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EFFECTS OF REHEARSAL METHODS ON PUBLIC SPEAKING ANXIETY AMONG UNDERGRADUATES

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Abstract

This study examines the effects of solo and peer-assisted rehearsal techniques on public speaking anxiety (PSA) among undergraduates. The study adopted experimental design where purposive sampling technique was used to select study population and simple random sampling method used to assign participants to experimental and control groups. After exposing the participants to solo and peer-assisted rehearsal training sessions, data were collected from the participants using a validated Public Speaking Anxiety Scale and analyzed using Analysis of Covariance statistics to test two hypotheses which were accepted at p <.05 level of significance. The result revealed a significant difference between solo method and control group in PSA with mean difference of -21.583 (SE = 1.77, p < 0.05). In addition, the result indicated significant difference between peer-assisted rehearsals and control group in PSA with mean difference of -21.844 (SE = 1.94, p < 0.05). However, there were no gender differences among study participants, $F_{(1,53)} = 0.728$, p > 0.05. The study concludes that solo and peer-assisted rehearsals are robust techniques to reduce PSA among study participants. The study recommends school authority and mental health professionals to incorporate both types of rehearsal methods into public speaking training to help students affected by PSA.

***Keywords**: solo rehearsal, peer-assisted rehearsal, public speaking anxiety, undergraduates.*

1. INTRODUCTION

Public speaking is an important skill in personal, academic, and professional spaces which serves as a fundamental means of communication that allows individuals to convey their ideas, share knowledge, and influence others effectively. It is an indispensable tool for leadership, collaboration, and societal engagement. Whether an individual is delivering a persuasive argument, presenting research findings, or motivating a team, public speaking empowers individuals to connect with their audience, articulate their thoughts clearly, and inspire meaningful action, thus fostering confidence and building credibility in various settings (Burgess, 2020).

However, despite the significance of public speaking, many individuals face the challenges of public speaking anxiety, a psychological dysfunction that occurs when individuals experience intense fear, nervousness, or discomfort in response to the anticipation of performing in front of an audience (Hernandez & Liu, 2024). Public speaking anxiety, also known as stage fright, or performance anxiety, emanates from a fear of negative evaluation, perceived inadequacy, or the overwhelming pressure to meet audience expectations, leading to physical symptoms such as trembling, sweating, or rapid heartbeat, alongside cognitive

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difficulties like forgetfulness or mental blocks (Eysenck, 2021; Ingraham, 2020). The National Social Anxiety Centre (2023) reported that approximately 73% of the population are affected by public speaking anxiety (PSA), making it one of the most commonly cited fears among people. Public speaking anxiety affects anyone who regularly speaks or performs in front of crowds such as professional athletes, actors, musicians and students (Darja, 2021; Davies, 2020).

There are three interrelated components of PSA: cognitive, physiological, and emotional components. The cognitive component has to do with the mental processes and thought patterns that influence how individuals perceive and respond to speaking situations which is rooted in deeply ingrained fears and negative expectations (Ougrin, 2020). These thought patterns typically include a pronounced fear of negative evaluation, where speakers worry excessively about being judged, criticized, or misunderstood by their audience, resulting in heightened self-awareness and an exaggerated sense of vulnerability (Ougrin, 2020). The physiological component is linked to the fight-or-flight mechanism, which is activated when an individual perceives a situation as threatening or overwhelming (Ougrin, 2021). This response triggers physical symptoms such as an accelerated heart rate, excessive sweating, trembling, dry mouth, and shortness of breath, all of which are directly caused by the release of adrenaline into the bloodstream (Olatunji et al., 2020).

The emotional component involves intense feelings of anxiety, embarrassment, and apprehension that arises either in anticipation of or during a public speaking engagement, playing a significant role in shaping the overall experience of performance anxiety (Gregersen & MacIntyre, 2019). These emotions often stem from a profound fear of failure, where individuals worry about not meeting their own or others' expectations, and this fear can be particularly paralyzing in situations perceived as high-stakes or evaluative (Gregersen & MacIntyre, 2019). Furthermore, the emotional component frequently interacts with both cognitive and physiological responses to amplify the speaker's sense of discomfort and create a feedback loop that perpetuates the experience of PSA.

