The Influence of Cognitive, Physiological and Behavioural Facets on Public Speaking Anxiety among Undergraduate Students

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ABSTRACT

Public speaking anxiety is a common challenge among undergraduates, shaped by interconnected physiological, cognitive, and behavioural factors. This study investigated how these facets influence public speaking anxiety and relate to each other. Using a quantitative design, data were collected from 122 undergraduates via a 17-item, 5-point Likert-scale survey adapted from Bartholomay and Houlihan (2016). Most respondents were aged 21–23 (96%) with intermediate (80%) or advanced (6%) English proficiency. Strong correlations were found between physiological and cognitive facets ($r = .761$, $p < .001$), physiological and behavioural facets ($r = .795$, $p < .001$), and behavioural and cognitive facets ($r = .770$, $p < .001$). The findings were aligned with Communication Apprehension Theory, confirming the multidimensional and interrelated nature of public speaking anxiety. Since physical arousal can trigger negative thoughts and avoidance behaviours, effective interventions should address all three facets. In higher education, communication courses should combine content delivery with anxiety-management skills such as relaxation, step-by-step exposure, and peer feedback. Lecturers can also be trained to identify anxiety symptoms and foster supportive environments. Future research should track changes in anxiety over time, explore students' experiences qualitatively, test which interventions best target each facet, and examine cultural differences in anxiety expression.

Keywords: Cognitive Facet, Physiological Facet, Behavioural Facet, Speaking Anxiety, ESL

INTRODUCTION

Background of the Study

Public speaking is defined as an art of speaking about a topic with the goals of persuading, inviting, educating, changing opinions, giving opinions and providing information (Astriani, Wahyuningsih, Roswati & Nurdiana, 2023). Bilgin (2022) defines public speaking as the art of speaking effectively in front of an audience by considering content, impact, relevance and the audience's needs. Based on the definition, it clearly shows that public speaking is not an easy task to be delivered, especially among undergraduate students. Hence, it is very common to deliver public speaking with a little to high level of anxiety. Abdeldaiem, Al-Zahraa, Fouad & Mokhtar (2020) in their study, found out that 78% of 400 students had anxiety while speaking in front of the audience and 26% had severe stress that led to a phobia of public speaking. The finding is also supported by Marinho et al. (2017) when they stated that public speaking is the most commonly feared situation in their research population.

Public speaking anxiety is very common, especially among undergraduate students, due to lack of public speaking skills and experience. Ch'ng (2025) also identified several key contributors to public speaking anxiety related to these two factors, namely fear of making mistakes, negative feedback and unpreparedness. Due to these contributors, students may experience anxiety in various types and dimensions. Siddique, Raja and Hussain (2020) stated that public speaking anxiety could affect both the cognitive and physiological

dimensions, while Muhibbah & Amalia (2025) found a significant relationship between public speaking anxiety and the behavioural dimension. Therefore, apart from the common feelings of nervousness, worry, negative thoughts and fear of judgement, public speaking anxiety may also include rapid heartbeat, sweating, trembling, shortness of breath, rushing through speech and relying heavily on notes. These symptoms are parts of the cognitive, physiological and behavioural facets experienced by the speakers due to public speaking anxiety.

There are quite a number of studies that have examined how the three facets affect public speaking anxiety, but most of the studies investigated each facet in isolation. Moving into 2026, with the way people communicate continuing to evolve, there is growing interest in how the three facets, which are cognitive, physiological and behavioural, interact with one another. Data obtained from studying the effects of these facets could be linked to create a more comprehensive understanding of public speaking anxiety.

Statement of the Problem

Public speaking anxiety, also known as PSA, is one of the most common communication issues that affects not only students but also many professional speakers (Muhibbah & Amalia, 2025). The anxiety occurs not only among English language learners but also across cultures and disciplines. Undergraduate students cannot avoid delivering speeches or presentations, as they are often required to present in academic courses, participate in scholarly events and engage in various college activities. While some students are able to speak effectively, others struggle due to difficulties in managing the three key facets of anxiety which are cognitive, physiological and behavioural (Gallego, McHugh, Penttonen & Lappalainen, 2022)

Some students could not perform well in public speaking due to being influenced by all three facets and it is also possible that some of them are only affected by any one of the facets. Cognitive facet may interfere with the train of thoughts and interrupt the speaking pace because of the nervous feeling and all the negative thoughts that are happening during the public speaking (Gallego et al., 2022). Physiological facet may give the speaker uncomfortable conditions due to rapid heartbeat, sweating, trembling and shortness of breath (McKroskey, 1977). A behavioural facet may affect the overall performance, as the speaker might be rushing through speech or relying too much on the notes (Mckroskey, 1977).

