

Demographic and Academic Effects on Research Anxiety among Graduate Students: An Interactive Predictive Study

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ABSTRACT:

Background: Research anxiety represents a common problem which graduate students experience because it negatively impacts their ability to study and conduct research. Demographic and academic factors are often implicated; however, their combined main and interaction effects remain insufficiently examined, particularly within psychology graduate programs.

Objective: The study aimed to determine whether research anxiety varies between different demographic groups and academic backgrounds while studying how gender, academic stage, specialization, academic year, and employment status interact with each other to predict research anxiety among graduate students.

Methods: The researchers used a quantitative cross-sectional analytical design for their study. gathered information from 273 psychology graduate students through their self-administered online questionnaire. Anxiety Rating Scale (RARS) served as the tool to evaluate research anxiety among the participants. used IBM SPSS Statistics (Version 26) to conduct their analysis through descriptive statistics factorial ANOVA and multiple regression analysis.

Results: Research anxiety exhibited marked variations according to gender ($F = 24.87, p < .001$), academic stage ($F = 7.29, p < .01$), and academic year ($F = 7.31, p < .001$). Male students reported higher levels of anxiety than females. Research anxiety decreased with higher academic stages but fourth-year students experienced a notable increase in anxiety levels. found no significant effects from specialization ($F = 0.69, p = .560$) or employment status ($F = 0.29, p = .593$) on outcomes. Multiple regression analysis demonstrated that gender ($\beta = -0.114, p = .008$), academic stage (Master: $\beta =$

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–0.110, $p < .001$; PhD: $\beta = -0.213$, $p < .001$), and fourth academic year ($\beta = 0.188$, $p < .001$) were significant predictors, explaining 14.7% of the variance in research anxiety. **Conclusion:** Demographic and academic factors play a significant role in shaping research anxiety among graduate students. shows that first-year students require special support because of their anxiety while studying. team proposes using specific support programs to help students who face anxiety issues during their first and last years of study.

Keywords: Research anxiety; Graduate students; Demographic variables; Academic variables; Factorial ANOVA; Multiple regression; Predictors; Psychology students.

1. INTRODUCTION

Research is considered an indispensable tool for human development and serves as the primary bedrock for addressing complex societal challenges. In tertiary education, graduate students are required to conduct independent inquiry to develop essential critical thinking skills, yet this process is frequently hindered by a pervasive phenomenon known as research anxiety (MOLAGUN, 2006). Research anxiety is defined as the experience of fear and uncertainty related to the production of scientific knowledge and is characterized as a multidimensional mechanism that includes library, statistical, composition, and research process anxieties (Eteng-Uket & Njaka, 2023). The concept describes a multi-dimensional framework which includes all cognitive, emotional, and behavioral reactions people show during their research activities that involve writing academic papers and analyzing research data and making research method choices. The existing evidence demonstrates that academic-related anxiety impacts many university students around the world because between 30 to 50 percent of graduate students display moderate to high academic and research-related stress according to estimates from (McCabe et al., 2024; Pascoe et al., 2020).

Graduate students in higher education need to perform independent research work to develop their critical thinking abilities, but research anxiety which affects all students, creates challenges for them to complete their research work (David & Hill, 2021; Salmi, 2001).

Research anxiety exists as a fear and uncertainty experience which scientists face when they try to create new scientific knowledge. The condition consists of several anxiety types which include people being anxious about library usage and statistical analysis and writing and their research activities. The condition consists of several anxiety types which include people being anxious about library usage and statistical analysis and writing and their research activities (Gustafsson & Hagström, 2024; Mallow, 2006; Zhenlei et al., 2024).

The experience of anxiety in individuals develops through the influence of demographic factors which include their gender and age. Research studies indicate that male students experience research anxiety at lower levels than female students while age progression creates differences in statistical anxiety. The academic elements of learning capacity and research self-belief and research methods course difficulty perception serve as primary factors which determine student distress levels (Farsani & Ghorbani, 2024; Papanastasiou & Zembylas, 2008).

