

The Relationship of Classroom Emotion, Self-Compassion, and Tolerance of Ambiguity with Academic Anxiety among Female Senior High School Students in District 9 of Karaj

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Article Info

Article type:

Original Research

How to cite this article:

Mohamadbeiki Khortabi, M. & Tarkhan, M. (2026). The Relationship of Classroom Emotion, Self-Compassion, and Tolerance of Ambiguity with Academic Anxiety among Female Senior High School Students in District 9 of Karaj. *Journal of Adolescent and Youth Psychological Studies*, 7(11), 1-13.

<https://dx.doi.org/10.61838/kman.jayps.5736>



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ABSTRACT

Objective: This study aimed to examine the relationship of classroom emotion, self-compassion, and tolerance of ambiguity with academic anxiety among female senior high school students in District 9 of Karaj.

Methods and Materials: The present study employed a descriptive-correlational research design. The statistical population consisted of female senior high school students in District 9 of Karaj, from whom 210 students were selected initially through multistage cluster sampling and finally through convenience sampling. Data were collected using the Friedman and Jacob Test Anxiety Questionnaire (1997), the Classroom Emotion Questionnaire developed by Titsworth et al. (2010), the Tolerance of Ambiguity Questionnaire developed by Weden et al. (2003), and the Short Form of the Self-Compassion Scale developed by Raes et al. (2011). The collected data were analyzed using descriptive indices, Pearson correlation coefficient, and stepwise multiple regression analysis.

Findings: The inferential findings indicated a significant negative relationship between classroom emotion and academic anxiety, suggesting that more positive classroom emotional experiences were associated with lower levels of academic anxiety. A significant negative relationship was also found between self-compassion and academic anxiety, indicating that students with higher self-compassion experienced lower academic anxiety. In the stepwise regression analysis, classroom emotion emerged as the strongest predictor and explained 15.50% of the variance in academic anxiety. Self-compassion was added in the second step and explained an additional 2.20% of the variance. Together, classroom emotion and self-compassion accounted for 17.70% of the total variance in academic anxiety. Tolerance of ambiguity did not enter the final predictive model.

Conclusion: The findings suggest that classroom emotion and self-compassion are important psychological and educational variables in predicting academic anxiety among female senior high school students. Strengthening positive classroom emotional experiences and promoting self-compassion may help reduce students' academic anxiety.

Keywords: Classroom Emotion; Self-Compassion; Tolerance of Ambiguity; Academic Anxiety; Female Students.

1. Introduction

Academic anxiety is one of the most important psychological challenges affecting students' learning experiences, academic functioning, and emotional adjustment during school years. Although a moderate level of concern about academic tasks can sometimes motivate students to prepare and perform, persistent academic anxiety may interfere with concentration, memory retrieval, self-confidence, learning engagement, and classroom participation. This issue is particularly important during senior high school, when students are required to manage more complex academic demands, prepare for high-stakes evaluations, and make decisions that may influence their future educational and occupational pathways. In this context, academic anxiety is not merely an individual emotional state; rather, it is shaped by a combination of cognitive, emotional, interpersonal, and contextual factors within the school environment. Recent studies have repeatedly emphasized that anxiety among students is closely connected with academic performance, learning motivation, self-regulation, classroom interaction, and psychological well-being (Jia, 2024; Langah et al., 2024; Wu et al., 2022).

Academic anxiety becomes especially significant when it is considered in relation to test anxiety. Test anxiety is commonly understood as a multidimensional form of academic anxiety that includes cognitive worry, emotional tension, physiological arousal, and fear of negative evaluation in testing situations. It can disrupt students' ability to demonstrate their real academic competence, even when they have adequate knowledge or preparation. The Persian validation of the Friedman Test Anxiety Scale has provided a useful basis for assessing this construct among Iranian students and has supported the applicability of this measure in educational and psychological research contexts (Baezat et al., 2012). In addition, recent research has shown that test anxiety is related to emotional regulation processes and academic performance, suggesting that students' ability to manage emotional responses in evaluative situations is essential for successful learning outcomes (Alshareef et al., 2025). Therefore, understanding the variables that may reduce or intensify academic anxiety can help educators, school counselors, and psychologists develop more effective preventive and supportive interventions.