Some cognitive-behavioral techniques (CBT) have been used to help individuals affected by public speaking anxiety. One of the CBT techniques investigated in this study is rehearsal method, which is the process of repeatedly practicing of information or actions over a period of time to strengthens memory and boosts confidence in the individual's knowledge (Karpicke & Blunt, 2014; McPherson & Welch, 2020; Schwieren et al., 2017; Thayer & Lane, 2018). Rehearsal technique requires the learner to repeatedly engage with the material through practice without immediate access to it. This act of repetition strengthens the neural pathways associated with the information, making it more durable and accessible over time (Roediger & Butler, 2021).

In this study, two types of rehearsal methods: solo rehearsal and peer-assisted rehearsal on PSA were investigated. Cizek and Borg (2019) described solo rehearsal as the process whereby an individual independently practices recalling and rehearsing information previously learned without the assistance of external prompts or collaboration with peers. This approach is grounded in the theory that actively engaging with material on one's own strengthens memory traces and enhances long-term retention. For instance, Grieve (2021) found that solo rehearsal creates opportunities for learners to reconstruct their knowledge, identify gaps, and correct misconceptions, which ultimately improves their ability to recall information in the future.

In addition, Morris (2021) found the act of rehearsing information without external aid to require significant cognitive effort, which activates deeper levels of processing and strengthens the neural connections associated with the material. In another study, Agarwal and Bain (2019) found solo rehearsal as particularly beneficial when learners space their practice over time, as this spacing effect leads to durable learning outcomes. However, Pan and Rickard (2018)

asserted that while solo rehearsal could be effective, its success largely depends on the learner's motivation and prior knowledge, as individuals with limited foundational understanding would struggle to recall or accurately reconstruct information in isolation.

The second type of rehearsal method considered in this study is peer-assisted rehearsal which refers to a collaborative learning strategy where learners engage in recalling and rehearsing information with the support and interaction of their peers (Frankenstein et al., 2022). This form of rehearsal is grounded in social constructive theories, which posits that meaningful learning would occur in social contexts where individuals co-construct knowledge through dialogue and shared problem-solving activities (Vygotsky, 2021). As a form of rehearsal, peer-assisted rehearsal involves structured exercises such as group quizzes, collaborative discussions, or paired testing where participants actively rehearse and discuss answers together. Karpicke and Blunt (2014) found peer-assisted rehearsal as effective in fostering interactive learning environments, since it combines the cognitive benefits of rehearsal with the social dynamics of peer collaboration. By explaining their thought processes and listening to others, learners would both reinforce their understanding and expose themselves to diverse perspectives that would deepen their comprehension of the subject matter.

Moreover, the interactive nature of peer-assisted rehearsal has been found to enhance engagement and motivation among learners (Morehead, 2019). In addition, it makes students feel more accountable and encouraged when participating in group-based rehearsal activities. This process of mutual reinforcement and shared accountability would lead to improved retention and application of knowledge, particularly in settings where learners actively challenge and correct each other's responses (Roelle, 2020). Studies have confirmed the meta-cognitive benefits of peer-assisted rehearsal. For example, Pan (2021) found that discussing answers and receiving immediate feedback from peers helps learners to better evaluate their own understanding and address gaps in their knowledge. Similarly, Agarwal and Bain (2020) found that the social element of peer-assisted rehearsal fosters a sense of community and reduces the anxiety often associated with independent practice, thereby creating a more conducive environment for learning and memory consolidation.