Research anxiety exists as a prevalent condition among graduate students which represents the most common form of their academic experience. Landmark qualitative research involving 6,000 students found that 75 to 85 percent of participants described their initial response to research in terms of "fear" (Mellon, 1986). The intensive academic requirements of graduate programs distress among students which a study of 100 United States schools of education found because students needed to finish an average of 4.48 research methods courses while some schools

needed students to study up to 11 courses (Group, 2002). The academic burden causes students to postpone their research class enrollment because they want to escape their feelings of dread which leads to students missing academic targets and taking extra time to finish their degrees (Lin, 2026; Okon, 2024). People experience anxiety at different levels based on their particular combination of demographic traits and non-cognitive skills, Age and Apprehension: The study found Ralston et al. (2016) that age does not predict general research anxiety but shows a significant link to statistics fear because younger students experience more anxiety about quantitative data and its usage.

Research anxiety reaches its highest level through demographic variables together with non-cognitive psychological traits which interact with each other. Onwuegbuzie (2013) established that age affects different anxiety types because younger students show greater statistical fear than their older counterparts. The trait Grit which Duckworth (2016) describes as the combination of passion with perseverance for pursuing long-term objectives has developed into a key forecasting element according to research by Eteng-Uket and Njaka (2023) which found that grit accounts for 6.1% of research anxiety variation between individuals. Thomson and Kamler (2010) claim that the distress experienced by doctoral students arises from their need to conduct scholarly Identity Work which requires them to step into academic space and display their written scholarly work to others who will assess it. Students experience their transition during the process when they reach a state of Liminal State which Szkudlarek (2010) defines as a period of educational change that brings both confusion and social separation while students stay within university territory but remain outside academic functions.

The systematic review conducted by Sverdlik et al. (2018) studied doctoral students in various academic fields. The study showed that anxiety levels change throughout graduate education, with early-stage students facing more uncertainty and anxiety, while students in advanced stages deal with increasing pressure from thesis completion and academic requirements. Goto and Kusumi (2015) conducted research about statistics anxiety among

European university students. The sample included students enrolled in research-related courses and the results showed that statistics anxiety significantly predicted lower academic achievement and engagement which highlights how research-related anxiety impacts learning outcomes. Zhou et al. (2022) conducted a study that investigated academic stress and mental health issues among university students across multiple countries. The study found that anxiety levels varied across cultural contexts but consistently showed significant associations with academic demands and psychological distress. The study conducted by Kandasamy et al. (2025) found that 9.9% of university students in Saudi Arabia displayed symptoms of clinically relevant anxiety which demonstrates that academic anxiety continues to threaten students throughout various regional contexts despite differences in prevalence rates.

Also, The systematic review conducted by Pascoe et al. (2020) showed that academic stress acts as a strong predictor which leads to both academic decline and mental health problems. Macher et al. (2015) found that students with statistics anxiety face difficulties in learning and succeeding during their research courses which shows how anxiety affects the whole academic system in graduate education. Research studies which examined gender differences found that female students experience more anxiousness about academic situations than their male counterparts according to some studies which found the opposite results and others which reported no difference at all Baloglu (2003). Students who advance through their studies will show two different anxiety patterns because students in early research phases face uncertain situations while advanced students deal with academic challenges which require them to finish their theses.

The research findings Hazell et al. (2020) demonstrate that research anxiety shows different patterns throughout the academic journey. The combination of workload and deadlines plus performance expectations causes students to experience higher stress levels which leads to research anxiety. The research field has focused on studying individual variables while only a small number of studies explored how multiple

demographic and academic factors interact together to produce different outcomes in a unified analytical framework.

This study examines how different interactive effects work to create a framework which predicts student success while strengthening their ability to overcome obstacles, developed a new system which uses non-cognitive psychological traits to predict outcomes, uses an interactive predictive model to investigate how demographic and academic elements interact to shape the research experience. The process of identifying predictive dynamics enables academic institutions to develop specific interventions which include emotional intelligence training and counseling to support student resilience while maintaining academic achievement. The study seeks to answer the following questions

1. Do levels of research anxiety among graduate students differ according to demographic and academic characteristics (gender, stage of study, specialization, academic year, and employment status)?
2. Do demographic and academic variables (gender, stage of study, specialization, academic year, and employment status) have a statistically significant effect on research anxiety among graduate students?
3. Are there statistically significant main effects and interaction effects of the variables (gender, stage of study, specialization, academic year, and employment status) on research anxiety?

2. METHODS

2.1. STUDY DESIGN

The research used a quantitative cross-sectional analytical design to study how demographic and academic factors which included gender and academic stage and specialization and academic year and employment status affected research

anxiety in graduate students. Data were collected through a self-administered online questionnaire.

