ORIGINAL ARTICLE

Public Speaking Anxiety and Individual Factors Among Undergraduate Medical Students at a Public University in Malaysia

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ABSTRACT

Introduction: Public speaking skills are crucial skills for medical students, enabling effective communication in their academic and future professional roles. However, public speaking anxiety (PSA) can hinder their full potential and warrant early intervention. This study aims to determine the prevalence of PSA and associated factors among medical undergraduates at a Malaysian public university. **Materials and methods:** A cross-sectional study was conducted using a validated and reliable online self-administered questionnaire. The Personal Report of Public Speaking Anxiety (PRPSA) questionnaire was used to assess PSA level and other factors such as sociodemographic, English proficiency level, public speaking training and experience, and the CompACT questionnaire for psychological flexibility. Descriptive, bivariate, and multivariate analyses were performed. **Results:** The analysis included a total of 362 respondents. The prevalence of moderate and high PSA was 49.3%. There was a significant association between race, psychological flexibility, public speaking experience, public speaking training, and PSA ($p<0.05$). Multiple logistic regression analysis showed that having high to moderate PSA was significantly linked to being 19–21 years old (AOR: 1.70, 95% CI: 1.081-2.678) and never having had public speaking training (AOR: 1.865, 95% CI: 1.067–3.261). On the other hand, being more psychologically flexible was a protective factor (AOR: 0.944, 95% CI: 0.925–0.964). **Conclusion:** The high prevalence of PSA among medical students highlights the need for early recognition, screening, and intervention within the education system. Incorporating public speaking training and interventions to enhance psychological flexibility within the curriculum can be beneficial to prevent PSA for better-quality graduates.
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INTRODUCTION

Public speaking anxiety (PSA), or glossophobia, is the fear of speaking in public, categorised as social anxiety disorder or social phobia in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [1]. It is characterized by fear or anxiety about one or more social situations in which the individual is exposed to possible scrutiny by others, such as performing in front of others along with other criteria [1]. Feeling embarrassed, being judged, panic attack accompanied by physical symptoms such as dry mouth, palpitation, rapid breathing, nausea, trembling and mind going blank are common symptoms of PSA [2]. The severity of symptoms differs among individuals and, in extreme cases, may hinder the ability to perform daily activities. It may cause communication impairment that has personal, social, and emotional repercussions [3].

The World Health Organisation's World Mental Health Survey Initiative reported that the lifelong prevalence of public speaking anxiety was higher with 12% as compared to other type of anxiety such as generalized anxiety disorder (6%), panic disorder (5%), post-traumatic stress disorder (7%) and obsessive-compulsive disorder (2%)[4]. Several studies were carried out with tertiary education students to address the problem of PSA and its intervention [5–8]. The prevalence of PSA was found notably high among university students compared to the general population. Research among university students in Finland found that 50% had high PSA levels and 42% had moderate PSA levels [9]. Research conducted in Malaysia among undergraduate engineering students found that 40% experienced a high level of PSA, while 55% reported a moderate level of PSA [10]. Another study among UiTM undergraduates reported that 6.7% had high PSA level and 54.7% had moderate PSA level [7]. Among undergraduate medical students, a study in Karachi, India reported 58.7% of respondents had

high level of PSA[4]. Medical students were also found to have a higher percentage of moderate and high PSA levels compared to psychology undergraduate students at an Indonesian university [11]. As of this moment, there is no documented prevalence of PSA among medical students in Malaysia. The significant prevalence of PSA among future graduates and doctors, as demonstrated by these results, necessitates additional research in order to produce graduates of higher quality.

Effective public speaking requires the use of nonverbal cues such as body language, significant breathing, pauses, and silence, in addition to spoken language. As not all individuals born with effective public speaking, certain individuals must acquire this skill through practice and instruction. In the field of medicine, where there will be a constant interactions between healthcare providers, patients, and stakeholders through variety of mediums, the ability to communicate effectively and with confidence in public is ultimately crucial. The skill must be polished throughout education, particularly in medical school, to foster strong communication skills, less public speaking anxiety, and improved interpersonal skills. Throughout medical school, there were various learning activities and assessments that requires public speaking skills e.g. presentations in class, patient interactions, and examinations. Medical students were also expected to participate and communicate with the patient or community via face-to-face or social media for consultation, health talks, presentations at seminars or conferences, etc. These activities aimed to educate and prepare future medical professionals who possess a strong foundation of knowledge and the ability to effectively disseminate their knowledge. PSA can hinder the successful completion of tasks, hence impeding a student's capacity to reach their maximum potential. Consequently, this may lead to feelings of self-disappointment and a decrease in self-confidence [12]. Ultimately, these adverse consequences can affect the student's efficacy as a medical doctor, especially in terms of their ability to communicate effectively and gain the trust of others. Poor communication apprehension in PSA decreases students' readiness to assume leadership roles and adjust to new circumstances, thereby diminishing the quality of graduates in the sector [13] Early intervention in the educational system is critical since the ability to perform successfully in public speaking was regarded as a required employability skill and contributed to graduate recruitment [12]