Gender effects on public speaking anxiety have been examined by various researchers and the results tend to be varied. For instance, Schneider and Miller (2022) who explored the role of rehearsal and cognitive restructuring in reducing public speaking anxiety in high school students found male and female students both experienced significant reductions in public speaking anxiety after engaging in rehearsals and cognitive restructuring techniques. In addition, Foster (2021) found both genders to show comparable levels of improvement in reducing their anxiety after participating in the guided rehearsal sessions. Furthermore, Zhang and Morgan (2022) studied the effects of solo and peer-assisted rehearsals on public speaking anxiety among male and female high school students and found that feedback and practice whether done individually or in groups helped them gain greater control over their nerves, leading to reduced public speaking anxiety across both genders.

However, Davies and Reynolds (2021) and Morris and Chen (2023) did not find gender differences in the effect of solo and peer-assisted rehearsal methods on public speaking anxiety among their study participants. This indicates that both rehearsal techniques were equally effective for all participants in reducing public speaking anxiety irrespective of gender.

While studies on the effects of solo and peer-assisted rehearsal techniques on public speech anxiety have been done using different populations and samples in developed countries and professions with varied results, studies using these techniques on undergraduates in Nigeria tends to be lacking leaving gaps in knowledge to fill.

2. OBJECTIVE AND HYPOTHESES

Therefore, this study examines the effects of solo rehearsal and peer-assisted rehearsal techniques on public speech anxiety among undergraduates at the University of Ibadan, Nigeria. The study sought to answer these questions: Will solo rehearsal and peer-assisted rehearsal techniques reduce public speaking anxiety among undergraduates at the University of Ibadan? And, will there be gender differences in public speaking anxiety among study participants?

The study would fill critical gap in understanding the roles of rehearsal modes in the management of undergraduates suffering from PSA. In addition, the results of the study would help the university authority and professionals to develop strategies for students to overcome PSA in public speaking and improve their academic and professional life.

The study tested these hypotheses: There will be significant main effect of treatment (solo rehearsal mode and peer-assisted rehearsals) on stage fright reduction in public speaking among undergraduates of the University of Ibadan, and there will be a significant effect of gender on stage fright reduction in public speaking among undergraduates.

3. METHOD

The study was an experimental research design that incorporated both pretest and post-test assessments as well as a control group. The experimental design facilitated an examination of how different levels of rehearsal practice affect the reduction of stage fright in public speaking tasks among undergraduates at the University of Ibadan. The independent variables were solo retrieval practice and peer-assisted retrieval practice, while the dependent variable was stage fright reduction in public speaking.

The study was conducted among undergraduates at the University of Ibadan which consisted of different groups of students actively engaged in public speaking activities. The research specifically focused on undergraduates from the Department of Psychology since they possess the academic background that is relevant to the research topic.

Multistage sampling techniques were employed. Stratified random sampling method was used to divide the population into strata based on age, gender, religion, and level of study to enhance representative. Afterwards, a simple random sampling technique was used to recruit potential participants. The probability random sampling method ensured that each participant has an equal chance of selection.

Data were collected using a validated questionnaire.

Public Speaking Anxiety Scale (PSAS, Bartholomay & Houlihan, 2016) was used to measure cognitive, affective, and physiological symptoms associated with public speaking anxiety. The PSAS consisted of 17 items rated on a 5-point Likert's format ranging from "not at all" to "extremely". The items are grouped into three categories: cognitive symptoms (e.g., negative thoughts and fear of failure), behavioral symptoms (e.g., avoidance and verbal disfluencies), and physiological symptoms (e.g., increased heart rate and sweating). Sample items include: " "Giving a speech is terrifying" and " I am nervous that I will embarrass myself in front of the audience" (C); "My voice trembles when I give a speech" and "I do not have problems making eye contact with my audience"(B); and "I feel sick before speaking in front of a group" and "I feel relaxed while giving a speech"(P). The PSAS has strong psychometric properties demonstrating high reliability and validity in previous studies. Overall composite Cronbach' $\alpha = 0.89$ was obtained in the present study.

