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Raising the Pressure: How Maternal Parenting Style Relates to Academic Performance Anxiety and Resilience in Graduate Students

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Graduate education demands considerable cognitive, emotional, and social effort, often placing students under substantial pressure to perform. While such environments can support growth, they also increase the risk of academic performance anxiety, which may hinder well-being and achievement. Prior research shows that Baumrind's parenting styles—authoritative, authoritarian, and permissive—shape emotional regulation, motivation, and coping. However, most studies focus on younger populations, collectivist cultures, or outcome-based academic indicators, with limited attention to how maternal caregiving affects psychological functioning in graduate students within individualistic Western contexts. This study examined whether maternal parenting style and academic resilience relate to academic performance anxiety in graduate students. The goal was to understand whether early relational experiences and resilience may shape adulthood functioning in high-pressure performance settings to inform more robust mental health support for graduate students. 53 full-time, graduate students completed an online survey that included the Parental Authority Questionnaire–Maternal Version, the Academic Resilience Scale, and an adapted version of the Sport Anxiety Scale-2 modified for academic settings. Authoritarian maternal parenting significantly predicted higher academic performance anxiety, particularly somatic symptoms and worry. Academic resilience significantly and negatively predicted academic performance anxiety and was associated with fewer somatic symptoms, less worry, and reduced concentration difficulties. These findings suggest that authoritarian caregiving may heighten academic stress, whereas resilience serves as a protective factor. Results underscore the enduring influence of early maternal relationships and highlight the value of resilience-based interventions for supporting graduate student mental health.

Keywords: performance anxiety, graduate education, maternal parenting style, resilience

Graduate school offers the hope of distinction, but often delivers the weight of distress. Within America's most demanding graduate programs, relentless workloads and fierce competition can lead to remarkable levels of stress and anxiety. As a result, the fear of failure and pressure to succeed can negatively impact academic performance and a student's overall well-being. In these high-performance environments, an individual's resilience can differentiate those who responsively adapt under pressure from those who inadvertently unravel under pressure. Considerable attention has been paid to structural and institutional contributors to academic stress, yet far less is known about the developmental antecedents that may predispose individuals to cope effectively, or ineffectively, within high-performance domains. In particular, this study explores the formative impact of maternal parenting style on academic performance.

Review of Existing Literature

Graduate Student Health and Performance Anxiety

Graduate education is widely regarded as a time of intellectual and professional growth, yet mounting evidence reveals that it also elevates anxiety, depression, and emotional distress. Researchers note that graduate students are six times as likely to experience depression and anxiety as compared to the general population (Evans et al., 2018). These statistics stem from a convergence of interrelated institutional, cultural, and economic stressors that gradually erode psychological well-being over time. Students may also struggle to reconcile initial hopes for academic belonging with the isolating, competitive, and evaluative realities of graduate training. These pressures are especially pronounced in health fields such as psychology and medicine, where the stakes of competency, licensure, and ethical responsibility compound layers of profound strain (Ibrahim et al., 2024; Lang & Haugen, 2023).

The focus on graduate students is particularly significant given their unique position within the educational continuum. Unlike undergraduate students, graduate students face heightened professional stakes, greater autonomy requirements, and more intense evaluative pressures that can activate anxiety responses rooted in early developmental experiences. Graduate education represents a critical transition period where individuals must demonstrate mastery-level competence while managing unprecedented academic demands.

The mental health toll of graduate education is further magnified when stress and anxiety have a high

potential to impact academic performance. Across multiple studies, students reported that academic overload, financial strain, a lack of work-school-life balance, and fear of failure were central contributors to stress and quality of life (El-Ghoroury et al., 2012; Ibrahim et al., 2024; Lang & Haugen, 2023). Experiencing such levels of stress and anxiety has even increased graduate students' risk for depression and suicide (Clement et al., 2025). As academic stress persists, it can impair sleep quality, self-esteem, perceived social support, and satisfaction with academic performance (Clement et al., 2025; Ibrahim et al., 2024).

Understanding how early parenting influences manifest in this population provides insight into the long-term developmental impacts of caregiving relationships and informs interventions for a population experiencing disproportionately high rates of psychological distress. Although the intensity of these pressures may vary across fields and institutions, the pattern is consistent: elevated stress, anxiety, and depressive symptoms represent significant threats to graduate students' overall well-being.

Parenting Style as a Predictor of Performance Success

A growing body of literature suggests academic success begins in early caregiving relationships. Childhood experiences of coping with adversity lay the foundation for self-efficacy, motivation, and resilience by shaping emotional regulation, stress responses, and psychological endurance. Among these early influences, parenting style within the caregiving environment is especially formative. Diana Baumrind's work in developmental psychology established a typology of parenting that remains widely recognized and empirically supported. Her framework distinguishes among three primary parenting styles: authoritative, authoritarian, and permissive, which are all based on two core dimensions: responsiveness (e.g., warmth and supportiveness) and demandingness (e.g., control and expectations; Baumrind, 1967, 1971, 1991).

Authoritative parenting is characterized by a balanced blend of warmth, high responsiveness, and clearly defined expectations. This parenting style encourages autonomy while maintaining appropriate structure, fostering both competence and emotional security. Research has demonstrated that authoritative parenting is consistently associated with optimal academic and psychological outcomes for students. Specifically, Hayek et al. (2022) found that authoritative parenting was associated with better academic achievement and higher self-efficacy compared to all other styles. Tiwari (2022) synthesized research on authoritative parenting, noting that it aids in the development of social skills, discipline, and self-esteem. Masud et al. (2014) conducted a systematic review and concluded that authoritative parenting, characterized by both warmth and behavioral control, was the most effective parenting style for enhancing academic achievement among adolescents. Authoritative parenting can also enhance learning motivation, foster academic competence, and influence greater self-efficacy at different developmental stages, such as among fifth-grade students (Cheung & McBride-Chang, 2008) and college students (Turner et al., 2009).