One theoretical framework that helps explain the emotional nature of learning is the control-value theory of achievement emotions. According to this perspective,

students' emotions in academic settings are shaped by their perceptions of control over learning tasks and the value they assign to academic outcomes. When students perceive academic tasks as threatening, uncontrollable, or highly evaluative, anxiety is more likely to emerge; in contrast, when students experience support, competence, and meaningful engagement, more adaptive emotions may develop (Pekrun, 2024). This theoretical view highlights the importance of studying academic anxiety alongside classroom emotions, because the emotional atmosphere of the classroom can influence how students interpret academic demands. Classroom emotion is therefore a key contextual and psychological variable that may either intensify or buffer students' academic anxiety.

Classroom emotion refers to the emotional experiences and emotional climate that emerge within teaching and learning interactions. It includes students' perceptions of emotional support, emotional struggle, and emotional capacity within the classroom. The development and validation of the Classroom Emotions Scale by Titsworth and colleagues provided an important instrument for measuring these aspects of classroom emotional experience (Titsworth et al., 2010). In the Iranian context, the psychometric properties of this scale have also been examined, supporting its relevance for studying students' classroom emotional experiences (Ghodsi et al., 2018). Classroom emotion is important because students do not learn in emotionally neutral spaces. Teacher communication, peer interactions, classroom organization, and perceived emotional safety can all shape how students experience academic challenges. When classrooms are emotionally supportive, students may feel more secure, more willing to participate, and less fearful of mistakes. Conversely, emotionally negative or unsupportive classroom environments may increase avoidance, worry, and academic anxiety.

Empirical evidence has increasingly confirmed the relationship between academic emotions and educational outcomes. Research on the academic emotions of students, teachers, and parents has shown that emotional factors are meaningfully associated with students' academic performance, indicating that emotion is an integral component of learning rather than a secondary or peripheral factor (Soleimani Shabilou et al., 2019). Similarly, studies on classroom interaction patterns have shown that students' emotional responses can be detected in abnormal or problematic classroom interactions, suggesting that classroom emotion is closely tied to participation,

engagement, and behavioral adjustment (Han et al., 2023). Reviews of academic stress and anxiety detection in classrooms have further emphasized that anxiety-related processes should be examined not only as internal psychological conditions but also as phenomena observable within classroom contexts and learning environments (Jiménez-Mijangos et al., 2023). These findings support the assumption that classroom emotion may play a significant role in predicting academic anxiety.

The relevance of classroom emotion has become even more visible in changing educational conditions, including online and technology-mediated learning environments. Studies have shown that online class-related anxiety is associated with academic achievement, indicating that emotional experiences in the learning environment, whether physical or virtual, can affect students' academic outcomes (Zeng et al., 2023). Furthermore, research on cyberostracism has demonstrated that digital exclusion and negative online social experiences can represent important emotional stressors for students, especially when peer relations and social belonging are connected to educational participation (Hatun & Demirci, 2022). These findings suggest that students' academic anxiety may be influenced by broader emotional and social experiences connected to school and classroom life. For adolescent girls, who may be particularly sensitive to interpersonal evaluation, social belonging, and classroom climate, classroom emotion may be an especially important protective or risk-related factor.

Another important variable related to academic anxiety is self-compassion. Self-compassion refers to the capacity to respond to personal difficulties, mistakes, and perceived inadequacies with kindness, mindfulness, and a sense of common humanity rather than harsh self-criticism, isolation, and over-identification with negative experiences. The short form of the Self-Compassion Scale developed by Raes and colleagues provides a concise and psychometrically supported measure of this construct (Raes et al., 2011). In Iran, the Persian version of the Self-Compassion Scale has also been examined and its factor structure and reliability have been supported (Shahbazi et al., 2015). In academic contexts, self-compassion is especially relevant because students frequently encounter failure, comparison, criticism, difficult tasks, and performance pressure. Students with higher self-compassion may interpret academic difficulty as a normal part of learning rather than as evidence of personal inadequacy.