Ethical approval was obtained by the researchers by submitting a research proposal to the Social Sciences and Humanities Research Ethics Committee (SSHREC) at the University of

Ibadan. When approval was granted, recruitment of participants was carried out. Participants were randomly selected and briefed on the objectives of the study. Informed consent was obtained before their participation. A pretest was administered using the Public Speaking Anxiety Scale (PSAS) to establish baseline anxiety levels. After the pretest, participants were randomly assigned to one of these three groups:

(1) Solo Retrieval Practice – Participants practiced retrieving speech content individually.
(2) Peer-Assisted Retrieval Practice – Participants engaged in retrieval practice with a peer.
(3) Control Group – Participants underwent any retrieval practice intervention.

Each group followed their respective practice method for two weeks, with three sessions per week. After the intervention period, a post-test using the PSAS was administered to assess changes in public speaking anxiety. During the study, participants were instructed on how to complete the research instruments accurately. Trained research assistants were available to provide clarifications and ensure consistency in data collection. After the study, participants were debriefed, and those in the control group were offered access to the intervention techniques after the conclusion of the study.

The following ethical considerations were strictly adhered to:

Confidentiality: Participants were assured of the confidentiality of their responses.
Informed consent was sought and obtained from the potential participants.
Beneficence/Non-maleficence: Participants were briefed of the positive contributions of the study to the well-being of adolescents in Ibadan and the Nigerian society at large without any negative implications.
Voluntary Participation: Participants were informed of the voluntary nature of the study and their right to decline or withdraw from the study at any time without facing any consequences.

IBM^R version 26 was used for data analysis. Both descriptive and inferential analysis were computed. All the hypotheses were tested using Analysis of Covariance (ANCOVA)and accepted at $p < 0.05$ level of significance.

4. RESULTS AND DISCUSSION

The study first presents the demographic data of the study participants.

Table 1: Participants' demographics

Variables	Categories	N	%
Sex	Male	19	32
	Female	41	68
Age *(Mean = 21, SD = 3)*	18 -20	18	30
	21 - 23	28	47
	24 - 26	11	18
	Above 26	3	5
Religion	Christian	31	52
	Muslim	29	48
Marital Status	Single	58	97
	Married	2	3
Level	200 Level	32	53
	300 Level	28	47
Experimental Conditions	Solo rehearsal mode group	20	33
	Peer-assisted rehearsal group	20	33
	Control group	20	33

Table 1 presents the demographic variables of the study participants. The result showed that 68% of the participants were females with 47% between 21 and 26 age brackets, and 52% were Christians. In terms of marital status, 97% were unmarried (single), while 53% were in the second year of their study.

Testing the hypothesis…

H1: There will be significant main effect of treatment (solo rehearsal mode and peer-assisted rehearsals) on stage fright reduction in public speaking among undergraduates of the University of Ibadan. The hypothesis was tested using Analysis of Covariance (ANCOVA) and the results are presented in Table 2.

Table 2: ANCOVA of the effect of treatments (solo rehearsal mode and peer-assisted rehearsals) on public speaking anxiety among study participants

Tests of Between-Subjects Effects						
Dependent Variable: Post-test score on public speaking anxiety scale						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	6305.367a	6	1050.895	43.554	0.000	0.831
Intercept	728.406	1	728.406	30.188	0.000	0.363
Pre-test	0.034	1	0.034	0.001	0.970	0.000
Gender	17.563	1	17.563	0.728	0.397	0.014
Treatment	4216.102	2	2108.051	87.367	0.000	0.767
Gender * Treatment	25.917	2	12.958	0.537	0.588	0.020
Error	1278.816	53	24.129			
Total	111501	60				
Corrected Total	7584.183	59				
a R Squared = .831 (Adjusted R Squared = .812)						