In contrast, authoritarian parenting is defined by high demands coupled with low responsiveness, emphasizing obedience over understanding and control over connection. Research shows that authoritarian parenting, characterized by high control and low responsiveness, has been found to have a negative effect on self-esteem among Brazilian adolescents in academic, social, and familial domains (Martínez et al., 2007).

Finally, permissive parenting reflects an approach of "low demandingness" (Power, 2013), wherein emotional availability is not matched with consistent guidance or boundaries. While permissive parenting includes the emotional warmth that authoritarian parenting lacks, it fails to have the structure necessary for sustained achievement (Hassan et al., 2022), effective self-regulation (Piotrowski et al., 2013), and to build self-confidence (Fitrianto et al., 2025).

Additional research provides further evidence for these differential outcomes, finding that the lack of parental support (Moral-García et al., 2020) or excessive parental control (Pinquart, 2016) are related to poor academic motivation and success (Hassan et al., 2022). Moreover, parenting style not only predicts academic success but also guides career trajectory through internalized values and achievement motivation (Zahed Zahedani et al., 2016). Collectively, this literature demonstrates that parenting styles shape not only immediate academic outcomes but also long-term resilience, motivation, and professional orientation.

Developmental Link Between Parenting Style and Academic Performance Outcomes

Developmental research illustrates how parent-

ing styles influence academic achievement at different stages of childhood and adolescence. In Cheah et al.'s (2009) study, authoritative parenting, characterized by warmth and responsiveness, among Chinese immigrant mothers was found to predict preschoolers' sustained attention and reduce the likelihood of negative evaluative feedback from teachers. Taking this a step further, Tsela et al. (2023) examined two parenting dynamics: parenting style (e.g., positive versus authoritarian) and parenting practices (e.g., parental involvement). They found that authoritative parenting was positively associated with children's school achievement, while authoritarian parenting predicted poorer outcomes. Practices characterized by involvement, firmness, and consistency supported academic success, whereas negligent and coercive practices were linked to lower grades.

A six-month longitudinal study of Lebanese adolescents further demonstrated that authoritative parenting both directly and indirectly predicted higher academic achievement and greater self-efficacy. Adolescents who perceived their parents as authoritative were more likely to hold strong efficacy beliefs, set higher intentions, and achieve better academic outcomes compared to peers of neglectful parents (Hayek et al., 2022).

Although substantial evidence links parenting style to children's emotional and academic outcomes, it is surprising that few studies have examined the distinct influence of each parent individually. Assuredly, the social roles or caregiving patterns of mothers versus fathers are markedly different. Even at a biogenetic level in rats, maternal care has been shown to specifically shape offspring stress responses through epigenetic mechanisms (Weaver et al., 2004). Offspring who received higher levels of maternal care showed increased glucocorticoid receptor expression in the hippocampus and greater glucocorticoid negative feedback sensitivity, leading to a milder hypothalamic-pituitary-adrenal stress response. Therefore, it is possible that children who receive more maternal care will demonstrate lower levels of anxiety later in life. Collectively, these findings underscore the powerful influence of parenting styles on academic performance across developmental stages, from preschool through adolescence.

Resilience in Academic Settings

Resilience, defined as the capacity to adapt effectively in the face of adversity, has become central to understanding students' academic performance, attitudes, and outcomes (American Psychological Association, 2025; Denckla et al., 2020; Southwick et al., 2014). Rather than being a fixed trait, resilience is now recognized as a learnable process of positive adaptation (Denckla et al., 2020; Gillham et al., 2013). Empirical findings support this developmental perspective. Chye et al. (2024) found that undergraduate health professions students cultivated resilience through life experiences, socioeconomic challenges, personal attributes, support systems, and role modeling, and higher resilience was linked to stronger coping skills, emotional regulation, and academic engagement. Similarly, Yamamoto et al. (2023) showed that elementary school students with greater social support from parents, teachers, and peers scored higher on resilience, highlighting the importance of environmental and relational factors.

Across studies, resilience consistently emerges as a protective factor against anxiety and stress. Students with higher self-efficacy exhibited greater academic resilience and lower test anxiety, suggesting that confidence in one's abilities enhances persistence in learning (Hayat et al., 2021). Likewise, students with high academic anxiety but strong mental toughness were less likely to avoid after-school learning (Hasty et al., 2020). Together, these findings demonstrate that resilience can support sustained engagement and better educational outcomes. Given the capacity of resilience to help individuals adapt to stress, there is a compelling case to further examine whether early caregiving environments, particularly those shaped by maternal figures, foster the capacity to thrive and perform effectively in adulthood despite stress or performance demands.

Gaps in Knowledge

Despite a substantial body of research demonstrating the developmental importance of parenting in academic performance, these dynamics remain insufficiently examined among graduate students. Extant literature focuses on academic performance stress within adolescents or undergraduates, where parental influence is assessed in relation to grade point average, learning outcomes, test scores, or motivation (Cheung & McBride-Chang, 2008; Kong & Yasmin, 2022; Shengyao et al., 2024); though, these studies are conducted primarily among Eastern cultures (e.g., Chinese students). While these studies offer valuable insights into cultural conceptions of achievement and success, they provide a limited perspective on how differences in cultural upbringing influence resilience in high-performance situations.