Understanding the factors contributing to PSA is an important step to recognise the problem and a stepping stone for the education system to intervene in such issues to produce confident, high-self-esteem professionals. PSA is largely contributed by individual factors such as sociodemographic (e.g., age, gender, race), behavioural (psychological flexibility, negative self-perception), and skill (language proficiency, public speaking experience) [14–18].

PSA was significantly associated with age group and higher among those in lower age group such as 18-21 years old in previous study[16,19]. Most of the studies showed that there were no gender difference in PSA in general and student population [10,20,21] Despite limited studies on the impact of racial disparities in PSA, particularly within Malaysia's multicultural population, earlier studies revealed that African-American students had lower PSA than Caucasian and Asian students [22]. Psychological flexibility is defined as the ability to recognise and adapt to situational demands, shift mindsets or behavioural repertoires when they compromise personal or social functioning, maintain balance in important life domains, and be aware, open, and committed to values-based behaviours [23]. Greater psychological flexibility plays a resilient factor and is consistently related to better psychological health and quality of life. It was also found to be negatively associated with depression and anxiety among both healthy people and those who had mental illnesses [24] Lower psychological flexibility was found to be associated with lower distress tolerance and a higher PSA among college students [25]. Language proficiency is also one of the factor in PSA, as students are required to communicate in a language other than their native tongue [15,26]. Previous public speaking training and experience was also positively associated with lower risk of PSA due to skills acquired through it [14,27,28]. While there has been some research on PSA among graduates, there is limited knowledge regarding this occurrence among undergraduate medical students in Malaysia. This study aims to determine the prevalence of public speaking anxiety and associated factors among medical students at a public university in Malaysia.

MATERIALS AND METHODS

This is a cross-sectional study conducted among undergraduate medical students (first to fifth year) at a public university in Malaysia from 23 December 2021 to 20 June 2022. The sample size was calculated based on the two population proportions formula by Lemeshow and Lwanga (1990), with an estimated non-response rate of 20% and a final sample size of 410. A stratified simple random sampling method proportionate to size was performed to select the respondent. The medical students were stratified according to the year of study and sampled proportionate to size based on sample size. Medical students from year 1 to year 5 were all included in this study, while students with generalised anxiety were excluded. All respondents were provided with a written informed consent form before their participation. There were no credits or payments awarded for their participation, as it was entirely voluntary.

Study instruments

A self-administered validated and reliable questionnaire consists of four section were distributed online to the respondents.

Respondents' characteristic and background

The characteristics of respondents based on age, gender, and ethnicity were recorded. The respondent's English proficiency in writing and speaking was recorded based on the Malaysian University English Test (MUET) band result and categorised into satisfactory (bands 3 and 4) and proficient (bands 5 and 6). Training and experience in public speaking were assessed with yes-or-no questions.

Comprehensive assessment of Acceptance and Commitment Therapy processes (CompACT) questionnaire

Psychological flexibility of respondents was assessed using adopted, validated and reliable questionnaire named Comprehensive Assessment of Acceptance and Commitment Therapy Process (CompACT) (Cronbach alpha: 0.8) (41). It consist of a 23-items of a self-reported questionnaire comprises of three subscales including the openness to experience (CompACT-OE), behavioural awareness (CompACT-BA), and valued actions (CompACT-VA). The scale is ranging from 0 (strongly disagree) to 6 (strongly agree). The score is calculated as the total of the three subcomponent scores which range from 0 to 138. A higher score determine a higher psychological flexibility.

Personal Report of Public Speaking Anxiety (PRPSA)

The level of PSA was assessed using the Personal Report of Public Speaking Anxiety (PRPSA) questionnaire with a 34-item scale, which was adapted from a previous study [29]. A 5-item Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), rated each item. The total score indicates the level of PSA as low (below 98), moderate (98 to 131), and high (above 131).