However, it is possible that one student is facing a physiological facet such as sweating or rapid heartbeat, which then leads to a cognitive facet which makes him unable to think of the next point that he wants to say. Research such as Ibrahim et al. (2021) only focused on exploring the fear of public speaking through social cognitive theory and grieve, Woodley, Hunt and McKay (2021) focused on the behavioural impacts on speaking performance. This study believes that more studies should be conducted to link all three facets and to study how they are related to one another. Therefore, this study was conducted to investigate how all the three facets influence public speaking anxiety and to analyse the relationship between physiological facets and all other components in public speaking anxiety.

LITERATURE REVIEW

Theoretical Framework of the Study

McCroskey's (1977) Communication Apprehension Theory explains how and why individuals experience anxiety in communication contexts, including public speaking. The theory defines communication apprehension as an individual's level of fear or anxiety associated with either real or anticipated communication with others. Four forms of communication apprehension were identified by McCroskey (1977), which were trait-like apprehension, context-based apprehension, audience-based apprehension and situational apprehension. The theory mainly suggests that communication apprehension affects multiple dimensions of human functioning. It is not just about the common feeling of nervousness but also affects cognitive processing, physiological arousal and behavioural patterns.

In this study, the three dimensions are operationalised as the cognitive, physiological and behavioural facets measured by the research questionnaire. The cognitive facet is directly linked to McCroskey's (1977) belief

that mental processes could be the key factor to feeling anxiety. Individuals who always have to deal with public speaking anxiety often mentally rehearse various negative scenarios, interpret audiences' responses negatively and always focus on their weaknesses (Shi, Brinthaupt & Mcree, 2015). These thought patterns not only contribute to anxiety but also affect the ability to plan and deliver the speech effectively.

The physiological facet reflects McCroskey's (1977) view that linked anxiety level with the body responses. The theory suggests that when individuals are having communication anxiety, their body will react accordingly, such as by having short breath and a rapid heartbeat. It can still be controlled by some individuals if it is just a small arousal, but excessive arousal can really affect speaking performance (Bodie, 2010). Excessive arousal caused by physiological factors could make individuals feel uncomfortable performing public speaking; hence, it will affect the focus to deliver effective public speaking.

The behavioural facet connects to the theory's emphasis on observable outcomes of apprehension. According to McCroskey (1977), communication apprehension often leads to withdrawal or avoidance behaviours. This includes behaviours such as speaking too quickly, failing to make eye contact, or reading directly from notes. The individuals who are having the communication apprehension would really want to complete the communication process quickly because they are very anxious and they do not want to engage with the audience (Maclntyre & Serroul, 2015).

Scholars have also identified a range of other causes that contribute to the speaking anxiety. Language, grammar, pronunciation, and peers are among the responsible factors for public speaking anxiety (Rajitha & Alamelu, 2020). Students often assess their personal competence and intellectual performance with negative insights before actually performing any given academic tasks and evaluations. Ellis (2015) stated that when a learner possesses poor linguistic ability, it might affect the anxiety level when required to perform related tasks. Roosdianna et al. (2018) highlights that limited vocabulary, lack of confidence and excessive tasks to accomplish are the three main factors that impede learners' speaking competence.

The insufficient support and resources from instructors and peers might worsen the learners' anxiety as they receive little positive feedback and responses (Day & Gu, 2013; Siyli & Kafes, 2015). This condition usually develops a tendency for self-criticism and self-monitoring actions that impede students' overall performance. The sense of anxiety through different stages of public speaking will reduce the students' self-efficacy. Rajitha and Alamelu (2020) disclosed that anxiety appears when students lack the confidence to make an impression on the audience by questioning their capabilities.

Attia et al. (2022) further add that communication styles, physical actions and reactions are used to measure students' responses, such as the level of anxiety in public speaking. The responses from the audience, including peers and educators, especially in large classrooms, also have a direct influence on how a student behaves when being anxious in public speaking. Lin (2020) highlights that status difference, unfamiliar audience and environment are the external factors that contribute to students' anxiety. Yee and Abidin (2014) disclose that the concern towards personal embarrassment and negative judgements by others are linked with social anxiety in public speaking.