2.2. Participants

The research involved 273 graduate students studying psychology at the university through non-probability convenience sampling, which used accessibility and voluntary participation, to build the study sample. The sample eligibility requirements were established to create proper guidelines for sample selection. The study included participants who were Master's or PhD students in the Department of Psychology and who opted for study participation. The study excluded all participants who were undergraduate students or who did not belong to psychology programs or who provided answers with major data gaps to protect the dataset's quality and its research validity. Data collection happened through electronic methods when researchers used a structured questionnaire that they distributed as Google Forms. The researchers acquired initial administrative permission to access their target group before they started data collection. Academic channels at the Department of Psychology were used to distribute the survey link to graduate students, who received a study introduction that explained the research purpose and invited them to participate freely.

The researchers made sure to follow all ethical guidelines that apply to studies involving human subjects. Participants were given assurance that their answers would not be linked to their identity and their participation in the study could choose to remain private. The study obtained informed consent from participants through electronic methods before their participation, which ensured that participants understood the study's objectives and methods and their right to discontinue participation at any time without facing negative outcomes. **Table 1** presents the demographic and academic characteristics of the study participants.

Table 1: Sample Distribution Demographic and Academic Characteristics (N = 273)

Variable	Category	n	%
Gender	Male	221	81.0
	Female	52	19.0
Major (Field of Study)	General Psychology	142	52.0

	Clinical Psychology	65	23.8
	Cyber Psychology	38	13.9
	Industrial & Organizational Psychology	28	10.3
	First Year	38	13.9
Academic Year	Second Year	167	61.2
	Third Year	35	12.8
	Fourth Year	33	12.1
Employment Status	Working	265	97.1
	Not Working	8	2.9

Table 1 displays the demographic and academic characteristics of the study participants. Males made up the largest group at 81.0% while females formed the smallest group at 19.0%. The distribution of specializations showed that General Psychology had the highest enrollment at 52.0% while Industrial and Organizational Psychology had the smallest enrollment at 10.3%. The second-year students made up the largest group at 61.2% while fourth-year students comprised the smallest group at 12.1%. The study found that 97.1% of participants worked at their jobs while only 2.9% of participants did not work.

2.3. Ethical Considerations

The research study maintained all required ethical standards which protect human research participants throughout its entire duration. The study required respondents to participate on a voluntary basis after they received full information about its goals through direct demonstration. Researchers obtained participant consent through electronic methods before participants completed their survey activities.

The study provided participants with two guarantees which included protection of their identity through anonymous responses and confidentiality of their answers while restricting data usage to scientific purposes. The study collected no personal identification details while it maintained strict security measures to handle all participant data which protected their identity. The study participants received information about their right to stop their participation at any moment during the research process without facing any negative outcomes. The study team first obtained all necessary administrative permissions which

confirmed that the research study met all institutional and ethical research requirements before they started data collection.

2.4. MEASUREMENT

Researchers obtained study data through standardized self-report instruments which measured research anxiety to fulfill their research goals. The assessment tools were chosen because their established psychometric properties matched the study variables which were being examined. The instruments underwent Arabic translation through a forward-backward translation method which maintained both linguistic accuracy and conceptual equivalence. Participants responded to all items through Likert-type scales which used higher scores to indicate greater levels of the assessed constructs.

Research Anxiety Scale

The researchers assessed research anxiety levels by applying the Research Anxiety Rating Scale (RARS) which [Onwuegbuzie \(2013\)](#) developed for this purpose. The Arabic translation of the scale was done through forward-backward translation method. The assessment consists of 45 items which evaluate seven specific domains that include fear of libraries, writing anxiety, statistics anxiety, research process anxiety, research language anxiety, research course anxiety, and perceived utility and competence. The five-point Likert scale rates research anxiety through answers which show higher research anxiety levels with higher score results. The scale demonstrated valid and reliable performance in the original study through its exploratory factor analysis which showed a multidimensional structure that accounted for 57% of total variance while maintaining strong relationships to related factors which included

statistics anxiety and library anxiety and writing apprehension. The Arabic version of the study conducted psychometric assessment through assessment of the same pilot sample ($n = 58$). The validity coefficients (item–total correlations) ranged from (.32 to .71), all statistically significant. The dimensions displayed reliability coefficients (Cronbach's alpha) which achieved (.74, .77, .82, .79, .81, .76, .78) for fear of libraries, writing anxiety, statistics anxiety, research process anxiety, research language anxiety, research course anxiety, and perceived utility and competence, respectively, while the total scale had an overall reliability coefficient of (.90).