Data analysis

The data obtained were analyzed using IBM SPSS version 27. Descriptive analyses were performed for all variables. Mann Whitney U test was used to determine association between CompACT score and the outcome. Chi quare test was performed on other variable to determine association between independent variable and moderate to high PSA. Multiple logistic regression analysis was performed to determine predictors of moderate to high PSA. Method "ENTER", "FORWARD" and "BACKWARD" were used to demonstrate the most parsimonious model. A model with the highest adjusted R square was chosen for the final model. Assumptions for multiple logistic regression were checked. The significant value was set at 0.05.

Ethical approval

Ethical approval was obtained from the Ethics Committee for Research Involving Human Subjects of Universiti Putra Malaysia (JKEUPM) with reference number JKEUPM-2022-174, and permissions to conduct the study were obtained from Dean of Faculty.

RESULTS

Respondents' characteristic

A total of 362 respondents responded to the questionnaire, with a response rate of 97.31%. Table 1 reported the background profile of the respondents. There was a similar age distribution among respondents. The majority of respondents were female (68.2%) and Malay (53.5%), had satisfactory English proficiency (50.7%), and had experience in public speaking (60%). Most of the respondents have no prior training in public speaking (79.4%). Psychological flexibility assessed by the CompACT score reported a median score of 72 with an interquartile range of 14. (Refer Table I)

Table I: Respondents characteristic

Variable	Mean (SD)	n	%
Age group (years)	22.0(1.59)		
19- 21		147	41.4
22-26		208	58.6
Gender			
Male		113	31.8
Female		242	68.2
Race			
Malay		190	53.5
Chinese		78	22.0
India		76	21.4
Others		11	3.1
English Proficiency (MUET)			
Satisfactory (Band 3 & 4)		180	50.7
Proficent (Band 5 & 6)		175	49.2
Public speaking experience			
Yes		213	60.0
No		142	40.0
Public speaking training			
Yes		73	20.6
No		282	79.4
CompAct Score	72(14)*		

Note : * Median (IQR)

Prevalence of Public Speaking Anxiety

The prevalence of public speaking anxiety among medical students which in category moderate and high is 49.3 %. (Refer Table II)

Table II : Prevalence of public speaking anxiety

PRPSA Category	n	%
Low	180	50.7
Moderate to High	175	49.3

Factors associated with moderate to high public speaking anxiety

There was a significant association between race, public speaking experience, public speaking training, and

psychological flexibility level (p<0.033), as reported in Table III. Malay respondents had a significantly higher percentage of having PSA (53.7%) compared to other races. Respondents who did not have public speaking experience reported a significantly higher percentage of having PSA (57.8%) compared to those who had experience. Similarly, those who did not receive public speaking training were significantly associated with a higher percentage of PSA (52.5%) compared to those who received training (p = 0.018). Lower psychological flexibility indicated a significant association with moderate to high PSA (p<0.01). There was no association between age, gender, or English language proficiency and PSA. (Refer Table III)

Table III: Factors associated with public speaking among medical students

Variable	Public Speaking Anxiety Category		χ^2 stat (df)	P value
	Low	Moderate to High		
Age group (years)				
19- 21	66 (44.9)	81 (55.1)	3.384 (1)	0.066
22-26	114 (54.8)	94 (45.2)		
Gender				
Male	63 (55.8)	50 (44.2	1.690 (1)	0.194
Female	117 (48.3)	125 (51.7)		
Race				
Malay	88 (46.3)	102 (53.7)	8.704 (3)	0.033
Chinese	41(52.6%)	37(47.4%)		
India	48(63.2)	28 (36.8)		
Others	3 (27.3)	8 (72.7)		
English Proficiency (MUET)				
Satisfactory (Band 3 & 4)	122(48.8)	128(51.2)	1.226(1)	0.268
Proficent (Band 5 & 6)	58(55.2)	47(44.8)		
Public speaking experience				
Yes	120 (56.34)	93 (43.66)	6.762(1)	0.009
No	60 (42.25)	82 (57.75)		
Public speaking training				
Yes	46 (63.0)	27 (37.0)	5.571(1)	0.018
No	134 (47.5)	148 (52.5)		
CompAct Score (Mean Rank)	208.44	146.69	-5.673*	<0.001