It is important to investigate whether students in Western contexts may experience different outcomes. Research by Luthar et al. (2020) suggests that in the United States, particularly within high-achieving schools, youth can face intense pressure to achieve from family, school, and peers (Luthar et al., 2020). This multi-systemic pressure has led to youth attending high-achieving schools to be considered a group at risk for mental health concerns (Luthar et al., 2020).

Additional research on American graduate students tends to prioritize systemic or institutional stressors over developmental contributors. Articles such as those by Bekkouche et al. (2021), El-Ghoroury et al. (2012), and Evans et al. (2018) emphasize the impact of systemic stressors, financial strain, workload, and a lack of work-school-life balance on graduate students' mental health. However, these findings rarely consider how academic stressors may be mitigated by early childhood attachment experiences or by patterns of emotional regulation modeled during development. Thus, few studies link parenting to emotional resilience or performance anxiety, with most emphasizing motivation or observable performance success measures (e.g., grade point average; Cheung & McBride-Chang, 2008; Mital, 2011). Particularly underexplored is how such early relational dynamics influence the way in which individuals cope with the demands of high-performing professional environments such as graduate school, medicine, athletics, or the performing arts.

Finally, extant literature has not focused specifically on whether maternal parenting has an impact on academic performance anxiety, despite evidence that a mother's parenting positively predicts emotion regulation and psychological well-being in adolescents (Jabeen et. al., 2013). With gaps in the literature, the present study addresses a critical need to understand how early maternal caregiving experiences may influence psychological functioning in graduate students within Western contexts. Specifically, this research examines whether developmental variables, namely maternal parenting, continue to shape academic coping strategies and anxiety responses in high-pressure graduate environments, and whether resilience moderates these relationships. By focusing on performance anxiety rather than academic achievement outcomes, this study advances existing literature to examine the affective physiological dimensions of academic functioning. Understanding these relationships is essential for developing targeted interventions to support graduate student mental health and academic success.

Present Study

This study examines associations between maternal parenting style, academic performance anxiety, and academic resilience among graduate students, addressing an important gap in understanding how early developmental experiences relate to adult functioning in high-pressure academic environments. Specifically, this study addresses three primary research questions: (1) Does maternal parenting style predict academic performance anxiety in graduate students? (2) Is academic resilience associated with academic performance anxiety? (3) Does parenting style moderate the relationship between academic resilience and academic performance anxiety?

This study also tests the hypothesis that authoritarian maternal parenting will be positively associated with academic performance anxiety. It is further hypothesized that academic resilience is negatively associated with academic performance anxiety, such that higher resilience corresponds to lower anxiety. Finally, it is posited that maternal parenting style will moderate the relationship between academic resilience and academic performance anxiety. Findings may inform intervention strategies in graduate student mental health services by identifying resilience and early relational experiences as targets for support.

Methods

Participants

Participants (n = 68, M_{age} = 26.5 years, 75.5% female) were recruited from Teachers College, Columbia University in New York City, through snowball sampling, community flyers, social media postings, and program Listservs. Teachers College offers graduate programs across education, psychology, health, and applied fields, thus providing a diverse academic context for examining performance anxiety across disciplines. Eligibility criteria required participants to be at least 18 years old, English speaking, and currently enrolled full-time in a graduate-level program at the time of data collection. Participants were excluded if one or more eligibility criteria were violated, or if submissions were left blank or incomplete. Analytic sample sizes varied across analyses due to different patterns of missing data: n = 53 for the primary resilience-anxiety analysis, n = 52 for resilience predicting anxiety subscales, and n = 50 for all parenting style analyses. The sample size was de-

termined pragmatically based on participant availability, recruitment feasibility, and the constraints of the study period rather than by an a priori power analysis.

Materials

Data were collected via an online Qualtrics survey, which included demographic questions, the Parental Authority Questionnaire-Pertaining to Mothers (PAQ-M; Buri, 1991), the Academic Resilience Scale (ARS-30; Cassidy, 2016), and the Sports Anxiety Scale-2 (SAS-2; Smith et al., 2006) modified for academic contexts. All measures used in this study were publicly available and free to use for research purposes. Written permission was obtained from the original authors of the PAQ (Buri, 1991) and SAS-2 (Smith et al., 2006) to use and adapt the instruments where necessary.

PAQ-M

The PAQ-M (Buri, 1991) is a 30-item self-report instrument designed to assess individuals' perceptions of their mothers' parenting style. It is based on Baumrind's (1971) theoretical framework of parenting, which outlines three primary parenting styles: authoritarian, authoritative, and permissive. The PAQ-M includes 10 items per subscale, each rated on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). Authoritative style is characterized by high responsiveness and high demandingness, reflecting warmth, reasoning, and autonomy-granting. Authoritarian style reflects high demandingness with low responsiveness, emphasizing control, obedience, and punitive discipline. Permissive style reflects high responsiveness with low demandingness, indicating indulgence and a lack of clear boundaries or rules.

The PAQ-M has demonstrated strong psychometric properties across multiple validation studies. Buri's (1991) original validation with 127 college students established construct validity through factor analysis, confirming the three-factor structure corresponding to Baumrind's (1967, 1971, 1991) parenting typology. Concurrent validity was demonstrated through significant correlations with theoretically related constructs, including parental nurturance and control measures. This instrument has also shown consistent factor structure across diverse samples and cultural contexts (Reitman et al., 2002; Rinaldi & Howe, 2012), supporting its cross-cultural validity. Test-retest reliability over 2-week intervals ranged from .77 to .92 across subscales (Buri, 1991), indicating stable measurement properties. The PAQ-M has demonstrated strong internal consistency in the current sample: Authoritative (α = .885), Authoritarian (α = .925), and Permissive (α = .852), consistent with previous validation studies (Buri, 1991).