Self-compassion may reduce academic anxiety through several psychological mechanisms. First, it can reduce self-

judgment after mistakes and thereby weaken the fear of failure. Second, it can help students regulate negative emotions by encouraging mindful awareness rather than avoidance or rumination. Third, it may strengthen resilience by helping students maintain motivation after academic setbacks. Research has shown that self-compassion can protect students against negative emotional responses under chronic academic stress (Zhang et al., 2016). In addition, self-compassion has been linked to lower perceived stress and healthier behaviors, suggesting that it may influence both psychological and behavioral pathways of well-being (Homan & Sirois, 2017). More recent evidence has also connected self-compassion with improved well-being and healthier cortisol profiles among undergraduate students, indicating that self-compassion may be associated not only with subjective psychological outcomes but also with physiological stress regulation (Cowand et al., 2024).

The role of self-compassion is also important in adolescent mental health. Recent research has shown that self-compassion can moderate the relationship between emotion regulation and mental health in adolescents, suggesting that self-compassion may function as a protective psychological resource when young people experience emotional difficulties (Nguyen et al., 2025). In the Iranian context, self-compassion has been studied as a mediating variable in the relationship between self-concept, body image, and social anxiety among female students, which highlights its relevance for understanding anxiety-related experiences in girls and young women (Harouni & Khosh Akhlaq, 2022). Since academic anxiety often contains elements of self-evaluation, fear of judgment, and perceived inadequacy, self-compassion may be particularly important for female students who face academic and social pressures simultaneously. Accordingly, students with higher self-compassion may be less likely to interpret academic challenges as personal threats and more likely to manage anxiety adaptively.

Emotion regulation is another mechanism linking classroom emotion, self-compassion, and academic anxiety. Educational research has increasingly shown that students' ability to regulate emotions is associated with academic motivation, perceived academic stress, and performance. For example, emotion regulation and perceptions of academic stress have been identified as key predictors of academic motivation in second language learning contexts (Liang & Mao, 2025). Intervention research has also shown that programs targeting anxiety and emotional regulation can influence academic performance even in younger students

(Gomis et al., 2025). These findings suggest that academic anxiety should not be examined only as a static outcome but as part of a dynamic emotional-regulatory system. In this system, classroom emotion may represent an external contextual factor, while self-compassion may represent an internal personal resource that helps students manage academic stress and anxiety.

Tolerance of ambiguity is another construct that may be relevant to academic anxiety. Tolerance of ambiguity refers to individuals' capacity to remain psychologically flexible and functional in situations that are unclear, complex, unpredictable, or lacking definite answers. In educational settings, students frequently encounter ambiguity in learning tasks, examinations, feedback, future planning, and peer or teacher expectations. Low tolerance of ambiguity may cause students to experience uncertain academic situations as threatening, thereby increasing stress and anxiety. The Ambiguity Tolerance Questionnaire has been examined in Iranian samples, providing support for its use in local research contexts (Moghimi & Ramezan, 2015). Theoretically, tolerance of ambiguity may be especially relevant during senior high school because students are exposed to uncertainty about examinations, grades, educational pathways, and future opportunities.

Previous studies support the relationship between ambiguity tolerance, uncertainty-related processes, and stress. Research among practicing physicians showed that ambiguity and uncertainty tolerance are associated with stress, indicating that difficulty tolerating unclear situations can have psychological consequences even in professional and educationally advanced populations (Iannello et al., 2017). More recent evidence among university students has shown that tolerance for ambiguity is related to stress and anxiety through the mediating role of need for cognitive closure, suggesting that individuals who struggle with ambiguity may seek certainty in ways that increase psychological strain (Zuo, 2025). In academic settings, intolerance of uncertainty, cognitive test anxiety, and academic self-handicapping have also been shown to collectively influence learner outcomes, supporting a process model in which uncertainty-related cognition contributes to anxiety and maladaptive academic behaviors (Cassady et al., 2024). These findings justify examining tolerance of ambiguity as a possible predictor of academic anxiety.