Note: * Z value. Mann U Whitney test

Predictors of public speaking anxiety

From multiple logistic regression analysis, predictors of having moderate to high PSA were age group, public speaking training, and psychological flexibility as measured by the CompACT score (Table IV). The age group of 19–21 years old is significantly 1.7 times more likely to have moderate and high PSA (AOR: 1.70, 95%CI: 1.081-2.678) compared to the age group of 22–26 years old. Those with no public speaking training are significantly 1.865 times more likely to have moderate to high PSA compared to those who had public speaking training before (AOR: 1.865, 95%CI: 1.067–3.261). An increase in one CompACT score, which may increase psychological flexibility, made 5% less likely to have moderate to high PSA (AOR: 0.944, 95%CI: 0.925–0.964). There was no multicollinearity or interaction between variables in the study. The overall model fit was good by the Hosmer and Lemeshow tests, and the area under the curve was 31.1%. The model explained 14% of the variation in PSA. (Refer Table IV)

Table IV: Predictors of moderate to high public speaking anxiety

Variable	Coefficient	AOR	(95% CI OR)	P value
Constant	3.057	33.340		<0.001
Age group				
19- 21 22-26 (Ref)	0.533	1.702	1.081-2.678	0.022
Public speaking training				
No Yes (Ref)	0.623	1.865	1.067, 3.261	0.029
CompAct Score	-0.057	0.944	0.925, 0.964	<0.001

DISCUSSION

The study has highlighted the prevalence of moderate to high PSA, with 49.3% among undergraduate medical students in this study population. The prevalence was slightly lower compared to the study conducted among medical undergraduates in Karachi, India, which

reported 58.7%[4]. The prevalence was also lower compared to undergraduates in software engineering and other faculty at Malaysian University [7,10]. Despite similar measurement tool to measure PSA across studies, the difference can be contributed by the respondents' background and characteristics. Although there was limited evidence on prevalence of PSA among undergraduate medical students in Malaysia for equal comparison, this prevalence can be considered as high since half of the respondents experienced PSA which may affect the process of learning in university and have impact later in their medical career.

The age group was found to be a significant predictor in this study. The lower age group of 19–21 years old was 1.7 times more likely to experience PSA compared to those aged 22–26 years. This finding is consistent with a previous study conducted among undergraduate medical students in Brazil, which reported PSA was significantly higher among respondents aged 22 and below [30]. Similarly, younger age also reported to be the significant factor with PSA in studies conducted in Japan and Libya [31,32]. This relationship between age and PSA could be attributed to the adjustment to learning processes at the university level. Younger students in the 19–21 age group may not be familiar with the learning tasks in university that involve public speaking, such as presentations or health talks. In contrast, older students in the 22–26 age group might have gained more experience and developed better anxiety management skills through repeated exposure during their educational journey.

The current study has identified public speaking training as a significant predictor of PSA. Individuals who have never received public speaking training are 1.8 times more likely to experience moderate to high levels of PSA than those who have. Public speaking training such as language, strategies for managing anxiety, etc. can help enhance speech delivery abilities [33]. Specifically, traditional public speaking training which includes curriculum on speech design and delivery, approach focusing on vocal mechanism and mastering vocal characteristic such as pitch, volume, rate, and quality were found to be effective in improving self-perceived confidence, competence and apprehension related to public speaking [34]. Speech courses that involve gradual repeated exposure therapy, cognitive modification of negative attitudes, and realistic thinking by acknowledging challenges through a strengths-based lens have been shown to reduce PSA in previous studies [35]. Virtual reality-based public speaking training, involving gradual exposure, has been proven to significantly reduce PSA and maintain this improvement even one year after the intervention [36,37]. Public speaking training and practical can be incorporated into various academic and non-academic activities within medical schools, such as class presentations, patient-doctor interviews, debates, and community health promotion and engagement.