ARS-30

The ARS-30 is a 30-item self-report measure designed to assess students' adaptive and maladaptive responses to academic adversity. Developed by Cassidy (2016), the scale presents participants with a vignette describing an academic failure scenario, followed by items representing cognitive-affective and behavioral responses. Participants rate the likelihood of each response on a 5-point Likert scale (1 = *very unlikely* to 5 = *very likely*).

Cassidy's (2016) validation study with 532 undergraduate students revealed a three-factor structure: perseverance (27% of variance), reflecting and adaptive help-seeking (9.1% of variance), and negative affect and emotional response (5.5% of variance). However, robust inter-factor correlations (r = .39–.71) supported the use of a global academic resilience score, with Cassidy (2016) noting that "dimension scores can be combined to represent a meaningful unitary global academic resilience score" (p. 8). The original validation demonstrated strong internal consistency for the global scale (α = .90), concurrent validity through significant correlations with academic self-efficacy (r = .49), and discriminant validity via significant differences between personal versus peer adversity vignettes (d = 0.98).

Items were developed to reflect domains grounded in self-efficacy (Bandura, 1997), self-regulated learning (Zimmerman & Schunk, 2001), and resilience theory. The ARS-30 demonstrated strong internal consistency in the current sample (α = .86), supporting the psychometric integrity of the global score approach used in our analyses.

Modified SAS-2

The SAS-2 (Smith et al., 2006) is a 15-item self-report instrument originally designed to assess performance anxiety in athletic contexts, capturing cognitive and somatic dimensions of anxiety. The original SAS-2 demonstrated strong construct validity through confirmatory factor analysis, supporting the three-factor structure (somatic anxiety, worry, concentration disruption) and convergent validity with other anxiety measures (r = .65–.78 with STAI-T). For the purposes of the current study, the SAS-2 was modified to assess anxiety in academic performance

contexts among graduate students. Specifically, the instructions were adapted to prompt responses within the academic domain by asking participants to respond to each item while considering: "When I am at school or completing school-related tasks...". All 15 original items were retained, with wording minimally adjusted to reflect academic situations (e.g., "test, quiz, or important task" in place of "competition"). These modifications preserved the underlying psychological constructs while making the items contextually relevant to academic performance situations. Written permission was obtained from the original authors to adapt the instrument for academic contexts. While formal validation of this academic adaptation was not conducted, the strong reliability coefficients suggest the modifications preserved the instrument's psychometric properties.

Participants responded using the original 4-point Likert scale (1 = *not at all* to 4 = *very much*). The scale consists of three subscales: Somatic Anxiety (e.g., "My body feels tense"), Worry (e.g., "I worry that I will not perform my best"), and Concentration Disruption (e.g., "It is hard to concentrate on the test, quiz, or important task").

The modified version of the SAS-2 demonstrated strong internal consistency reliability across all subscales in the present sample: Somatic Anxiety (α = .860), Worry (α = .933), and Concentration Disruption (α = .907). These reliability coefficients are comparable to or exceed those reported in the original validation study (Smith et al., 2006), suggesting that the adaptation maintained the instrument's psychometric integrity. Adapting the SAS-2, rather than selecting a different measure, allowed the study to retain its established factor structure while making it suitable for use in academic settings.

Procedure

This cross-sectional, self-report study was completed remotely on Qualtrics from March through April of 2025. After reviewing and indicating agreement on the informed consent form, participants completed a four-part survey, which took approximately 10 minutes to complete. No compensation was provided for participation. To address potential psychological discomfort, contact information for mental health resources was provided to all participants at the conclusion of the survey. No formal debriefing process was implemented. However, participants were provided with mental health and emergency hotline resources as part of the informed consent materials.

Ethics Statement

This study was approved by the Institutional Review Board at Teachers College, Columbia University (Protocol #25-232).

Data Analysis

Statistical Software

IBM SPSS Statistics (Version 30) was used for descriptive analyses, assumption testing, and multiple regression analyses. Hayes' PROCESS macro version 4.2 was employed for moderation analyses using Model 1 to test simple moderation effects. PROCESS macro was employed because it provides heteroscedasticity-consistent standard errors (HC3) that are robust to violations of homoscedasticity and normality assumptions, and it automatically handles multicollinearity through mean-centering of continuous variables.

Primary Analyses

Multiple regression analyses were conducted to examine the relationship between maternal parenting styles (authoritative, authoritarian, and permissive) and academic performance anxiety. Linear regression tested the relationship between academic resilience (predictor) and academic performance anxiety (criterion). Subsequently, three separate moderation analyses were conducted using PROCESS Model 1 to examine whether each parenting style (authoritative, authoritarian, or permissive) moderated the relationship between academic resilience and total anxiety. Each analysis included the main effect of academic resilience, the main effect of the specific parenting style, and the interaction term between resilience and parenting style.

Statistical Assumptions and Robustness

PROCESS macro automatically addresses potential assumption violations by: (1) providing heteroscedasticity-consistent standard errors (HC3) that are robust to violations of homoscedasticity and normality assumptions, and (2) automatically mean-centering continuous variables prior to analysis, which reduces multicollinearity between main effects and interaction terms. Given the sample size limitations (n = 50–53), we acknowledge the study may be underpowered to detect small interaction effects and therefore emphasize effect sizes and confidence intervals alongside significance testing.