2.5. TRANSLATION OF STUDY MEASURES

The study measures were translated using a standardized forward–backward translation procedure. Initially, the instruments were translated into Arabic by a bilingual expert, followed by an independent back-translation into the original language. Discrepancies between versions were reviewed and resolved to ensure semantic and conceptual equivalence. The final version was

Table 2 (ANOVA) examine the effect of demographic and academic variables on research anxiety.

Variable	df	F	p-value
Gender	1	24.865	< .001
Stage	2	7.291	< .01
Specialization	3	0.688	.560
Academic Year	3	7.313	< .001
Employment Status	1	0.287	.593

The factorial ANOVA results demonstrated that research anxiety levels exhibit significant differences across three factors which include gender and study stage and academic progression. The study found that gender had a significant effect on anxiety levels which showed different results between male and female participants ($F = 24.865$, $p < .001$). The study results showed that both study stage and academic year created research anxiety differences which resulted from students advancing through their educational journey.

The study results showed that specialization ($p = .560$) and employment status ($p = .593$) did not produce significant differences which indicates that

evaluated by experts in psychology for clarity and cultural appropriateness prior to administration.

2.6. STATISTICAL ANALYSIS

The researchers conducted their data analysis through the use of IBM SPSS Statistics software which they used in Version 26. calculated descriptive statistics which included means and standard deviations and frequencies and percentages to create a data summary. conducted a factorial ANOVA to evaluate how gender and academic stage and specialization and academic year and employment status affected research anxiety. The study used multiple regression analysis to determine which demographic and academic factors could predict research anxiety and their capacity to predict it.

3. RESULTS

3.1. Do levels of research anxiety among graduate students differ according to demographic and academic characteristics (gender, stage of study, specialization, academic year, and employment status)?

these two factors do not have any meaningful impact on research anxiety. The graphical representations support the statistical findings. Research anxiety shows distinct patterns based on gender and academic stage and academic year according to the mean plots which demonstrate different mean values through their distinct patterns of direction and magnitude. The academic year plot shows that students develop increasing anxiety levels as they complete their academic requirements. The specialization and employment status plots show flat trends which demonstrate that there are no statistically significant differences between these two variables.

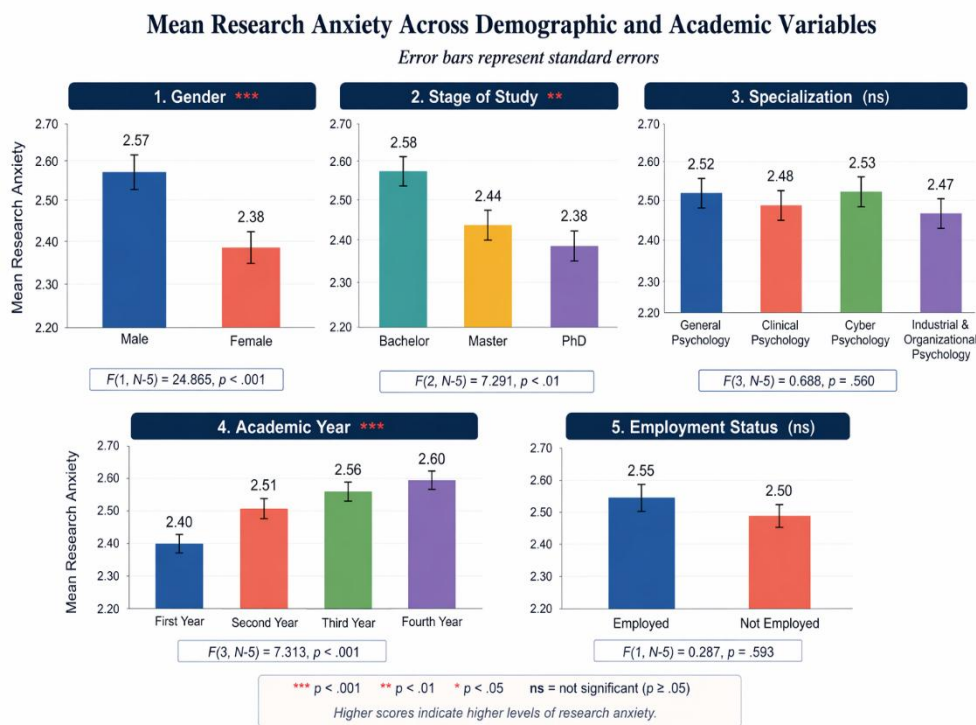


Figure 1. Mean levels of research anxiety across demographic and academic variables. Error bars represent standard errors. Significant differences were observed for gender, stage of study, and academic year, whereas no significant differences were found for specialization and employment status. The figure shows significant differences in research anxiety by gender, stage, and academic year, with a clear increasing trend across academic years. No significant differences were observed for specialization or employment status.