In this present study, psychological flexibility plays a crucial role as a protective factor. Individuals with higher psychological flexibility had a lower risk of having moderate-to-high PSA. This finding aligns with a previous study conducted among college students in Finland, which reported a relationship between psychological flexibility and PSA [25] Psychological flexibility is considered as key aspect of health and wellbeing as it allows individual to effectively navigate challenges, cope with stress and pursue meaningful goals. It involves the ability to adapt and adjust one's thought, emotion and behaviors depending on situation. This includes recognizing and accepting the present moment, shifting perspectives or strategies when necessary, maintaining balance in different experience, and aligning actions with personal values [38]. Conversely, individuals with low psychological flexibility tend to struggle with tolerating difficulties and are more prone to avoiding circumstances that may trigger their anxiety [39]. Furthermore, psychological flexibility has been identified as a significant mediator between academic emotions and study pace among university students, contributing to academic achievement [40] In the context of medical students, psychological flexibility has been observed as a protective factor against conditions such as obsessive-compulsive disorder, interpersonal sensitivity, and depression symptoms. It also serves as a mediating factor between self-esteem and psychological symptoms [41]. It is generally associated with positive outcomes such as improved mental health, resilience, and overall life satisfaction, which will be beneficial for future medical professionals. Having psychological flexibility is ultimately important in developing public speaking skills, as the individual will better adapt to the situation, which can reduce the risk of PSA. Interventions such as acceptance and commitment therapy have been found to be effective in enhancing psychological flexibility and reducing public speaking anxiety, as demonstrated by previous research [42]. More recent approaches involving virtual reality and Acceptance and Commitment Therapy have also shown significant effectiveness in improving psychological flexibility and reducing PSA [36]

This study highlights the significance of racial difference as a contributing factor to PSA, particularly in a multiracial nation like Malaysia. Bivariate analysis revealed a significantly higher percentage of Malay medical students experiencing moderate to high levels of PSA. Although there is very limited evidence of ethnicity's role in PSA except for one previously found that African Americans had a lower PSA compared to Caucasian and Asian students, this finding is worth exploring [43] This might be explained by difference in language proficiency among races which affect the confidence in public speaking, as previously noted in another study [44]. Therefore, additional research in

this area is needed to better comprehend the complex interplay between race, cultural factors, language proficiency and the experience of PSA.

The conduct of the present study at a single university in Malaysia's central region may limit the generalizability of its findings to other undergraduate student populations, including those at public or private institutions. Despite these limitations, this study represents a significant contribution to the field, considering the scarcity of research on PSA and its determining factors among medical students in Malaysia and global populations. For future studies, the involvement of other universities in investigating the prevalence of PSA and factors can be implemented to better represent the population. A qualitative research approach could prove valuable in gaining a deeper understanding of the barriers to and coping mechanisms for PSA. Additional factors, such as social and institutional aspects, can be included in future studies to provide a more comprehensive and holistic understanding of the PSA phenomenon among students in tertiary education.

In this study, PSA was found to be more prevalent among younger age groups, which further highlighted the importance of intervening with the issue at an earlier stage, even prior to university entrance. This requires proactive measures both at the individual and educational system levels, as it can support students currently struggling with this condition and prevent and prepare for better communication among future doctors. At the individual level, raising awareness of PSA and taking preventive measures to manage it can be highly beneficial. Students can equip themselves with public speaking training and skill development, helping them gain the confidence and abilities needed to effectively address PSA. Training in public speaking and participating frequently in public speaking activities were proven to be beneficial in helping with PSA[33,45]. It is essential for the education system to acknowledge the issue of PSA among students and provide a structured approach to handle and prevent the phenomenon in the curriculum at an earlier stage. Lecturers can identify students with PSA in class by using available tools like PRPSA, which enables early intervention and enhances students' self-esteem and academic performance. Assessment of psychological flexibility level using CompACT among students either during the entrance to medical school or in the early stages of a medical student's learning journey may also be beneficial as it allows for timely intervention not only towards PSA but also other consequences such as burnout and mental health [46,47]

The education system, especially universities, should include public speaking-related training and skills in the curriculum to further increase graduates' quality. Various approaches to intervention or training, such as acceptance and commitment therapy, cognitive behavioral therapy, and systematic desensitization delivered through virtual reality or face-to-face were previously studied to improve PSA conditions [37,45,48]. A meta-analysis of randomised controlled trials found that 30 psychological interventions were effective in reducing PSA in the short and long term after intervention. The study also highlighted that both technology-delivered and traditional face-to-face interventions were equally effective in reducing PSA [49] This is an important implication for the education system, clinicians, or researchers to be able to develop and deliver interventions via various mediums and may provide individual intervention plans and increase intervention uptake among the general population and students.

CONCLUSION

The prevalence of moderate to high PSA among medical undergraduates was 49.8%, which was slightly lower compared to previous studies conducted among the same population. Nevertheless, this finding is significant, given the limited availability of studies in Malaysia and globally for comparison. The predictors of moderate to high PSA were identified as belonging to a younger age group, a lack of prior public speaking training, and lower psychological flexibility. To address this issue, there is a clear need for proactive measures from the education system and providers, with a focus on early intervention to enhance student outcomes. The introduction of public speaking training and courses at an earlier stage or during the initial year of medical school may aid in skill development and reduce the risk of PSA. Additionally, efforts to enhance psychological flexibility among medical students are worth considering, as they may prove beneficial in reducing the likelihood of PSA.