In conclusion, this section discusses the underlying theory and possible causes of public speaking anxiety. The Communication Apprehension theory by McCroskey (1977) provides an overview on how anxiety is exhibited in different forms of apprehension that can be related to the specific contexts of physiological, cognitive and behavioural facets in public speaking anxiety. The relationships between the external factors such as the audience, types of academic tasks, classroom dynamics exist within both theoretical and conceptual framework of public speaking anxiety which impair students' performance in communication.

Past Studies

There are many studies that have been conducted to investigate the causes, experiences and coping mechanisms related to public speaking anxiety, especially among students, who are very common victims of the issue. These studies examined cognitive, physiological, and behavioural factors that influence performance during oral presentations.

The study by Shi, Brinthaupt and McCree (2015) was conducted to investigate how cognitive processes such as

negative self-talk and audience perception could lead to public speaking anxiety among undergraduate students. The respondents of this study were 209 undergraduate students from a southeastern U.S. public university. The data were collected by using two instruments, which were the Personal Report of Public Speaking Anxiety (PRPSA) and a self-developed questionnaire that assessed thought patterns during speeches. The study found out respondents with higher PSA scores were more likely to engage in negative thoughts and to perceive neutral audience responses as signs of disapproval. The implications suggest that interventions focusing on cognitive reframing and audience interpretation could help to reduce anxiety levels.

Next, the study by Siddique, Raja and Hussain (2020) investigated the factors and the reasons behind speaking anxiety. Qualitative research was conducted and a total of nine participants from a public university in Karachi were involved in a focus group discussion. A recorder was used to record the discussion and all participants were required to sit in a circle to have an interactive discussion. The findings of the study were that many factors lead to speaking anxiety, including cognitive factors such as having negative thoughts about the audience and being demotivated by the teachers' responses and physiological factors such as sweating and shivering.

The study by Dong (2023) investigated the relationship between self-anxiety and self-efficacy among Chinese students. The total number of respondents who were involved in the study was 51 students. The study used questionnaires consisting of close-ended questions to collect the data. From the study, Dong (2023) found out that self-efficacy and speaking anxiety were negatively correlated. The speaking anxiety, in fact, had an inverse effect on self-efficacy. In other words, if a student feels very nervous or anxious when speaking the English language, they tend to believe less in their ability to perform well. The study's implication highlights the importance of reducing speaking anxiety in English language learning to enhance students' self-efficacy. Language teachers and instructors should implement supportive teaching strategies, create a low-anxiety classroom environment and most importantly, provide positive feedback to the students. These can help the students to gain confidence that can lead to better learning outcomes.

In summary, past studies consistently show that both cognitive and physiological factors contribute to public speaking anxiety. They also highlight the need for interventions that focus on both thought patterns and physiological regulation. An intervention such as providing supportive practice environments was also suggested to overcome the issue of speaking anxiety. In relation to this study, these findings provide a solid foundation, but there remains a gap in integrating all factors, including cognitive, physiological and behavioural, into a single and comprehensive intervention model for undergraduate students.

Conceptual Framework of the Study

Students' apprehension for public speaking can stem from different types of apprehension. Both types of apprehension can influence students' view of public speaking (Rahmat et al., 2018). The first type of apprehension is trait apprehension and this is caused by the person's individual characteristics. In the context of this study, this refers to the person's cognitive facets (figure 1). The second type of apprehension is state apprehension and this refers to two sub-factors such as external and internal factors. External factors refer to the environment of the speaker. In the context of this study, these external factors refer to the audience. Another external factor is evaluation. The very fact that the public speaking speech is being evaluated can add anxiety to the speaker.

Figure 1 below shows the conceptual framework of the study. According to Bartholomay & Houlihan (2016), there are three facets of public speaking anxiety. The first is cognitive facet and this is portrayed when the speakers are nervous that they will embarrass themselves in front of the audience. It can also refer to the speakers not feeling satisfied when the speech is over. The second facet is the behavioural facet. This refers to the speakers finding it difficult to make eye contact with the audience. The last facet is the physiological facet. This is the speakers feeling tense before the speech. It could also refer to the speakers not feeling relaxed prior to the speech. The last facet is physiological.

This study also explores if there is a relationship between physiological facets and behavioural facets. This study also looks into the relationship between behavioural and cognitive facets. Finally, this study investigates the relationship between cognitive and physiological facets.