3.2 Do demographic and academic variables (gender, stage of study, specialization, academic year, and employment status) have a statistically significant effect on research anxiety among graduate students?

Table 3. Results of Factorial ANOVA for Research Anxiety

Variable	df	F	p-value
Gender	1	24.865	< .001
Stage	2	7.291	< .01
Specialization	3	0.688	.560
Academic Year	3	7.313	< .001
Employment Status	1	0.287	.593

Table 2 show that there are significant research anxiety differences which researchers can use to study both gender and student academic progression and their academic progress through different academic years. The results demonstrate that gender has a major impact on research anxiety because it creates substantial differences between male and female student anxiety levels. Research

anxiety levels show a strong relationship with both study progression and academic status because students experience different research anxiety levels throughout their academic development. The study established that specialization and employment status do not produce statistically significant research anxiety differences because these factors fail to explain research anxiety changes.

Table 4. Post Hoc Comparisons (Tukey HSD) for Significant Variables

Variable	Comparison	Mean Difference	p-value
Gender	Female – Male	-0.150	< .001
Stage	Master – Bachelor	-0.063	.036
	PhD – Bachelor	-0.161	.012
	PhD – Master	-0.099	.189

Academic Year	Fourth – First	0.176	.001
	Fourth – Second	0.169	< .001
	Other comparisons	—	—

The table displays Tukey post hoc comparison results which were conducted for all variables that showed statistically significant results from the ANOVA testing. The results show that female students experience less research anxiety than their male counterparts. Master's and PhD students maintain lower anxiety levels than Bachelor students according to their stage of study, while Master students and PhD students show no significant differences between them. Fourth-year students experience more research anxiety than first- and second-year students according to their academic year. The statistical analysis showed that no other pairwise comparisons reached the threshold for statistical significance.

3.3. *Is there a significant main effect and interaction effect of the variables (gender, academic level, specialization, year of study, employment status) on research anxiety?*

Table 5. Multiple Linear Regression Predicting Research Anxiety

Predictor	B	t	p-value
Gender (Female)	- 0.114	- 2.67	.008
Stage (Master)	- 0.110	- 3.51	< .001
Stage (PhD)	- 0.213	- 3.58	< .001
Year (Fourth)	0.188	3.70	< .001
Other variables	—	—	Not significant

The results of regression analysis show that three factors which are gender and study level and academic year all serve as essential indicators for predicting research anxiety. Female students exhibit lower anxiety levels compared to males, while students at advanced academic stages (Master and PhD) report lower anxiety compared to Bachelor students. Results show that fourth-year students experience research anxiety at much higher levels because their academic workload has reached its most demanding point. The remaining variables, including specialization and employment status, do not demonstrate significant predictive effects. The model explains approximately 14.7% of the variance in research anxiety, suggesting that while these variables are important, other unmeasured factors may also contribute to the phenomenon.