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REFERENCES

1. American Psychiatric Association. Diagnostic Criteria and Codes:Social Anxiety Disorder (Social Phobia). Diagnostic and Statistical Manual of Mental Disorder (DSM-5)™. 5th ed., American Psychiatric Association; 2013, p. 202–8.
2. Li T. Analysis on the Causes and Treatment of Public Speaking Anxiety. Advances in Social Science, Education and Humanities Research 2020;466. https://doi.org/10.2991/assehr.k.200826.103.
3. Ferreira Marinho AC, Mesquita de Medeiros A, Cфrtes Gama AC, Caldas Teixeira L. Fear of Public Speaking: Perception of College Students and Correlates. Journal of Voice 2017;31:127.e7-127.

e11. https://doi.org/10.1016/j.jvoice.2015.12.012.
4. Khan F, Saqib Shafique M, Ali A. Glossophobia among Undergraduate Students of Government Medical Colleges in Karachi. International Journal of Research 2015;2. Available from: https://journals.pen2print.org/index.php/ijr/.
5. Lingaiah J, Binti Ishak SN. Public Speaking Anxiety in English Among ACCA Foundation in Accountancy Students in a Malaysian Private University: A Case Study. International Journal of Research and Review 2023;10:98–109. https://doi.org/10.52403/ijrr.20230716.
6. Kelsen BA. Exploring public speaking anxiety and personal disposition in EFL presentations. Learn Individ Differ 2019;73:92–101. https://doi.org/10.1016/j.lindif.2019.05.003.
7. Mohd Naser NA, Mat Isa IA. Public Speaking Anxiety in Oral Presentation Class among Undergraduates. International Journal of Academic Research in Business and Social Sciences 2021;11. https://doi.org/10.6007/ijarbss/v11-i10/11456.
8. AlShaibani G, Fong YA, Ravindran L, K. S. Al-Shaibani G. Oral Presentation Anxiety Among Undergraduate Malaysian Chinese Students in Private University. Asean Journal of Teaching and Learning in Higher Education 2022;14. https://doi.org/10.17576/ajtlhe.1401.2022.06.
9. Gallego A, McHugh L, Penttonen M, Lappalainen R. Measuring Public Speaking Anxiety: Self-report, behavioral, and physiological. Behav Modif 2022;46:782–98. https://doi.org/10.1177/0145445521994308.
10. Yau A, Tse H. Glossophobia of University Students in Malaysia. International Journal of Asian Social Science 2005;2:2061–73. Available from: https://archive.aessweb.com/index.php/5007/article/view/2374.
11. Gufriyansyah R, Khairani M. An Experiment of Public Speaking Anxiety on College Students, Scitepress; 2020, p. 5–11. https://doi.org/10.5220/0009433900050011.
12. Ibrahim O, Devesh S. Implication of public speaking anxiety on the employability of Omani graduates. Journal of Teaching and Learning for Graduate Employability 2019;10:122–35. https://doi.org/10.21153/jtlge2019vol10no2art861.
13. Brian D. B., Timothy T. B., Katherine C. R. Communication Apprehension: A Barrier to Students' Leadership, Adaptability, and Multicultural Appreciation. AMLE, 12, 158–172,. Academy of Management Learning and Education 2013;12:158–72. https://doi.org/10.5465/amle.2011.0127