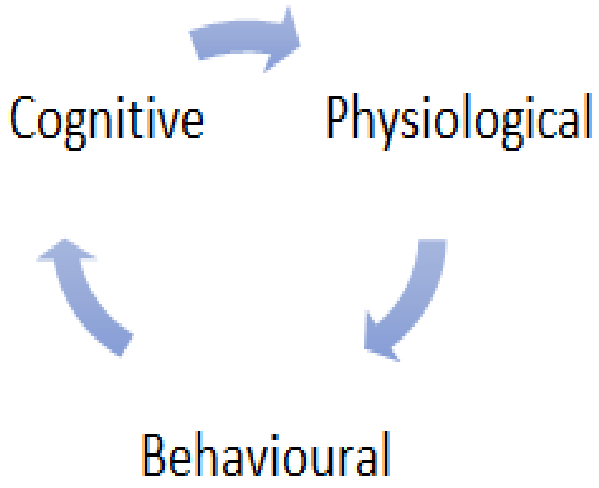

Figure 1- Conceptual Framework of the Study

METHODOLOGY

This quantitative study was conducted to explore the perception of students on public speaking anxiety. A convenient sample of 122 participants responded to the survey. The instrument used is a 5 Likert-scale survey. Table 1 below shows the categories used for the Likert scale; 1 is for Never, 2 is for Rarely, 3 is for Sometimes, 4 is for Very Often and 5 is for Always.

Table 1: Likert Scale Use

1	Never
2	Rarely
3	Sometimes
4	Very Often
5	Always

Table 2 shows the distribution of items in the survey. The instrument for this study is replicated from the instrument by Bartholomay & Houlihan (2016) to reveal the variables in the table below. Section B has 8 items on the Cognitive component. Section C has 4 items on Behavioural and section D has 5 items on Physiological.

Table 2: Distribution of Items in the Survey

NO	VARIABLE	SUB-CATEGORY	
B	COGNITIVE	8	.912
C	BEHAVIOURAL	4	.815
D	PHYSIOLOGICAL	5	.885
	TOTAL ITEMS	17	.948

Table 2 also shows the reliability of the survey. The analysis shows a Cronbach's alpha of .912 for cognitive components, .815 for behavioural components and .885 for physiological components. The overall Cronbach's alpha for all 17 items is .948, thus revealing a good reliability of the instrument chosen. Further analysis using SPSS was conducted to present findings to answer the research questions in this study.

RESULTS AND DISCUSSION

Demographic Analysis

Table 3: Percentage for Demographic Profile

Questions	Demographic Profile	Categories	Percentage (%)
1	Gender	Male	69%
		Female	31%
2	Age	18-20	4%
		21-23	96%
3	Self-Rating English Proficiency	Beginner	14%
		Intermediate	80%
		Advanced	6%

The participants of this study consisted of 69% male and 31% female respondents. In terms of their age, the majority (96%) were between 21 and 23 years old, while only four per cent were aged 18-20. This suggests that the participants were in their early adulthood, indicating that they have undergone a lengthy English language learning process. Krashen, Long and Scarcella (1982) argue that individuals who begin learning a second language at a very young age tend to achieve a higher proficiency level than those who begin as adults. This argument is supported by the respondents' self-rated English proficiency, in which the majority of them (80%) rated themselves as intermediate and 6% of them rated themselves as advanced. This indicates that many of them have a solid foundational competence in English. There are only 14% of the respondents who rated their proficiency as beginner. This distribution suggests that most of the respondents were young adult learners with moderate to high English language proficiency.

Descriptive Statistics (Mean)

Findings for Physiological Facets

This section presents data to answer research question 1: How does physiological facet influence public speaking anxiety among undergraduates?

STATEMENT/QUESTIONS	MEAN	SD
DPQ1 I feel sick before speaking in front of a group.	2.6	1.1
DPQ2 I feel tense before giving a speech.	3.1	1.0
DPQ3 My heart pounds when I give a speech.	3.4	1.1
DPQ4 I sweat during my speech.	2.5	1.2
DPQ5 I do not feel relaxed while giving a speech.	3	1.0

Figure 2: Mean for Physiological Components

The findings indicate that the respondents experience several physiological symptoms that are associated with public speaking anxiety. Based on the above figure, the highest mean score was recorded for item 3: "My heart pounds when I give a speech" (M = 3.4, SD = 1.1). This suggests that cardiovascular responses are a very common physical reaction to anxiety in public speaking situations. The mean score was then followed by item 2: "I feel tense before giving a speech" (M = 3.1, SD = 1.0) and item 5: "I do not feel relaxed while giving a speech" (M = 3, SD = 1.0). The numbers reflect that delivering public speaking can lead to sustained muscle tension and lack of ease. Item 1: "I feel sick before speaking in front of a group" (M = 2.6, SD = 1.1) and item 4: "I sweat during my speech" (M = 2.5, SD = 1.2) report moderate levels of impact, indicating that nausea and perspiration occur less frequently compared to other symptoms. The data support that physiological responses indeed play a significant role in influencing public speaking anxiety among undergraduate students.