Tolerance of ambiguity may also influence learning engagement and collaboration. A review of ambiguity tolerance and resilience emphasized that these factors may

contribute to students' engagement, suggesting that students who can tolerate ambiguity may remain more involved in learning despite uncertainty and challenge (Yu et al., 2022). Similarly, structural equation modeling evidence from language learning contexts has shown that ambiguity tolerance is associated with learning effectiveness and students' perceptions of peer collaboration (Lin et al., 2023). These findings indicate that ambiguity tolerance may have both emotional and educational implications. However, its relationship with academic anxiety may vary across samples and contexts. In some cases, ambiguity tolerance may directly predict anxiety; in others, its influence may be weaker than that of more immediate emotional variables such as classroom emotion and self-compassion.

Adolescence is a developmental period in which academic anxiety deserves particular attention. High school students experience rapid cognitive, emotional, social, and identity-related changes while simultaneously facing increasing academic responsibilities. Longitudinal evidence on high school adolescents has shown meaningful correlations between psychological and physiological indicators of stress and anxiety, indicating that anxiety during this period may be reflected across both mental and bodily systems (Stromájer et al., 2023). For female students, academic anxiety may also intersect with gendered expectations, social comparison, fear of evaluation, and concerns about future educational success. Therefore, studying academic anxiety among female senior high school students can contribute to a more nuanced understanding of the psychological factors that support or undermine educational adjustment.

Despite the growing body of international research on anxiety, academic emotions, self-compassion, and ambiguity tolerance, there remains a need for context-specific studies among Iranian high school students. Many previous studies have focused on university students, medical students, online learning, or general adolescent mental health, while fewer studies have simultaneously examined classroom emotion, self-compassion, and tolerance of ambiguity as predictors of academic anxiety among female senior high school students. This is important because these variables represent three different but complementary levels of influence: classroom emotion reflects the emotional quality of the learning environment, self-compassion reflects an internal self-regulatory and self-relational resource, and tolerance of ambiguity reflects the student's cognitive-emotional response to uncertainty. Examining these variables together can clarify which factors

have stronger predictive value for academic anxiety and can help guide school-based interventions.

Furthermore, the use of validated instruments in the Iranian context strengthens the methodological basis for such research. The availability of Persian measures for test anxiety, classroom emotion, self-compassion, and ambiguity tolerance allows researchers to examine these constructs with greater cultural and linguistic appropriateness (Baezat et al., 2012; Ghodsi et al., 2018; Moghimi & Ramezan, 2015; Shahbazi et al., 2015). From an applied perspective, identifying significant predictors of academic anxiety can help school counselors and educational psychologists design targeted programs. If classroom emotion is a major predictor, interventions may need to focus on teacher-student communication, emotional support, classroom climate, and emotionally responsive pedagogy. If self-compassion is a significant predictor, programs may need to include self-kindness, mindfulness, reduction of self-criticism, and normalization of academic difficulty. If tolerance of ambiguity is significant, cognitive flexibility and uncertainty-management training may be useful components of prevention programs.

Overall, academic anxiety is a multidimensional educational and psychological problem that should be examined through both contextual and individual variables. Classroom emotion may influence how students experience the learning environment, self-compassion may shape how they respond to academic setbacks and self-evaluative situations, and tolerance of ambiguity may determine how they manage uncertainty and complexity in academic life. Integrating these variables provides a more comprehensive framework for understanding academic anxiety among female senior high school students and may offer practical implications for educational counseling, classroom management, and student mental health promotion.

Therefore, the present study aimed to examine the relationship between classroom emotion, self-compassion, and tolerance of ambiguity with academic anxiety among female senior high school students in District 9 of Karaj.

2. Methods and Materials

2.1. Study Design and Participants

The present study was applied in terms of its objective, quantitative in terms of data type, descriptive in terms of nature, and correlational in terms of research method. The statistical population included all female senior high school students studying in District 9 of Karaj during the 2025–