Missing Data

Missing data were minimal in this study. Of the 53 participants, 50 (94.3%) had a complete set of

data on all measures. The remaining 3 participants had missing data in clear patterns: 2 participants were missing all parenting style scores, and 1 participant was missing all anxiety scores. No participants had partial missing data within measure sets.

To preserve statistical power, analysis-specific listwise deletion was used, resulting in sample sizes of n = 50–53 depending on the variables analyzed. This approach maximized the available data for each research question rather than excluding participants who had a complete set of data for some analyses but not others.

Results

Sample Demographics

Of the 68 total survey submissions, 15 were excluded due to blank or incomplete responses, yielding 53 participants with usable data. Due to variable-specific missing data, final analytic sample sizes ranged from n = 50 to n = 53 across analyses. Specific sample sizes are noted for each analysis below. Participants ranged in age from 21 to 47 years (M = 26.5, SD = 4.9). The majority identified as female (75.5%), followed by male (20.8%), with smaller proportions identifying as non-binary (1.9%) or preferring not to disclose gender (1.9%). Most participants identified as non-Hispanic/Latinx (90.6%), with 9.4% identifying as Hispanic/Latinx. In terms of race, 50.9% identified as White, 28.3% as Asian, 9.4% as Black, and 11.3% as Other. Demographic characteristics are summarized in Table 1.

Maternal Parenting and Academic Performance Anxiety

A multiple regression analysis was conducted (n = 50) to examine whether maternal parenting style, as measured by PAQ-M subscales, predicted graduate students' academic performance anxiety, as measured by the Modified SAS-2 total score.

The overall model was statistically significant, $F(3, 46) = 5.12$, $p = .004$, $R^2 = .25$, indicating that 25% of the variance in academic performance anxiety scores was explained by the parenting styles. Among the predictors, authoritarian parenting was a significant positive predictor of academic stress ($\beta = .56$, $p = .014$), while authoritative ($\beta = -.06$, $p = .728$) and permissive parenting ($\beta = .14$, $p = .483$) were not significant predictors (see Table 2).

To further examine the effects of maternal parenting style on academic performance anxiety among graduate students, separate regression analyses were conducted (n = 50) for each of the SAS-2 subscales: somatic anxiety, worry, and difficulty concentrating. For somatic anxiety, the overall model was statistically significant with maternal parenting styles explaining 20% of the variance ($F(3, 46) = 3.83$, $p = .016$, $R^2 = .20$). Authoritarian parenting emerged as a significant positive predictor of somatic anxiety ($\beta = .56$, $p = .017$), while authoritative and permissive parenting styles were not significant predictors.

Similarly, for worry, the model was statistically significant, explaining 26% of the variance ($F(3, 46) = 5.46$, $p = .003$, $R^2 = .26$). Authoritarian parenting was again a significant positive predictor ($\beta = .70$, $p = .002$), indicating that higher levels of authoritarian parenting were associated with increased worry. Neither authoritative nor permissive parenting significantly predicted worry. For the difficulty concentrating subscale, the overall model was statistically significant ($F(3, 46) = 3.64$, $p = .019$, $R^2 = .19$); however, none of the individual parenting styles—authoritative, authoritarian, or permissive—were significant predictors (all ps > .05). See Table 3.

Academic Resilience and Academic Performance Anxiety

A linear regression (n = 53) examined whether academic resilience, as assessed using the ARS-30 total score, predicted academic performance anxiety using the SAS-2 total score. The model was statistically significant ($F(1, 51) = 12.28$, $p < .001$, $R^2 = .20$, Adjusted $R^2 = .18$), indicating that resilience accounted for approximately 20% of the variance in performance anxiety. The regression coefficient was negative and statistically significant ($B = -0.72$, $SE = 0.21$, $\beta = -0.44$, $t = -3.50$, $p < .001$), showing that higher academic resilience was associated with lower academic performance anxiety.

Follow-up univariate analyses (n = 52) demonstrated that academic resilience significantly and negatively predicted all three SAS-2 subscales: somatic anxiety, worry, and concentration disruption. Specifically, academic resilience negatively predicted Somatic Anxiety, ($F(1, 50) = 8.87$, $p = .004$, $\eta^2_p = .15$), Worry ($F(1, 50) = 6.43$, $p = .014$, $\eta^2_p = .11$), and Concentration Disruption ($F(1, 50) = 10.80$, $p = .002$, $\eta^2_p = .18$). Detailed results are in Table 4.

The Moderating Effect of Parenting Style

Three moderation analyses (n = 50) were conducted using PROCESS macro (Model 1; Hayes, 2022) to examine whether parenting style moderated the rela-

tionship between academic resilience and total anxiety, with statistical assumptions evaluated for each analysis. Variables were automatically mean-centered by PROCESS prior to analysis, which reduces multicollinearity between main effects and interaction terms. The analyses used heteroscedasticity-consistent standard errors (HC3) to provide robust parameter estimates. Each moderation model included academic resilience as the predictor variable, one parenting style as the moderator, and their interaction term, with total academic performance anxiety as the outcome variable. The three models tested were: (1) Academic Resilience × Authoritative Parenting, (2) Academic Resilience × Authoritarian Parenting, and (3) Academic Resilience × Permissive Parenting.

For all three moderation models, the interaction terms were not statistically significant: Authoritative × Resilience ($B = -0.15$, $SE = 0.29$, $p = .615$), Authoritarian × Resilience ($B = -0.03$, $SE = 0.18$, $p = .871$), and Permissive × Resilience ($B = -0.06$, $SE = 0.20$, $p = .761$). The confidence intervals for all interaction effects included zero, indicating no significant moderation. Thus, parenting style did not moderate the protective effect of academic resilience.