Findings for Cognitive Facets

This section presents data to answer research question 2: How does cognitive facets influence public speaking anxiety among undergraduates?

STATEMENT/QUESTION	MEAN	SD
BCQ1 Giving a speech is terrifying.	3.3	0.9
BCQ2 I am afraid that I will be at a loss for words while speaking.	3.6	1.0
BCQ3 I am nervous that I will embarrass myself in front of the audience.	3.5	1.0
BCQ4 If I make a mistake in my speech, I am unable to refocus.	3.3	1.0
BCQ5 I am worried that my audience will think I am a bad speaker.	3.3	1.1
BCQ6 I cannot focus on what I am saying during my speech.	2.8	1.0
BCQ7 I am not confident when I give a speech.	3	1.1
BCQ8 I do not feel satisfied after giving a speech.	3.1	1.0

Figure 3: Mean for Cognitive Components

Figure 3 lists the cognitive components that the respondents experience in public speaking anxiety. In general, the figure indicates that the respondents have a high degree of developing these settings in public speaking anxiety. It was discovered that Item 2 (M = 3.6, SD = 1.0) has the highest mean value, where the respondents feel anxious about struggling to express themselves in speaking. Consequently, Item 3 (M = 3.5 , SD = 1.0) displays that they are concerned about personal embarrassment in front of an audience, while Item 5 (M = 3.3 , SD = 1.1) states that the respondents are anxious about being perceived as a novice speaker by an audience. Both Item 3 and Item 5 indicate the role of public's impression towards self-image and competence in public speaking anxiety as Item 4 (M = 3-3, SD = 1.0) found that the respondents also experience difficulty regaining focus after making mistakes in speaking. It is also stated that the respondents are frightened when required to give a speech in Item 1 (M = 3.3, SD = 0.9). Moreover, the respondents agreed that they feel dissatisfied after giving a speech in Item 8 (M = 3.1, SD = 1.0) while not feeling confident when speaking in Item 7 (M = 3, SD = 1.1). Both Item 8 and Item 7 illustrate that anxiety also occurs in different stages of public speaking. However, Item 6 (M = 2.8, SD = 1.0) suggests that the respondents have a moderate level of anxiety when being unable to focus on their speech content in public speaking.

Findings for Behavioural Facets

This section presents data to answer research question 3: How does behavioural facet influence public speaking anxiety among undergraduates?