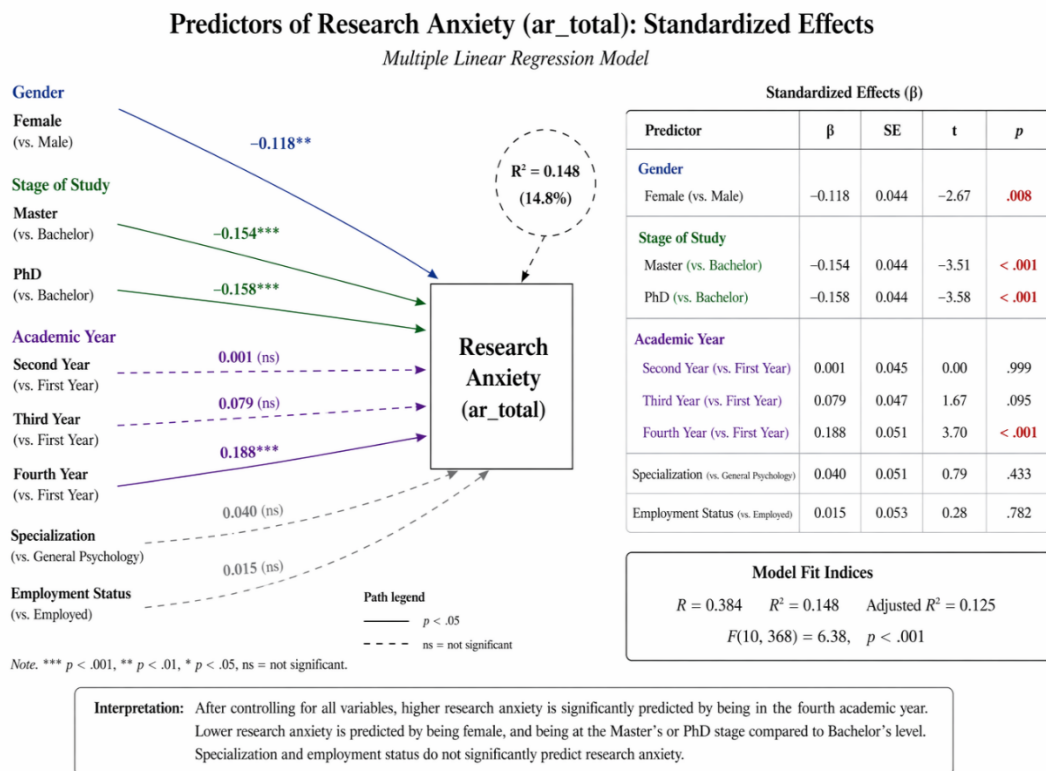


Figure 2. Predictors of Research Anxiety (ar_total): Standardized Effects from Multiple Linear Regression

Note. Solid arrows indicate statistically significant effects, while dashed arrows represent non-significant relationships. Higher research anxiety is positively associated with being in the fourth academic year, whereas lower anxiety is associated with being female and at more advanced stages of study (Master's and PhD). Specialization and employment status did not show significant effects

4. DISCUSSION

4.1. Gender Differences in Research Anxiety

the results indicated that male students reported significantly higher levels of research anxiety compared to female students ($F = 24.87, p < .001$). This finding diverges from a substantial portion of the literature that often reports higher anxiety levels among females, suggesting that the relationship between gender and research anxiety may be context-dependent rather than universal

This finding may be explained by Social Cognitive Theory (Bandura), which holds that self-efficacy and perceived competence determine emotional responses like fear rather than demographics. Students who perceive poorer methodological or

statistical abilities are more anxious in research-intensive circumstances (Bandura, 1997)

The research conducted by Farsani and Ghorbani (2024) demonstrated that research self-efficacy functions as a strong negative predictor of research anxiety. found that male students reported higher anxiety levels because they believed their research abilities were weaker than their actual performance. Current studies demonstrate that students experience different degrees of academic anxiety based on their gender identity and the specific situation

The research conducted by McCabe et al. (2024) demonstrated that university students experience psychological distress based on their help-seeking behaviors and coping mechanisms instead of their gender identity. The different ways that students manage academic stress lead to different levels of anxiety. Research anxiety includes three main components writing and statistics and research process which indicates that gender differences probably emerge in specific research areas instead of across the entire research field (Onwuegbuzie, 2013)

The research found that gender interacts with self-efficacy, coping strategies, and academic performance, which results in multiple outcome patterns that the study used to reach its findings. Research anxiety exists as a dynamic construct which cognitive and contextual factors shape, instead of being a direct result from demographic characteristics.

4.2. Effect of Academic Stage on Research Anxiety

The study results revealed that students' research anxiety levels showed significant variation between their academic stages ($F = 7.29$, $p < .01$), with students in earlier academic stages reporting higher levels of anxiety compared to those in more advanced stages. The finding demonstrates how students' research-related emotional states depend on their academic level.

The study results match the research findings from [Sverdlik et al. \(2018\)](#); [\(Szentagotai & Jones, 2010\)](#); [Szkudlarek, 2010](#); [Thomson & Kamler, 2010](#)), who demonstrated that early-stage graduate students face greater uncertainty and anxiety because they have less experience with research activities, while advanced students show better emotional control and confidence in their capabilities. [Farsani and Ghorbani \(2024\)](#) found that students who gained more research experience and developed higher self-efficacy skills experienced decreased research anxiety, which supports the concept that students' anxiety levels decrease as they develop their skills.