Moreover, descriptive statistics and bivariate intercorrelations among study variables are presented in Table 6. Authoritarian parenting showed significant positive associations with total anxiety ($r = .49$, $p < .001$) and all anxiety subscales, while authoritative parenting and academic resilience were negatively correlated with anxiety outcomes. Notably, authoritarian and authoritative parenting were strongly inversely correlated ($r = -.63$, $p < .001$), reflecting the expected divergence between these styles.

Discussion

Summary of Key Findings

In examining the effects of maternal parenting style on academic performance anxiety, results indicated that authoritarian parenting was a significant positive predictor of anxiety. Specifically, it predicted higher levels of somatic anxiety and worry, though it did not significantly predict concentration disruption. Authoritative and permissive parenting styles were not significant predictors of academic anxiety or any of its subcomponents. Interestingly, the overall model predicting concentration disruption was statistically significant, despite none of the individual parenting styles emerging as significant. This finding likely reflects the high intercorrelations among the three parenting styles subscales, which makes it difficult to isolate the unique contributions of any single parenting style. Future research with larger samples may distinguish the overlapping contributions.

Additionally, academic resilience was a significant negative predictor of academic performance anxiety. Higher levels of academic resilience were associated with lower scores across all three anxiety subscales: somatic anxiety, worry, and concentration disruption. Finally, moderation analyses examined the interaction between maternal parenting style and academic resilience on academic anxiety, which revealed no significant interaction effects. That is, the protective effect of academic resilience on academic anxiety did not differ by maternal parenting style, suggesting that resilience operates as a consistent buffer against academic stress regardless of caregiving environment. These findings should nevertheless be interpreted with care, as conducting three separate analyses may have inflated Type I error, thereby increasing the likelihood of false positive results. Therefore , the pattern of significant effects should be viewed as preliminary until they are replicated in future, larger samples.

Interpretation of Results

Given that authoritarian maternal parenting significantly predicted heightened academic performance anxiety, both somatically and cognitively, our first hypothesis is substantiated. This evidence suggests that strict, controlling, and low-warmth care cultivates an individual's baseline sense of internalized pressure, potentially upregulating autonomic arousal. Such unintentional conditioning may predispose students to perseverate on fear of failure, develop obsessive perfectionistic tendencies, and formulate unattainable standards of success. Moreover, the significant positive associations with both the somatic symptoms and worry subscales suggest that authoritarian parenting is linked to cognitive aspects of anxiety, such as apprehension about performance outcomes, as well as physiological responses, including muscular tension and autonomic stress reactivity during academic tasks.

Unexpectedly, neither authoritative nor permissive parenting styles demonstrated significant negative associations with performance anxiety, suggesting that warmth with structure (authoritative) and warmth without structure (permissive) do not meaningfully

modulate academic performance anxiety within this graduate student sample. It is possible that, because these individuals were not conditioned to chronic criticism, threat sensitivity, or hypervigilant self-monitoring in early development, their baseline stress responses remain comparatively neutralized. This finding was particularly surprising given the extensive literature demonstrating that authoritative parenting promotes emotional regulation and reduces anxiety in younger populations (Jabeen et al., 2013; Jin & Chen, 2024; Li et al., 2023; Mortazavizadeh et al., 2022). We had anticipated that authoritative parenting would show protective effects against academic anxiety, similar to its established benefits for academic competence and self-efficacy (Masud et al., 2014; Mital, 2011).

Consistent with this study's second hypothesis, academic resilience negatively predicted academic performance anxiety. As greater resilience is associated with diminished performance anxiety, students exhibiting higher resilience likely possess more robust coping repertoires, greater adaptability to adversity, and more established capacities for emotional and cognitive regulation under academic stress. Thus, resilience can be confidently conceptualized as a protective factor against the physiological, cognitive, and attentional expressions of anxiety. No moderation effect was found between parenting style and resilience, signifying that resilience functions as a universal buffer irrespective of early maternal experiences. This absence of moderation has several important theoretical and clinical implications that warrant detailed consideration.

First, these findings challenge developmental models that position early caregiving as the primary determinant of adult coping capacity. While authoritarian parenting predicted higher anxiety levels, resilience's protective effects remained consistent across all parenting styles. This suggests that resilience may be more malleable and context-dependent than previously assumed, operating through mechanisms that are at least partially independent of early relational programming. The universality of resilience's protective effects indicates that individuals can develop adaptive coping strategies regardless of whether they experienced supportive, controlling, or permissive maternal caregiving.

Second, the lack of moderation supports contemporary conceptualizations of resilience as a dynamic process rather than a fixed trait established in childhood. These findings align with intervention research demonstrating that resilience skills can be effectively taught and strengthened throughout adulthood, even among individuals with adverse childhood experiences. The consistent protective effect across parenting styles suggests that resilience-building interventions may be equally effective for all graduate students, regardless of their developmental history.

These findings attenuate assumptions that resilience is solely cultivated during early developmental periods. Rather, they reinforce prior literature conceptualizing resilience as an evolving construct that adapts to unique challenges across the lifespan (MacLeod, 2016). For this study in particular, resilience was associated with reduced somatic anxiety, worry, and concentration difficulties in response to academic performance demands.