Table 2 shows ANCOVA of the effect of treatment (solo rehearsal mode and peer-assisted rehearsals) on stage fright reduction in public speaking among undergraduates of the University of Ibadan. The results revealed a significant main effect of the treatments on public speaking anxiety $F_{(2,53)} = 87.367$, $p < 0.05$, $\eta^2 = .767$, $R^2 = .831$, Adj $R^2 = .812$. The effect size, as indicated by partial eta squared ($\eta^2 = .767$), shows a large effect, indicating that the treatments had significant effects on reducing stage fright. The R^2 value of .831 (Adjusted $R^2 = .812$) implies that approximately 81.2% of the total variation in public speaking anxiety scores was explained by the model, with 76.7% ($\eta^2 = .767$) of the variance specifically attributable to differences in the treatment groups. Therefore, the hypothesis that solo rehearsal mode and peer-assisted rehearsals will significantly reduce stage fright in public speaking among undergraduates at the University of Ibadan was confirmed.

To examine the significant main effect of treatment on stage fright reduction in public speaking, Bonferroni post-hoc test was conducted and the results are presented in Table 3.

Table 3: Bonferroni post-hoc tests for experimental and control groups

Pairwise Comparisons					
Dependent Variable: Post-test score on public speaking anxiety scale					
(I) Treatment	(J) Treatment		Std. Error	Sig. b	95% Confidence Interval for Difference b

		Mean Difference (I-J)			Lower Bound	Upper Bound
Solo rehearsal mode	Peer-assisted rehearsals	0.261	1.702	1.000	-3.947	4.468
	Control group	-21.583*	1.773	0.000	-25.966	-17.201
Peer-assisted rehearsals	Solo rehearsal mode	-0.261	1.702	1.000	-4.468	3.947
	Control group	-21.844*	1.938	0.000	-26.634	-17.054
Control group	Solo rehearsal mode	21.583*	1.773	0.000	17.201	25.966
	Peer-assisted rehearsals	21.844*	1.938	0.000	17.054	26.634

Table 3 presents the Bonferroni post-hoc test of the main effect of treatment and control group on stage fright reduction in public speaking among study participants. The result revealed a significant difference between solo rehearsal mode and the control group, with a mean difference of -21.583 (SE = 1.77, $p < 0.001$). In addition, the result indicated significant difference between peer-assisted rehearsals and the control group in the reduction in public speaking anxiety with a mean difference of -21.844 (SE = 1.94, $p < 0.001$). However, the results revealed no significant difference between the solo rehearsal mode and peer-assisted rehearsals in reducing public speaking anxiety, with a mean difference of 0.261 (SE = 1.70, $p > 0.05$). This implies that both methods were equally effective in reducing stage fright among study participants.

H2: There will be a significant effect of gender on stage fright reduction in public speaking among undergraduates. The hypothesis was tested using ANCOVA and the result is presented in Table 2.

The ANCOVA results in Table 2 indicated that gender has no significant effect on PSA among study participants, $F_{(1,53)} = 0.728$, $p > 0.05$, partial $\eta^2 = .014$, which is not statistically significant at the 0.05 level. Therefore, the hypothesis was not supported.

The hypothesis that there will be significant effect of treatment (solo rehearsal mode and peer-assisted rehearsals) on stage fright reduction in public speaking among undergraduates at the University of Ibadan was confirmed. This means that both solo rehearsal mode and peer-assisted rehearsals significantly reduced stage fright in public speaking as participants in these treatment groups had lower anxiety levels compared to the control group. Participants who participated in either of these treatments showed significantly lower anxiety levels compared to those in the control group.

This finding aligns with that of Ingraham (2020) who found a high percentage of participants to consider public speaking as their most significant fear, which ranked higher than other commonly feared situations such as heights and insects. Younger individuals and those with limited public speaking were more anxious about speaking in front of others, compared to older, more experienced speakers who displayed lower anxiety levels. In addition,

participants indicated that rehearsal in private, free from external judgment, helped them to reduce some of the anxiety by boosting their confidence and preparation.