Self-Efficacy Theory [Schunk and DiBenedetto \(2016\)](#) explains the finding by showing that people build their confidence in their task performance through practice and skill development. Advanced graduate students have built their research skills through academic work and research experience, which allows them to match academic requirements and research activities to their research activities, which helps students lower their anxiety levels.

The study finding supports the Developmental Perspective in Higher Education, which explains that students follow an adaptation process while they advance through their academic programs. Students at early research stages lack clarity about

research requirements, but advanced students possess the needed skills to handle academic requirements. The research by [Hazell et al. \(2020\)](#) demonstrates that academic experience serves as the primary determinant of how students develop psychological responses to research-related stress.

Research anxiety develops through three distinct stages, with students experiencing elevated anxiety during their initial phase because of their research uncertainty, but their anxiety declines when they become proficient at research work. The beginning of academic study requires targeted student support to ensure their successful academic development.

4.3. Demographic and Academic Determinants of Research Anxiety

The research findings from the current study demonstrated that both demographic factors and academic variables particularly gender and academic stage and academic year students' academic path through university research anxiety assessment indicates that students with different academic progression experience distinct research anxiety levels. Male students who study at lower academic levels and who study in their final year display more anxiety symptoms which demonstrates a complicated anxiety pattern that does not follow a straightforward path.

The research findings match the outcomes of research which showed that graduate students experience different psychological states throughout their academic progression, with students in early stages facing uncertainty while students in advanced stages deal with performance-related stress. discovered that graduate students experience increased anxiety levels because the combination of academic requirements and workload and assessment standards reach its peak during their final academic periods. which showed that students believe research-related activities create significant fear and uncertainty, and the study proves that research anxiety continues to exist throughout all educational environments([Hazell et al., 2020](#); [Mellon, 1986](#); [Nahar & Sekhar, 2024](#); [Sverdlik et al., 2018](#))

The results of this study can be understood through the combination of Self-Efficacy Theory ([Bandura,](#)

1997) with the Control-Value Theory of Achievement Emotions (Rezaei-Gazki et al., 2024). The self-efficacy theory states that students experience reduced anxiety because their expertise develops through acquired skills. The control-value theory states that students experience greater anxiety when they believe their tasks require high importance yet they lack power over the situation. Pekrun et al. (2023) discovered that academic emotions amplify their intensity during high-stress situations which supports this explanation.

Social-cognitive theory provides an explanation for gender differences since women experience emotional states because they judge their competency abilities and their ability to handle stress. empirical research proves that research self-efficacy establishes a direct relationship with anxiety levels, while shows that student well-being develops through their ability to cope with challenges and their psychological evolution (Farsani & Ghorbani, 2024; McCabe et al., 2024).

The research results demonstrate that students experience a progression of research anxiety which begins with high levels of anxiety because of uncertainty, then declines through the development of experience, and finally increases during periods of intense academic stress. Research anxiety should be treated as an evolving complex phenomenon which develops through the interaction of cognitive factors and academic factors and contextual factors instead of being viewed as a fixed result which depends on personal traits.

4.4. Non-Significant Results: Specialization and Employment Status

The results demonstrated that neither specialization nor employment status had any impact on research anxiety levels. The research results show that academic field of study educational discipline does not affect research anxiety levels because students experience anxiety from two main sources task demands and methodological challenges which walk through their research process. The theoretical framework of Cognitive Appraisal Theory (Wardecker et al., 2022) establishes that anxiety arises from individuals' assessment of task difficulty instead of environmental factors. Research anxiety shows a connection to perceived

task complexity according to Papanastasiou and that students who have effective coping strategies experience no anxiety difference based on their work status (Parker & Trolan, 2024). Research anxiety exists as a common academic issue which does not depend on students' specific fields of study or their employment circumstances.

4.5. Non-Significant Results: Specialization and Employment Status

The results of the study revealed that specialization and employment status do not have any notable impact on research anxiety. The research findings demonstrate that researchers experience more anxiety from their specific task requirements and their difficulties in executing research procedures than from their field of study. Theoretical Cognitive Appraisal Theory states that anxiety develops because people perceive their tasks as difficult. Papanastasiou and established that research anxiety develops when researchers face tasks that they believe to be more difficult than their actual difficulty level, demonstrated that students who possess strong coping mechanisms experience no differences in their anxiety levels based on their work status. Research anxiety appears to be a general academic phenomenon, not tied to specialization or employment status (McGrath, 2005; Mellon, 1986; Mills & Blankstein, 2000; Molnar et al., 2020).