2026 academic year. The sample size was determined based on statistical power analysis using G*Power software. In this calculation, three predictor variables, including classroom emotion, self-compassion, and tolerance of ambiguity, and one criterion variable, academic anxiety, were considered within a multiple regression model. The significance level was set at 0.05, the statistical power at 0.80, and the effect size at a medium level ($f^2 = 0.15$). Accordingly, the initial required sample size was estimated to be approximately 77 participants. However, considering the clustered structure of classrooms, an intraclass correlation coefficient of 0.05, the design effect, and a possible 15% rate of data attrition, the final sample size was determined as 210 students. Sampling was conducted through a multistage cluster sampling procedure. In the first stage, girls' senior high schools in District 9 of Karaj, including Hadaf, Rajhan, Etrat, and Islamic Revolution schools, were selected as the main clusters. In the next stage, the tenth, eleventh, and twelfth grades in each school were considered as sub-clusters. Finally, a number of students from the classes of each grade were selected through convenience sampling and entered the study as the final sample. After obtaining the required permissions from the university and presenting them to the Department of Education in District 9 of Karaj, the necessary coordination was carried out with the principals of the selected schools. The researcher attended the schools, explained the objectives of the study, assured the participants about the confidentiality of their information, emphasized the voluntary nature of participation, and provided instructions on how to complete the questionnaires. Informed consent was obtained from the students before data collection. The questionnaires were administered collectively in classroom settings under standard conditions. The researcher supervised the administration process, responded to possible questions, and emphasized the importance of completing all items. After completion, the questionnaires were collected, reviewed, scored, and entered into SPSS version 27 for statistical analysis.

2.2. Measures

Classroom Emotion Scale. The Classroom Emotion Scale was developed by Titsworth et al. in 2010 to assess classroom emotion among students. This scale consists of 14 items and three subscales: emotional support, emotional struggle, and emotional capacity. The emotional support subscale includes items 1 to 8, the emotional struggle subscale includes items 9 to 12, and the emotional capacity

subscale includes items 13 and 14. The items are scored on a five-point Likert scale ranging from 1, indicating “strongly disagree,” to 5, indicating “strongly agree.” Items 9, 11, and 12 are reverse-scored. The total score ranges from 14 to 70, with higher scores in each dimension indicating a higher level of the corresponding classroom emotion. In the study by Titsworth et al. (2010), the reliability of the scale was assessed using Cronbach’s alpha, and the coefficients for emotional support, emotional struggle, and emotional capacity were reported as 0.92, 0.78, and 0.89, respectively. In an Iranian study by Ghodsi et al. (2018), Cronbach’s alpha was reported as 0.71 for the total scale and 0.79, 0.58, and 0.80 for emotional support, emotional struggle, and emotional capacity, respectively.

Self-Compassion Scale–Short Form. The Self-Compassion Scale–Short Form consists of 12 items and was developed by Raes et al. in 2011 based on Neff’s 26-item Self-Compassion Scale. The instrument was designed to assess individuals’ level of kindness and compassion toward themselves. In the study by Raes et al. (2011), six subscales were identified, and the same structure was confirmed in the Iranian validation study by Shahbazi et al. (2015). The six subscales include over-identification, measured by items 1 and 9; self-kindness, measured by items 2 and 6; mindfulness, measured by items 3 and 7; isolation, measured by items 4 and 8; common humanity, measured by items 5 and 10; and self-judgment, measured by items 11 and 12. The subscale scores are interrelated, and the scale also provides a total self-compassion score. Items are scored on a five-point Likert scale ranging from 1, indicating “never,” to 5, indicating “always.” The items related to self-judgment, isolation, and over-identification are reverse-scored. The total score ranges from 12 to 60, with higher scores indicating greater self-compassion. Raes et al. (2011) reported an internal consistency coefficient of 0.86 and a correlation coefficient of 0.97 with the long form of the Self-Compassion Scale. Confirmatory factor analysis in their study supported the six-factor structure and indicated that the 12-item version was an appropriate alternative to the long form. In the Iranian validation study by Shahbazi et al. (2015), Cronbach’s alpha was reported as 0.91 for the total scale and 0.77, 0.83, 0.92, 0.88, 0.91, and 0.87 for over-identification, self-kindness, mindfulness, isolation, common humanity, and self-judgment, respectively. Concurrent validity coefficients between this scale and its subscales with the General Health Questionnaire were significant and ranged from -0.28 to -0.48. The questionnaire was translated into Persian, reviewed in terms of content and

wording, and then back-translated into English by a professor proficient in English. The Persian version was used with minimal modifications.