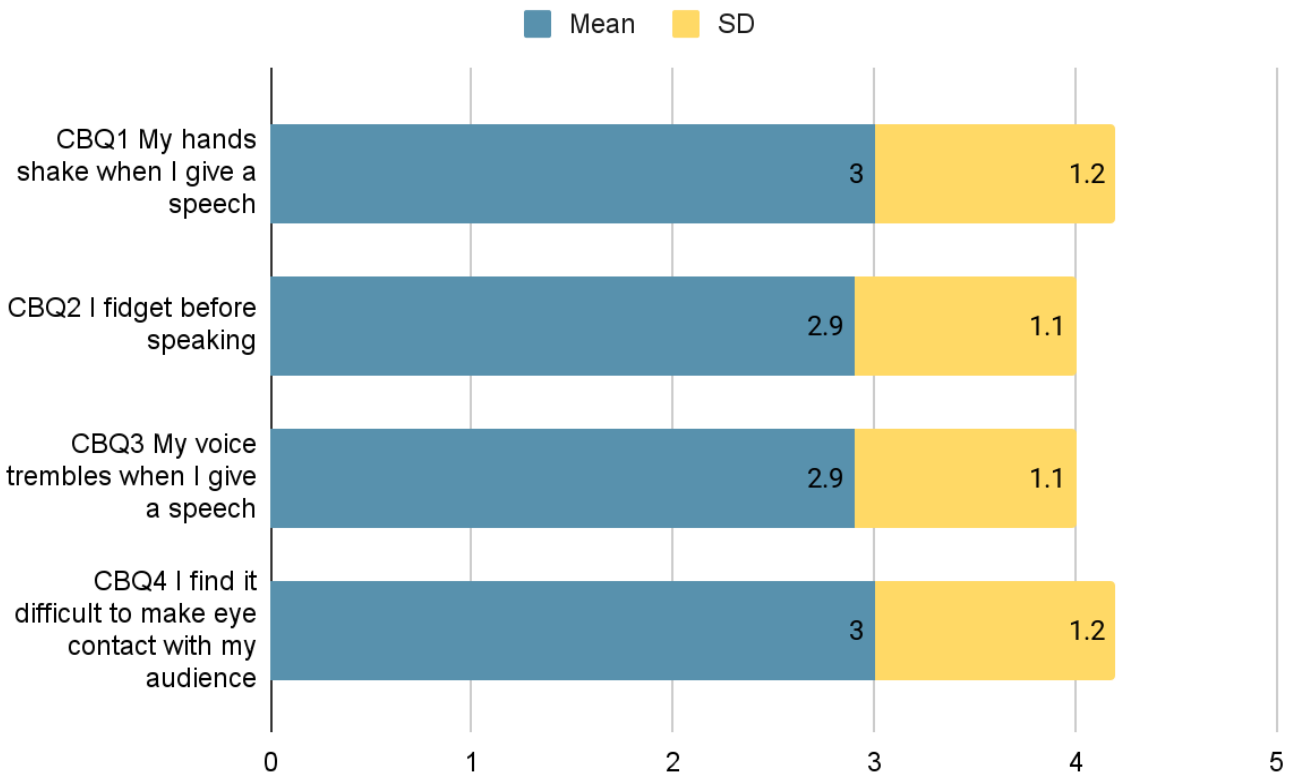

Figure 4: Mean for Behavioural Components

Figure 4 presents the mean for behavioural components. Item 1 (M = 3, SD = 1.2) states that when the students gave a speech, their hands shook. Next, item 4 (M = 3, SD = 1.2) states that the learners found it difficult to make eye contact with the audience. Item 2 (M = 2.9, SD = 1.1) states that the students fidget when they spoke. Lastly, item 3 (M = 2.9, SD = 1.1) states that their voice trembled when they gave a speech.

Exploratory Statistics

This section presents data to answer research question 4: Is there a relationship between physiological facets and all other components in public speaking anxiety?

To determine if there is a significant association in the mean scores between physiological facets and all other components in public speaking anxiety, data were analysed using SPSS for correlations. Results are presented separately in tables 3, 4, 5 and 6 below.

Table 4: Correlation between Cognitive and Physiological Components

		COGNITIVE	PHYSIOLOGICAL
COGNITIVE	Pearson Correlation	1	.761**
	Sig (2-tailed)		.000
	N	122	122
PHYSIOLOGICAL	Pearson Correlation	.761**	1

	Sig (2-tailed)	.000	
	N	122	122

**Correlation is significant at the level 0.01 (2-tailed)

Table 4 shows there is an association between cognitive and physiological components. Correlation analysis shows that there is a high significant association between cognitive and physiological components (r=.761**) and (p=.000). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between cognitive and physiological components.

Table 5: Correlation between Physiological and Behavioural Components

		PHYSIOLOGICAL	BEHAVIOURAL
PHYSIOLOGICAL	Pearson Correlation	1	.795**
	Sig (2-tailed)		.000
	N	122	122
BEHAVIOURAL	Pearson Correlation	.795**	1
	Sig (2-tailed)	.000	
	N	122	122

**Correlation is significant at the level 0.01 (2-tailed)

Table 5 shows there is an association between physiological and behavioural components. Correlation analysis shows that there is a highly significant association between physiological and behavioural components (r=.795**) and (p=.000). According to Jackson (2015), the coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between physiological and behavioural components.

Table 6: Correlation between Behavioural and Cognitive Components

		BEHAVIOURAL	COGNITIVE
BEHAVIOURAL	Pearson Correlation	1	.770**
	Sig (2-tailed)		.000
	N	122	122
COGNITIVE	Pearson Correlation	.770**	1
	Sig (2-tailed)	.000	
	N	122	122

**Correlation is significant at the level 0.01 (2-tailed)

Table 6 shows there is an association between behavioural and cognitive components. Correlation analysis shows that there is a high significant association between behavioural and cognitive components (r=.770**)

and (p=.000). According to Jackson (2015), the coefficient is significant at the .05 level and a positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between behavioural and cognitive components.

CONCLUSION

Summary of Findings and Discussions

RQ1: How does physiological facet influence public speaking anxiety among undergraduates?

The findings indicate that undergraduates experience a range of physiological responses when confronted with public speaking situations. The most prominent reactions reported include an increased heartbeat rate and body tension, both of which often occur even before the speech begins. These symptoms suggest that the pre-speaking phase can be as stressful as the act of speaking itself.

