted mean score ($M = 149.431$), followed by the Emotional Mastery group ($M = 132.681$) and the Cognitive Self-Instruction group ($M = 114.263$). This finding suggests that participants exposed to Motivational Interviewing showed greater improvement in sexual risk-taking behaviour outcomes compared to those in the Emotional Mastery and Cognitive Self-Instruction groups.

H_{02}: There is no significant interaction effect of treatment and socioeconomic status on adolescents' sexual risk-taking behaviour.

The results in Table 1 demonstrate a significant interaction effect between treatment and socioeconomic status on adolescents' sexual risk-taking behaviour ($F(2,30) = 7.845$, $p = 0.045 < 0.05$, $\eta^2 = 0.904$). Based on this finding, the null hypothesis was rejected. Therefore, we conclude that there is a significant interaction effect of treatment and socioeconomic status on adolescents' sexual risk-taking behaviour.

The large effect size ($\eta^2 = 0.904$) indicates that approximately 90.4% of the variance in adolescents' sexual risk-taking behaviour can be attributed to the interaction between treatment type and socioeconomic status. This suggests that

the effectiveness of each therapeutic approach varies considerably depending on participants' socioeconomic background.

Discussion of Findings

The statistical results demonstrate varying degrees of effectiveness among the three therapeutic intervention techniques. Motivational Interviewing emerged as the most efficacious approach, with the highest adjusted mean score (149.431). This finding suggests that adolescents who participated in Motivational Interviewing sessions exhibited the most substantial improvement in regulating sexual risk-taking behaviours. The superior performance of this approach likely stems from its interactive, client-centered nature, which guides adolescents through exploring personal motivations, evaluating potential risks and benefits of their actions, and developing intrinsic motivation to make safer choices (Miller & Rollnick, 2023) [11]. The profound engagement and personalized reflection inherent in Motivational Interviewing appears to resonate particularly well with adolescents' developmental needs for autonomy and self-determination (Cushing *et al*., 2023) [11].

Recent neurobiological research helps explain why Motivational Interviewing might be especially effective for adolescents. During this developmental period, brain regions associated with reward processing show heightened sensitivity, while prefrontal regions responsible for executive function are still maturing (Casey *et al*., 2020) [7]. By focusing on personal motivations and values rather than external rules or fear-based messaging, Motivational Interviewing harnesses adolescents' natural reward sensitivity while supporting their emerging capacity for self-regulation (Magill *et al*., 2022).

Emotional Mastery ranked second in effectiveness with an adjusted mean score of 132.681, indicating that addressing emotional drivers of risky behaviour represents another valuable intervention strategy. Adolescents frequently make impulsive decisions driven by intense emotional states, and Emotional Mastery provides specific tools for recognizing and regulating these emotions effectively (Heller & LaPierre, 2021) [7]. By fostering emotional awareness, resilience, and self-control, this technique likely helped participants reduce impulsive decision-making related to sexual behaviour. Although not as effective as Motivational Interviewing, the relatively strong performance of Emotional Mastery underscores the critical role of emotional regulation in adolescent sexual decision-making.

Contemporary neuroscience research reveals that adolescents experience emotions more intensely than either children or adults, partly due to increased reactivity in limbic regions coupled with still-developing prefrontal regulatory systems (Galván, 2021) [16]. This neurobiological reality makes emotion regulation particularly challenging—yet especially important—during adolescence. Emotional Mastery techniques that strengthen connections between prefrontal and limbic regions may help adolescents navigate emotional situations with greater stability and thoughtfulness (Mayer *et al*., 2022).

Cognitive Self-Instruction, while demonstrating effectiveness, showed the lowest adjusted mean score (114.263) among the three approaches. This finding suggests that cognitive restructuring, though beneficial, may not be as immediately impactful as the other methods for addressing adolescent sexual risk-taking. This approach primarily focuses on teaching adolescents to challenge and reframe maladaptive thoughts, which might require longer to internalize compared to the more interactive and emotionally engaging techniques (Hayes & Hofmann, 2023) [17]. Additionally, relying predominantly on cognitive strategies may not fully address the emotional and motivational aspects that often drive risky sexual behaviour among adolescents.

The significant interaction between treatment approach and socioeconomic status ($p = 0.045$, $\eta^2 = 0.904$) reveals an important consideration for intervention implementation. This strong interaction effect suggests that the relative effectiveness of each therapeutic approach varies substantially based on participants' socioeconomic background. This finding aligns with ecological models of adolescent development, which emphasize how contextual factors including family resources, neighborhood characteristics, and access to supports significantly shape adolescent behaviour and responses to intervention (Bronfenbrenner and Morris, 2022) [6]. Adewale and Fehintola (2024) [4,14] suggested that when designing sexual health interventions for adolescents, practitioners must consider how socioeconomic factors might influence program effectiveness and potentially adapt approaches to address specific needs and challenges faced by different socioeconomic groups.

These findings collectively highlight the importance of implementing multifaceted, evidence-based therapeutic techniques to address adolescent sexual risk-taking behaviour effectively. While Motivational Interviewing demonstrated the strongest overall impact, the complementary roles of Emotional Mastery and Cognitive Self-Instruction should not be overlooked. Combining these approaches might yield even greater benefits, ensuring that adolescents develop motivation alongside the emotional and cognitive skills necessary for making safer sexual health decisions.

Conclusion

This study confirms that targeted therapeutic interventions can significantly influence adolescent sexual decision-making processes. Among the three techniques examined, Motivational Interviewing demonstrated superior effectiveness, helping adolescents reflect on their choices and discover personalized motivations for making safer decisions. Emotional Mastery also played a crucial role by teaching adolescents to regulate emotions that frequently precede risky behaviour. While Cognitive Self-Instruction showed positive but comparatively modest effects, suggesting that cognitive approaches alone might be insufficient without corresponding emotional and motivational support. The significant interaction between treatment effectiveness and socioeconomic status underscores the importance of contextualizing interventions within adolescents' broader life circumstance.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. Use Motivational Interviewing: Incorporate this effective approach into sexual health programs to reduce risk-taking behaviours.
2. Teach Emotional Regulation: Help adolescents manage emotions related to sexual decision-making.
3. Contextualize Interventions: Adapt programs to address socioeconomic differences and specific barriers.

4. Train Professionals: Educate educators and healthcare providers in multiple therapeutic techniques (Motivational Interviewing, Emotional Mastery, Cognitive Self-Instruction).

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