Tolerance of Ambiguity Questionnaire. The Tolerance of Ambiguity Questionnaire was developed by Weden et al. in 2003 and consists of 16 items. The questionnaire assesses four dimensions, including novelty, complexity, insoluble problems, and tolerance of chaos and ambiguous conditions. The novelty dimension includes items 2, 9, 11, and 13; the complexity dimension includes items 4, 5, 6, 7, 8, 10, 14, 15, and 16; the insoluble problems dimension includes items 1, 3, and 12; and the overall dimension of tolerance of chaos and ambiguous conditions includes all 16 items. In this questionnaire, the even-numbered items, including items 2, 4, 6, 8, 10, 12, 14, and 16, are reverse-scored. Higher scores indicate lower tolerance of ambiguous and chaotic conditions, whereas lower scores indicate higher tolerance of ambiguity. Scores between 44 and 48 indicate a moderate level of tolerance of ambiguity. Scores below 44 indicate higher tolerance of ambiguity, and scores above 48 indicate lower tolerance of ambiguity. The reliability and validity of this questionnaire were evaluated by Weden et al., and reliability coefficients higher than 0.70 have been reported.

Friedman and Bendas-Jacob Test Anxiety Questionnaire. The Test Anxiety Questionnaire was developed by Friedman and Bendas-Jacob in 1997 to measure test anxiety. The questionnaire contains 23 items and includes three subscales in its original version: social derogation, cognitive obstruction, and tension. The social derogation subscale includes items 1 to 8, the cognitive obstruction subscale includes items 9 to 17, and the tension subscale includes items 18 to 23. The subscale scores are interrelated, and the questionnaire also provides a total score. Items are scored on a four-point Likert scale ranging from 0, indicating “strongly agree,” to 3, indicating “strongly disagree.” Items 1, 2, 3, 4, 5, 6, 7, 8, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22 are reverse-scored. The total score ranges from 0 to 69. In this questionnaire, higher scores indicate lower test anxiety. Friedman and Bendas-Jacob (1997) reported Cronbach’s alpha coefficients of 0.91, 0.85, and 0.81 for social derogation, cognitive obstruction, and tension, respectively, in a sample of 3,700 participants, indicating high internal consistency. In the study by Baezat et al. (2012), the reliability of the questionnaire was examined using Cronbach’s alpha, and the coefficients were reported as 0.90 for the first factor, 0.85 for the second factor, 0.83 for the third factor, and 0.91 for the total scale.

2.3. *Data Analysis*

Data analysis was conducted using both descriptive and inferential statistical methods. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize the demographic characteristics of the participants and the main research variables. Inferential statistics were applied to examine the relationships among the variables and to determine the predictive role of classroom emotion, self-compassion, and tolerance of ambiguity in academic anxiety. Pearson correlation coefficient was used to examine the bivariate relationships between the predictor variables and academic anxiety. In addition, stepwise multiple regression analysis was used to identify the variables that significantly predicted

academic anxiety and to determine the proportion of variance explained by each predictor. All statistical analyses were performed using SPSS version 27.

3. **Findings and Results**

The study sample consisted of 210 female senior high school students from District 9 of Karaj during the 2025–2026 academic year. Participants were selected from the tenth, eleventh, and twelfth grades in the selected girls’ senior high schools. All participants completed the questionnaires on academic anxiety, classroom emotion, self-compassion, and tolerance of ambiguity, and the data from all 210 respondents were included in the final statistical analysis.

Table 1

Descriptive Statistics and Pearson Correlations among the Study Variables

Variable	N	Mean	SD	1	2	3	4
1. Academic Anxiety	210	30.53	8.48	1			
2. Classroom Emotion	210	38.10	11.79	-0.399**	1		
3. Self-Compassion	210	35.18	10.57	-0.385**	0.666**	1	
4. Tolerance of Ambiguity	210	44.48	8.15	0.007	0.096	0.005	1

As shown in Table 1, the mean score of academic anxiety was 30.53 with a standard deviation of 8.48. Among the predictor variables, self-compassion had the lowest mean score, whereas tolerance of ambiguity had the highest mean score. The Pearson correlation coefficients indicated that classroom emotion had a significant negative relationship with academic anxiety ($r = -0.399, p < .01$). Self-compassion also showed a significant negative relationship with academic anxiety ($r = -0.385, p < .01$). These findings indicate that students with higher levels of classroom emotion and self-compassion reported lower levels of academic anxiety. However, the relationship between tolerance of ambiguity and academic anxiety was not statistically significant ($r = 0.007, p > .05$). In addition, a significant positive correlation was found between classroom emotion and self-compassion ($r = 0.666, p < .01$).