Contextualized in Prior Literature

The present finding that authoritarian maternal parenting style is significantly correlated with academic worry and somatic anxiety supports Pinquart's (2016) meta-analysis findings that authoritarian parenting (and permissive parenting) were associated with lower academic performance. However, the unexpected null findings for authoritative parenting warrant particular attention, as they diverge from established literature showing protective effects of warm, structured caregiving. For example, Turner et al. (2009) found that parental support and warmth continue to influence academic outcomes among female first-year college students. Similarly, Cheung and McBride-Chang (2008) claimed that parental support and encouragement are notable contributors to academic motivation in fifth-grade students. However, in our graduate student sample, authoritative parenting (e.g., high warmth, high demandingness) was not significantly related to reduced performance anxiety. One possible explanation is developmental timing: authoritative parenting may exert its strongest protective effects during childhood and adolescence, which is when parental involvement directly shapes coping and regulatory skills. However, its influence may diminish in adulthood. At later stages, institutional demands, individual coping resources, and broader social support may become more critical in shaping anxiety outcomes.

Our study also revealed no significant relationship between permissive parenting and academic performance anxiety. This finding may reflect the distinct au-

tonomy and self-direction of graduate students, who are less dependent on parental structure. By the time students reach graduate school, the heightened costs and risks associated with extending their education may foster greater intrinsic motivation, even among those who lacked structured encouragement during childhood.

While parenting styles have been widely studied in relation to academic outcomes such as grades, motivation, or competence, there has been far less attention to their links with performance anxiety. By focusing on the psychological manifestations of academic anxiety, this study broadens the literature across performance psychology, school psychology, and family psychology, with particular emphasis on maternal parenting patterns.

Implications

Collectively, these findings reinforce that early maternal caregiving fundamentally shapes emotional regulation under academic performance pressure. Notably, there are enduring and detrimental impacts of authoritarian parenting, which can undermine well-being in high-demand environments where downregulation, self-efficacy, and adaptive problem-solving are essential. The absence of a moderation effect suggests that resilience functions as a universal protective factor, with interventions targeting resilience likely to benefit students regardless of their maternal parenting history.

For clinicians working with graduate students, these results underscore the importance of considering early caregiving experiences when conceptualizing performance-related anxiety. Understanding how authoritarian parenting may contribute to internalized pressure, perfectionism, and maladaptive coping can inform targeted and effective interventions. In particular, this study highlights the need to integrate resilience-building approaches to fortify adaptive coping alongside broader therapeutic care. Interventions might include cognitive restructuring to challenge fear-based achievement beliefs, skills training to enhance emotion regulation under pressure, and mindfulness or acceptance-based practices to mitigate somatic anxiety during academic tasks. Fostering self-compassion and helping students recognize the limits of parental influences can cultivate greater psychological flexibility and autonomy. Furthermore, exploring the developmental origins of achievement-related fears can deepen the therapeutic alliance by validating clients' histories while empowering them to build resilience as a dynamic, lifelong resource in their academic and professional pursuits.

The null moderation findings also carry broader implications for understanding resilience development and intervention design. The universal protective effect of resilience suggests that graduate programs and mental health services can implement resilience-building initiatives without needing to tailor approaches based on students' early family experiences. This universality supports the implementation of interventions such as resilience workshops, stress management training, and mindfulness-based programs, which can benefit all students regardless of developmental background.

Limitations

This study has several limitations to consider. First, the sample size is small (n = 50), limiting statistical power and generalizability. As a result, some associations may have gone undetected due to insufficient sensitivity. For example, the absence of a link between authoritative parenting and performance anxiety may reflect a limited sample size rather than a true null effect. Furthermore, conducting moderation analyses with an underpowered sample increases the risk of unstable parameter estimates and Type II errors, which should be considered when interpreting these findings.

Given the non-significant interactions observed and the sample size constraints, the study was powered to detect only large effects and may have missed smaller, yet potentially meaningful, moderation effects. To address potential assumption violations with the limited sample size, we employed PROCESS macro with heteroscedasticity-consistent standard errors and mean-centered variables, which provides more robust estimates than traditional regression approaches.

Second, the sample was largely composed of graduate students from a single, urban institution in the Northeastern United States, which limits the generalizability of findings to broader or more diverse graduate student populations. However, the institution from which the sample was drawn is academically competitive, and recruitment from this context was intentional, given evidence that performance anxiety is often heightened in such environments. Coupled with this, all measures were self-reported and retrospective, which could have introduced recall bias or social desirability effects, particularly in the assessment of maternal parenting style. Our survey also used the term 'mother' without further specification of the

type of maternal relationship (e.g., biological, adoptive, stepparent), thus potentially introducing variability in how participants interpreted and responded to parenting-style questions. Similarly, although our modification of the SAS-2 demonstrated strong psychometric properties, the use of an adapted version rather than the originally validated and worded items may require additional methodological consideration.

Lastly, our study did not examine a wide variety of demographic differences in our primary analysis, which would have provided additional insights into how parenting influences vary across diverse groups. Some additional demographic questions could have included participants' specific academic programs, prior academic performance, or educational backgrounds, which could inform understanding of how academic history interacts with parenting influences. However, the decision to omit these analyses reflected the exploratory nature of the study and the constraints of the sample size, as including additional covariates may have reduced statistical power and limited interpretability. Finally, our survey did not account for confounding effects such as current mental health support or broader social determinants that may impact both academic resilience and anxiety.

Future Directions

Future research should continue to expand on the influence of early caregiving experiences on academic resilience and anxiety. They would benefit from larger and more diverse samples to fully capture cultural variability in parenting perceptions and include participants from a range of geographical settings. Adequate statistical power will also be essential in future work, with larger samples ($n > 100$) recommended to detect small to moderate interaction effects. The use of bootstrapping procedures would further enhance the stability and robustness of estimates.