The research findings show that graduate students experienced research anxiety because of their academic progress and their assessment of their own abilities instead of their fixed background conditions. The results support current theoretical frameworks which show that self-efficacy theory and control-value theory use perceived control together with academic demands to explain how people experience emotions. Academic factors account for most of the differences seen in research anxiety yet the limited predictive strength indicates that researchers must investigate psychological and environmental factors for their upcoming studies. The findings demonstrate that researchers need to use multiple methods which account for different developmental stages to study and treat research anxiety present in graduate education.

5. CONCLUSION

The research study examined how graduate students experience research anxiety while studying the relationship between specific demographic and academic factors which explain different levels of research anxiety. results showed that research anxiety depends on three factors which are gender and academic stage and academic year of students. Male students demonstrated higher anxiety levels than female students while students who were at their first academic stage showed more anxiety than students who had reached their final academic stage. Students who reached their final academic year experienced increased research anxiety because they faced more demanding academic work which included research completion. The findings revealed that research anxiety relates more to students' academic progress and their respective academic duties instead of their specialization and employment status. The regression analysis results showed that research anxiety depends on three factors which are gender and academic stage and academic year. The explained variance percentage demonstrates that other psychological factors and contextual factors must exist to explain the research anxiety results findings show that graduate education must include research anxiety treatment because it occurs during crucial times when students need to develop their academic skills. Academic institutions should implement specific support methods which include research training programs and mentoring and academic guidance to assist students who experience research-related difficulties which cause them anxiety. requirements of upcoming studies need researchers to analyze more factors while they use longitudinal methods to study research anxiety throughout different time periods.

6. Limitations & Strengths

The research study requires multiple limitations to be considered when interpreting its results. The cross-sectional research design restricts researchers from establishing causative links between demographic factors and academic performance and research anxiety. results become less applicable to different groups and fields of study because the researchers used a convenience sample from one

specific academic setting. used self-report instruments to gather data which could result in people responding to questions with social desirability and personal bias toward interpreting the test items. The model identified important predictors yet only a small portion of variance was explained because psychological factors and environmental factors which included self-efficacy and supervisory support and institutional climate were missing from the research study.

The study has multiple strengths which exist despite its existing limitations. provides an all-encompassing analytical framework which investigates group differences together with main and predictive effects for multiple demographic and academic factors through advanced statistical methods which include factorial ANOVA and multiple regression. used a validated research anxiety measurement system which includes multiple dimensions and reliable psychometric characteristics to improve the trustworthiness of the study results. The research study uses several academic indicators to explain how research anxiety changes throughout different periods of graduate education. results gain strength from these advantages which create a trustworthy base for upcoming research studies in this field of study.

7. Practical Implications and Recommendations

The study results demonstrate that graduate education requires research anxiety to be treated as an essential educational element. Anxiety levels which differ between academic periods reach their maximum intensity during particular times which include the initial research period and the final study period thus forcing graduate programs to implement support systems which match student development stages.

Graduate programs should start their research training programs at the beginning to help students gain crucial skills while decreasing their research task uncertainties. The program will provide organized workshops which teach research design, academic writing, and statistical analysis through a stepwise system that matches students' current knowledge. During thesis or dissertation work students need dedicated support which includes

supervisory guidance and writing support groups and time-management interventions to handle their increased research completion stress.

The study found gender-based differences which demonstrate that academic institutions need to create environments which support all students who have different research experiences. Mentoring systems and peer-support networks may provide valuable platforms for sharing experiences, enhancing confidence, and reducing anxiety associated with research demands. Psychological support services which academic programs use to support students enable institutions to handle research anxiety through their integrated approach. The program provides counseling services and stress management training and workshops which teach researchers how to cope with research-related difficulties. Climate of graduate programs improves through transparent requirements and available resources and continuous academic assistance which results in lower student anxiety and better research participation. Students who participate in

these activities will experience improved well-being which will enhance their academic performance and research achievements.

Data availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to ethical and confidentiality considerations.

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Not applicable

CONFLICT OF INTEREST

The authors declare no competing interests.

Competing interests

The authors declare no competing interests.

Clinical trial number

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