14. Uddin Raja F, Raja F. Anxiety Level in Students of Public Speaking: Causes and Remedies. Journal of Education and Educational Development 2017;4. Available from: https://files.eric.ed.gov/fulltext/EJ1161521.pdf.
15. Hasibuan SH, Manurung ID, Ekayati R. Investigating Public Speaking Anxiety Factors among EFL University Students through Online Learning. Applied Research on English Language 2022;11:21–38. https://doi.org/10.22108/are.2021.130092.1767.
16. Naz H, Ali N, Aziz S. A study to Evaluate Anxiety of Public Speaking in Young Adults. International Journal of Scientific Engineering and Applied Science (IJSEAS) 2021. Available from: https://ijseas.com/volume7/v7i8/IJSEAS202108113.pdf.
17. Rahman Hz BI. Exploring Gender Differences in Public Speaking Anxiety. Sawwa: Jurnal Studi Gender 2022;17:247–66. https://doi.org/10.21580/sa.v17i2.14295.
18. Ferreira Marinho AC, Mesquita de Medeiros A, Cфrtes Gama AC, Caldas Teixeira L. Fear of Public Speaking: Perception of College Students and Correlates. Journal of Voice 2017;31:127.e7-127.e11. https://doi.org/10.1016/j.jvoice.2015.12.012.
19. Gaibani A, Elmenfi F. The Role of Gender in Influencing Public Speaking Anxiety. International Journal of Gender and Women's Studies 2014;2:105–16. Available from: http://www.eajournals.org/wp-content/uploads/The-Role-of-Gender-in-Influencing-Public-Speaking-Anxiety.pdf
20. Fauziyah A, Wati S, Solihati TA. Gender Difference in Speaking Anxiety. Etnolingual 2021;6:1–13. https://doi.org/10.20473/etno.v4i2.34064.
21. Pristiyaputri AE, Afiqoh M, Jauhari MA, Al Afghani MJ, Kurniasih K. The Differences of Speaking Anxiety Across Academic Levels and Gender. The Journal of English Literacy Education: The Teaching and Learning of English as a Foreign Language 2023;10:63–80. https://doi.org/10.36706/jele.v10i1.20292.
22. Larochelle JM, Karpinski AC. Racial differences in communication apprehension and interprofessional socialization in fourth-year doctor of pharmacy students. Am J Pharm Educ 2016;80. https://doi.org/10.5688/ajpe8018.
23. Kashdan TB, Rottenberg J. Psychological flexibility as a fundamental aspect of health. Clin Psychol Rev 2010;30:865–78. https://doi.org/10.1016/j.cpr.2010.03.001.
24. McCracken LM, Buhrman M, Badinlou F, Brocki KC. Health, well-being, and persisting symptoms in the pandemic: What is the role of psychological flexibility? J Contextual Behav Sci 2022;26:187–92. https://doi.org/10.1016/j.jcbs.2022.10.003.
25. Gallego A, McHugh L, Villatte M, Lappalainen R. Examining the relationship between public speaking anxiety, distress tolerance and psychological flexibility. J Contextual Behav Sci 2020;16:128–33. https://doi.org/10.1016/j.jcbs.2020.04.003.
26. Dansieh SA, Owusu E, Seidu GA. Glossophobia: The Fear of Public Speaking in ESL Students in Ghana. Language Teaching 2021;1:p22. https://doi.org/10.30560/lt.v1n1p22.