Moreover, future investigations should explore whether parenting styles moderate the relationship between resilience and specific dimensions of anxiety (e.g., somatic symptoms, worry, concentration disruption) to provide a more nuanced understanding of protective mechanisms. Additional studies could focus more specifically on paternal parenting styles or extend inquiry to the roles of other caregivers, such as grandparents, siblings, aunts, and uncles, in order to capture a broader range of familial influences on resilience, anxiety, and academic performance. Finally, employing longitudinal designs would be especially valuable for clarifying how parenting styles, resilience, and academic anxiety unfold and interact across different stages of education. Ultimately, such work is aimed at making the future of graduate education healthier and more sustainable.

Conclusion

This study found that authoritarian maternal parenting is associated with greater academic performance anxiety in graduate students, while academic resilience serves as a protective factor. Notably, parenting style did not moderate the relationship between resilience and anxiety, suggesting that resilience serves as a protective factor regardless of early maternal caregiving style. Altogether, these findings underscore the importance of promoting resilience-based interventions in high-pressure academic settings and highlight early relational experiences as meaningful, though not determinative, influences on students' capacity to manage academic performance anxiety. Looking ahead, future research should carefully investigate how family dynamics and individual coping mechanisms interact to shape resilience, anxiety, and success in the demanding context of graduate education.

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Table 1.

Demographic Characteristics of the Participants

Demographic	*n*	*%*
Gender	53	100.0
Male	11	20.8
Female	40	75.5
Non-Binary	1	1.9
Prefer not to say	1	1.9
Ethnicity	52	98.1
Hispanic/Latinx	4	9.4
Non-Hispanic/Latinx	48	90.6
Race	53	100.0
White	27	50.9
Black	5	9.4
Asian	15	28.3
Other	6	11.3

Note. Demographic characteristics were obtained through a self-report questionnaire. Analytic sample sizes varied by analysis due to missing data patterns depending on participants.

Table 2.

Maternal Parenting and Academic Performance Anxiety Among Graduate Students

Maternal Parenting Style	β	*t*	*p*	95% CI
Authoritative	−.06	−0.35	.728	[−0.35, 0.25]
Authoritarian	.56	2.57	.014*	[0.09, 0.76]
Permissive	.14	0.71	.483	[−0.27, 0.56]

Note. $n = 50$. The maternal parenting style was assessed using the PAQ-M, which includes authoritative, authoritarian, and permissive subscale scores. Academic performance anxiety was assessed using the total Modified SAS-2 score.

*$p < .05$

Table 3.

Multiple Regression Analyses on Maternal Parenting Style and Subscales of Academic Stress: Somatic Anxiety, Worry, and Difficulty Concentrating (n = 50)

Variable	Somatic Anxiety		Worry		Difficulty Concentrating	
	β	*p*	β	*p*	β	*p*
Authoritative	−.13	.463	.20	.235	−.24	.174
Authoritarian	.56	.017*	.70	.002**	.21	.363
Permissive	.33	.112	.12	.546	−.04	.833
R^2	.20		.26		.19	
F	3.83*		5.46**		3.64*	

Note. Maternal parenting style was assessed using the PAQ-M. Academic stress subscales were assessed using the SAS-2 Modified. All regression models had degrees of freedom (3, 46).
*$p < .05$. **$p < .01$

Table 4.

Summary of Univariate Effects of Academic Resilience on Anxiety Subscales: Somatic Anxiety, Worry, and Difficulty Concentrating

Dependent Variable	$F(1,50)$	p	η^2_p	Observed Power
Somatic Anxiety	8.87	.004**	.15	.83
Worry	6.43	.014*	.11	.70
Concentration	10.80	.002**	.18	.90

Note. n = 52. All regression models had degrees of freedom (1, 50). Observed power calculations were performed using α = .05.
*p < .05. **p < .01

Table 5.

Parenting Style as a Moderator of the Relationship Between Academic Resilience and Anxiety

Parenting Style	*B*	*SE*	*t*	*p*	95% CI
Authoritative × ARS	−0.15	0.29	−0.51	.615	[−0.74, 0.44]
Authoritarian × ARS	−0.03	0.18	−0.16	.871	[−0.39, 0.34]
Permissive × ARS	−0.06	0.20	−0.31	.761	[−0.46, 0.34]

Note. $n = 50$. Interaction terms test whether the association between academic resilience (ARS) and total anxiety varies by parenting style. All confidence intervals include zero, indicating no significant moderation effects. p-values are uncorrected.

Table 6.

Descriptive Statistics and Intercorrelations Among Study Variables

Variable	*n*	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. Authoritative Parenting	51	3.27	0.82	–							
2. Authoritarian Parenting	51	2.85	0.97	-.63**	–						
3. Permissive Parenting	51	2.59	0.72	.52**	-.77**	–					
4. Academic Resilience	53	3.73	0.44	.39**	-.12	.14	–				
5. Somatic Anxiety	52	2.01	0.72	.31*	.38**	-.16	-.39**	–			
6. Worry	52	2.47	0.90	-.18	.48**	-.31*	-.34*	.67**	–		
7. Concentration Disruption	52	2.08	0.90	-.40**	.40**	-.33*	-.42**	.57**	.59**	–	
8. Total Anxiety	52	2.19	0.72	-.34*	.49**	-.32*	-.44**	.84**	.88**	.85**	–

Note. Parenting style subscales are from the PAQ-M (range: 1–5). Academic Resilience is from the ARS-30 (range: 1–5). Anxiety subscales and total are from the Modified SAS-2 (range: 1–4).
*$p < .05$. **$p < .01$