In addition, the result supports Pribyl's (2020) finding that individuals who engaged in a structured skills-based program experienced a notable reduction in anxiety levels, emphasizing the value of acquiring specific speaking skills and strategies for managing anxiety. Moreover, this finding corroborates that of Lucas (2019) who found structured individuals' rehearsal to significantly improve their public speaking abilities and reduced the anxiety levels particularly among those enrolled in public speaking courses. Participants were found to feel more confident and prepared after several weeks of solo practice. These private rehearsals allowed them to refine their delivery without the immediate pressure of audience evaluation, thus enhancing their overall performance and content mastery.

Finally, the current finding agrees with that of Keller (2020) that participants who engaged in solo retrieval practice, where they independently rehearsed and recalled information in private, performed significantly better when under stressful conditions compared to a control group that did not participate in such practices. The solo retrieval group experienced less cognitive load and emotional anxiety, which in turn allowed them to manage high-pressure situations more effectively. This means that practicing independently in a stress-free environment both enhances participants' recall abilities and contributes to their ability to handle stress and perform well in high-pressure scenarios.

Contrasting the previous findings (Lucas, 2017; Keller et al., 2020; Pribyl, 2020), Asysyfa et al. (2019) found a significant negative relationship between group rehearsal practice and speaking anxiety among EFL students in Indonesia. This means that increased frequency of group rehearsal tasks led to decreased anxiety levels, with students citing peer feedback and the safe environment as important in reducing their fears.

Finally, the hypothesis that gender will significantly influence stage fright reduction in public speaking among undergraduates was not supported. This implies that male and female students experienced similar reductions in public speaking anxiety compared to the control group. This finding corroborates that of Schneider and Miller (2022) who found both male and female students to show similar reductions in anxiety after participating in a structured rehearsal program. Further support for the present result is that of Zhang and Morgan (2022) who found feedback and practice done individually or in groups helped students gain greater control over their nerves, leading to reduced public speaking anxiety across both genders. However, Davies and Reynolds (2021) and Morris and Chen (2023) did not find gender differences in the effect of solo and peer-assisted rehearsal methods on public speaking anxiety among their study participants. This indicates that both rehearsal techniques were equally effective for all participants in reducing public speaking anxiety irrespective of gender.

5. CONCLUSIONS

This study investigates the effects of solo rehearsal and peer-assisted rehearsal methods on reducing stage fright in public speaking tasks among undergraduates at the University of Ibadan. Two hypotheses were tested and accepted at $p < .001$ level of significance. The study reveals that both solo rehearsal and peer-assisted rehearsal methods were effective in reducing public speaking anxiety among study participants. Participants who engaged in the two rehearsal methods demonstrate significant reductions in anxiety levels compared to those in the control group. This suggests that structured rehearsal, regardless of whether it is performed alone or in collaboration with peers, plays a pivotal role in mitigating anxiety associated with public speaking tasks. However, gender did not influence the reduction of public speaking

anxiety among study participants, meaning that both male and female students experienced similar levels of anxiety reduction.

Since both solo and peer-assisted rehearsal methods were effective strategies for reducing public speaking anxiety, educators should incorporate both types of rehearsal methods into public speaking curricula to cater to diverse student needs. Because there were no gender differences in the effectiveness of rehearsal methods among study participants, there is a need to develop gender-neutral strategies for addressing public speaking anxiety among study participants.

Some limitations of the study need to be mentioned and addressed in further study. For instance, the study was conducted with a specific sample of undergraduates from the University in different cultural or educational contexts, therefore, further study should include other universities across different geopolitical zones to enhance generalization of study findings.
In addition, data on public speaking anxiety were primarily collected through self-reported questionnaires which were not free of response biases, hence, further study should include observation methods and key informant interviews to triangulate data collected from self-reported questionnaires. Finally, the study concentrates only on two methods of reducing public speaking anxiety which was not exhaustive. Further study investigates external variables such as personal experiences with public speaking, classroom environment, and social support.

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