Other physiological indicators, such as sweating and sensations of nausea, were experienced by some students, though less frequently. While these symptoms may not be universal, their occurrence reflects individual differences in anxiety expression. Many participants also reported difficulty maintaining physical relaxation throughout their speech, implying that the stress response tends to persist for the duration of the presentation rather than subsiding once it begins.

These findings are consistent with the work of Bodie (2010), who identified physiological arousal, particularly increased heart rate, as a defining component of public speaking anxiety. Similarly, Allen and Bourhis (1996) observed that muscular tension and autonomic responses are common across diverse speaking contexts, regardless of the speaker's experience level. The present results also resonate with Teovanović et al. (2020), who argued that such bodily reactions can both reflect and amplify the speaker's anxiety, creating a feedback loop that may hinder performance.

The physiological facet plays a significant role in shaping the public speaking experience for his study's samples. Even when cognitive preparedness is adequate, the persistence of bodily symptoms can interfere with confidence, fluency, and delivery. Addressing these physical responses through relaxation techniques, exposure-based practice, or biofeedback, may therefore be essential for effectively reducing public speaking anxiety.

RQ2: How does cognitive facet influence public speaking anxiety among undergraduates?

The cognitive facet of public speaking anxiety is reflected in the thoughts, beliefs, and mental processes that arise during pre-, middle- and post-speech activity. The results show that our samples frequently experience intrusive and self-critical thoughts, such as fear of forgetting their words, concerns about making mistakes, and apprehension about negative evaluation from the audience. These mental patterns often emerge in anticipation of speaking, but they can persist throughout the speech.

One of the more prominent concerns among participants is the possibility of losing their train of thought mid-speech, which aligns with the findings of MacIntyre and Thivierge (1995), who noted that anticipatory cognitive interference can be as debilitating as the physical symptoms of anxiety. Similarly, the fear of embarrassment and perceived judgement by the audience reflect the evaluative anxiety described by Daly et al. (1997), where speakers' self-appraisal becomes a significant determinant of their anxiety intensity.

Some students also reported difficulties maintaining concentration during their speech, which is consistent with Ayres et al. (1998), who found that cognitive overload caused by simultaneous speech delivery and self-monitoring can impair message clarity. Post-performance dissatisfaction, as expressed by several participants, further suggests that the cognitive dimension extends beyond the speaking event itself, influencing self-perception and willingness to engage in future speaking opportunities.

In line with Horwitz et al.'s (1986) conceptualisation of communication apprehension, these results underscore the role of negative self-talk and mental rehearsal of potential failure in sustaining high anxiety levels. Addressing these thought patterns through cognitive restructuring, mindfulness training, or gradual exposure may be essential in reducing public speaking anxiety and improving both self-confidence and performance outcomes.

RQ3: How does behavioural facet influence public speaking anxiety among undergraduates?

The behavioural facet of public speaking anxiety encompasses the outward, observable actions that reveal a speaker's nervousness. The findings indicate that undergraduates often display behaviours such as shaking hands, trembling voice, fidgeting, and difficulty maintaining eye contact with their audience. These behaviours not only reflect the internal state of anxiety but may also affect how the speaker is perceived, potentially reinforcing their nervousness through audience feedback.

The difficulty in sustaining eye contact suggests avoidance behaviour, a well-documented response in anxious speakers. As Beatty and Behnke (1991) observed, such avoidance can reduce perceived speaker credibility and weaken audience engagement. Similarly, voice tremors and physical shaking, as described by participants, mirror the behavioural manifestations reported in Ayres and Hopf's (1993) study, where physiological arousal translates directly into visible performance cues.

Fidgeting emerged as another common behaviour, aligning with the findings of Daly et al. (1997), who identified it as a coping mechanism for excess nervous energy. However, while these behaviours may momentarily ease internal tension, they can detract from delivery effectiveness and distract the audience. The interplay between these behavioural signs and cognitive anxiety is also notable, as self-awareness of such behaviours may heighten self-consciousness and perpetuate the anxiety cycle.

RQ4: Is there a relationship between physiological facets and all other components in public speaking anxiety?

The analysis revealed strong and significant positive correlations between the physiological facet of public speaking anxiety and the other measured components, cognitive and behavioural. The strength of these associations suggests that physiological symptoms are not isolated experiences; rather, they operate in tandem with mental processes and observable behaviours during public speaking situations.