27. Hancock AB, Stone MD, Brundage SB, Zeigler MT. Public Speaking Attitudes: Does Curriculum Make a Difference? Journal of Voice 2010;24:302–7. https://doi.org/10.1016/j.jvoice.2008.09.007.
28. Gaibani AA. Determining the Role Of English Language Competece in Influncing the Public Speaking Anxiety of International Post Graduate Students at the University of Utara, Malaysia. International Journal of Learning and Development 2014;4:111. https://doi.org/10.5296/ijld.v4i2.4419.
29. McCroskey JC. Measures of communication-bound anxiety. Speech Monographs 1970;37:269–77. https://doi.org/https://doi.org/10.1080/03637757009375677.
30. Rosa Rossi-Barbosa LA, Alves Carvalho Laube K, Camargo JF, Prates Caldeira A, Rossi Barbosa-Medeiros M. Self-statements of medical students about the fear of speaking in public. Bionorte 2023;12:363–73. https://doi.org/10.47822/bn.v12i1.682.
31. Furukawa TA, Watanabe N, Kinoshita Y, Kinoshita K, Sasaki T, Nishida A, et al. Public speaking fears and their correlates among 17,615 Japanese adolescents. Asia-Pacific Psychiatry 2014;6:99–104. https://doi.org/10.1111/j.1758-5872.2012.00184.x.
32. Gaibani A. Age as an Affective Factor in Influencing Public Speaking Anxiety of English Language Learners at Omar Al-Mukhtar University. Advances in Language and Literary Studies 2016;7. https://doi.org/10.7575/aiac.alls.v.7n.2p.179.
33. Nie J, Torabi S, Peck C, Niles H, Encandela J. Teaching public speaking to medical students. Clin Teach 2020;17:1–6. https://doi.org/https://doi.org/10.1111/tct.13153.
34. Hancock AB, Stone MD, Brundage SB, Zeigler MT. Public Speaking Attitudes: Does Curriculum Make a Difference? Journal of Voice 2010;24:302–7. https://doi.org/10.1016/j.jvoice.2008.09.007.
35. Hunter KM, Westwick JN, Haleta LL. Assessing Success: The Impacts of a Fundamentals of Speech Course on Decreasing Public Speaking Anxiety. Commun Educ 2014;63:124–35. https://doi.org/10.1080/03634523.2013.875213.
36. Gorinelli S, Gallego A, Lappalainen P, Lappalainen R. Virtual reality acceptance and commitment therapy intervention for social and public speaking anxiety: A randomized controlled trial. J Contextual Behav Sci 2023;28:289–99. https://doi.org/10.1016/j.jcbs.2023.05.004.
37. Takac M, Collett J, Blom KJ, Conduit R, Rehm I, De Foe A. Public speaking anxiety decreases within repeated virtual reality training sessions. PLoS One 2019;14. https://doi.org/10.1371/journal.pone.0216288.
38. Kashdan TB, Rottenberg J. Psychological flexibility as a fundamental aspect of health. Clin Psychol Rev 2010;30:865–78. https://doi.org/10.1016/j.cpr.2010.03.001.
39. Palladino CL, Ange B, Richardson DS, Casillas R, Decker M, Gillies RA, et al. Measuring psychological flexibility in medical students and residents: A psychometric analysis. Med Educ Online 2013;18. https://doi.org/10.3402/meo.v18i0.20932.
40. Asikainen H, Hailikari T, Mattsson M. The interplay between academic emotions, psychological flexibility and self-regulation as predictors of academic achievement. J Furth High Educ 2018;42:439–53. https://doi.org/10.1080/0309877X.2017.1281889.
41. Guo J, Huang X, Zheng A, Chen W, Lei Z, Tang C, et al. The Influence of Self-Esteem and Psychological Flexibility on Medical College Students' Mental Health: A Cross-Sectional Study. Front Psychiatry 2022;13. https://doi.org/10.3389/fpsyt.2022.836956.
42. Hazavei F, Robatmili S. The Effect of "Acceptance and Commitment Therapy" on Psychological Flexibility and Behavioral Inhibition of Adolescents with Social Anxiety Disorder. Journal of Health Promotion Management 2020;8. https://doi.org/10.21859/jhpm-08603.
43. Ningsih S, Putri Rahayu A, Asrawijaya E, Kusumawati I, Rohani T, Adiyono . The Correlation of Ethnicities and Students' Speaking Anxiety in Online English Learning. Proceedings of the 4th International Conference on Innovation in Education (ICoIE 4 2022) - Digital Era Education After the Pandemic, INSTICC; 2022, p. 402–8. https://doi.org/10.5220/0012201700003738.
44. Mbato CL. Confronting Cultural Barriers in Public Speaking through Multiple Learning Strategies: A Case of Indonesian EFL Learners. Humaniora 2020;32:51–67. https://doi.org/10.22146/jh.v32i1.53380.
45. Spieler C, Miltenberger R. Using awareness training to decrease nervous habits during public speaking. J Appl Behav Anal 2017;50:38–47. https://doi.org/10.1002/jaba.362.
46. Szarko AJ, Houmanfar RA, Smith GS, Jacobs NN, Smith BM, Assemi K, et al. Impact of Acceptance and Commitment Training on psychological flexibility and burnout in medical education. J Contextual Behav Sci 2022;23:190–9. https://doi.org/10.1016/j.jcbs.2022.02.004.
47. Marais GAB, Lantheaume S, Fiault R, Shankland R. Mindfulness-based programs improve psychological flexibility, mental health, well-being, and time management in academics. Eur J Investig Health Psychol Educ 2020;10:1035–50. https://doi.org/10.3390/ejihpe10040073.
48. Lestari AI, Noviekayati I, Saragih S. The Effectiveness of Public Speaking Training with Cognitive Behavioral Therapy for Public Speaking Anxiety among both Gender. GUIDENA: Jurnal Ilmu Pendidikan, Psikologi, Bimbingan Dan

Konseling 2017;7. https://doi.org/10.24127/gdn.v7i2.1050.
49. Ebrahimi O V., Pallesen S, Kenter RMF, Nordgreen T. Psychological interventions for the Fear of Public Speaking: A meta-analysis. Front Psychol 2019;10. https://doi.org/10.3389/fpsyg.2019.00488.