The strongest relationship was observed between the physiological and behavioural facets, indicating that heightened physical arousal such as increased heart rate, muscle tension, or sweating, is often accompanied by visible actions like fidgeting, avoidance of eye contact, or voice tremors. This finding is consistent with Ayres and Hopf's (1993) observation that physical manifestations of anxiety often translate directly into performance behaviours, shaping how the speaker is perceived by an audience.

The correlation between the physiological and cognitive facets was also substantial. This supports the view presented by Beatty et al. (1998) that bodily arousal and anxiety-related thoughts can reinforce each other, creating a feedback loop where physical sensations heighten negative self-appraisal, which in turn exacerbates physiological responses. For instance, a speaker who notices their heart pounding may interpret it as a sign of impending failure, intensifying both physical tension and mental distress.

A similarly strong association emerged between cognitive and behavioural components, suggesting that anxiety-driven thought patterns influence not only how a speaker feels but also how they act in front of an audience. This is aligned with the theoretical model proposed by Schlenker and Leary (1982), which posits that self-presentational concerns lead to both mental preoccupation and performance-disruptive behaviours.

Implications and Suggestions for Future Research

Theoretical and Conceptual Implications

The findings correspond to the Communication Apprehension Theory by confirming that public speaking anxiety among undergraduate students is influenced by cognitive, behavioural and physiological facets. All

three of them were found to influence anxiety and correspond to the multidimensional nature proposed by the theory. Conceptually, the study confirms that these facets are interrelated. This is shown in Table 6 with a notable association between behavioural and cognitive components. This also suggests that physical arousal can lead to negative thought patterns, which then can trigger anxiety. The concept is also consistent with behavioural reactions like avoidance or apprehensive activities, which are the external manifestations of interior anxiety. When taken as a whole, these findings support the theoretical and conceptual models and demonstrate that in order to effectively reduce public speaking anxiety, interventions must address all three aspects.

Pedagogical Implications

For pedagogical implications, the intervention and mitigating strategies to help students overcome public speaking anxiety must be addressed from the stages of curriculum development to the implementation of classroom instructions and learning. Oral skills are necessary in preparing students for future careers through building confidence when speaking in front of an audience (Zainuddin et al, 2022). It is crucial for curriculum developers to incorporate learning syllabus that focus on industrial training and real-world scenarios. This helps to prepare students with the correct preparation, as they are aware of how to cater their academic abilities to classroom needs.

On the other hand, educators must also play their role in providing learning environments and opportunities that provide gradual exposure that assists students in regulating their responses to public speaking anxiety. Chaaban et al. (2021) mentioned that both educators and peers have a pivotal role in reducing anxiety while increasing self-assuredness through encouraging feedback and cooperative learning activities. Another study done by Melvin et al. (2019) in medical education discovered the need for further emphasis on clear expectations and guidelines when providing oral-presentation-related tasks. This should be a similar concern towards instructors and educators to fulfil similar needs in public speaking.

A positive learning environment that encourages students to participate would reduce the likelihood of developing speech anxiety. Taylor and Swanberg (2020) emphasised that feedback from lecturers and peers is crucial in restructuring oral presentation requirements. This helps in providing realistic expectations from the assessments and tasks that determine the students' anxiety level. Tóth (2024) proposed that paired presentations are beneficial, improving fluency and accuracy as well as reducing anxiety. Teaching strategies and approaches such as blended learning through the use of online platforms and technologies also assists students to feel more comfortable in preparing academic tasks. Nasri et al. (2019) proposed a frequent use of spoken languages that offer sufficient opportunities for establishing learners' speaking skills. It is vital to combine both pedagogical and technological approaches that encourage learning collaboration and positive feedback. According to Kho and Ting (2023), practical approaches with valuable feedback can be offered with different teaching methods such as structured feedback, topic-based assessment and self-assessment videos. The correct facilitation of instructional aids with technology is also critical in creating a supportive learning environment to reduce anxiety.

Suggestions for Future Research

In terms of future research suggestions, the framework of preventive measures for public speaking anxiety must be addressed within the development of teaching curriculum and learning instructions. The dynamics of various teaching strategies and instructional aids in helping students to overcome speaking anxiety must be explored to discover new intervention methods which also improve the quality of students' learning process and outcomes. Research on the relevant and correct types of technology applications as educational tools that can remain valuable for students in both academic and real-world settings should be conducted. Investigations on determining appropriate types of educator training programmes for improving classroom instructions should also be addressed. This paper concludes that future research should focus on learning curriculum, training programmes for instructors and classroom instructions, which hold great significance in providing breakthrough solutions for the physiological, cognitive and behavioural factors in public speaking anxiety.

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