Before conducting the regression analysis, the assumptions required for parametric tests were examined. The results of the Kolmogorov–Smirnov test showed that the significance levels of the study variables were greater than 0.05, indicating that the distribution of the data was normal. Therefore, the use of Pearson correlation and multiple regression analysis was considered appropriate. In addition, the correlation matrix showed that the highest correlation among the predictor variables was between classroom emotion and self-compassion ($r = 0.666$), which did not indicate a severe multicollinearity problem. Since tolerance of ambiguity did not have a significant relationship with academic anxiety, it did not enter the stepwise regression model.

Table 2

Stepwise Regression Model Summary for Predicting Academic Anxiety

Criterion Variable	Model	Predictor Entered	R	R ²	Adjusted R ²	ΔR ²	Overall F	p	ΔF	p
Academic Anxiety	1	Classroom Emotion	0.399	0.159	0.155	0.159	39.37	.001	39.37	.001
Academic Anxiety	2	Self-Compassion	0.430	0.185	0.177	0.022	23.42	.001	6.44	

As presented in Table 2, classroom emotion entered the regression equation in the first step and significantly predicted academic anxiety. In this step, classroom emotion explained 15.50% of the variance in academic anxiety. In the second step, self-compassion entered the model and added 2.20% to the predictive power of the equation. Together, classroom emotion and self-compassion explained 17.70%

of the variance in academic anxiety among female senior high school students. The overall regression model was statistically significant, indicating that the combination of classroom emotion and self-compassion significantly predicted academic anxiety. Tolerance of ambiguity was excluded from the final regression model because it did not show a significant relationship with academic anxiety.

Table 3

Regression Coefficients for Predicting Academic Anxiety

Criterion Variable	Model	Predictor	B	SE	Beta	t	p
Academic Anxiety	1	Constant	41.46	1.82	—	—	—
Academic Anxiety	1	Classroom Emotion	-0.287	0.046	-0.399	-6.27	.001
Academic Anxiety	2	Constant	43.59	1.98	—	—	—
Academic Anxiety	2	Classroom Emotion	-0.185	0.061	-0.257	-3.05	.003
Academic Anxiety	2	Self-Compassion	-0.171	0.068	-0.214	-2.53	.012

As shown in Table 3, in the first model, classroom emotion negatively and significantly predicted academic anxiety ($B = -0.287$, $\beta = -0.399$, $t = -6.27$, $p = .001$). Therefore, the first regression equation was as follows: $Academic\ Anxiety = 41.46 + (-0.287 \times Classroom\ Emotion)$. In the second model, both classroom emotion and self-compassion were significant negative predictors of academic anxiety. Classroom emotion significantly predicted academic anxiety ($B = -0.185$, $\beta = -0.257$, $t = -3.05$, $p = .003$), and self-compassion also significantly predicted academic anxiety ($B = -0.171$, $\beta = -0.214$, $t = -2.53$, $p = .012$). Thus, the final regression equation was as follows: $Academic\ Anxiety = 43.59 + (-0.185 \times Classroom\ Emotion) + (-0.171 \times Self-Compassion)$. Based on these results, higher classroom emotion and higher self-compassion predicted lower academic anxiety among female senior high school students.

did not show a significant relationship with academic anxiety. The stepwise regression analysis further showed that classroom emotion was the strongest predictor of academic anxiety and explained 15.50% of its variance. In the second step, self-compassion entered the regression model and increased the explained variance by 2.20%. Overall, classroom emotion and self-compassion together explained 17.70% of the variance in academic anxiety. Tolerance of ambiguity was not retained in the final regression model because it did not significantly predict academic anxiety.

4. Discussion

The present study aimed to examine the relationship between classroom emotion, self-compassion, and tolerance of ambiguity with academic anxiety among female senior high school students in District 9 of Karaj. The findings showed that classroom emotion had a significant negative relationship with academic anxiety. In other words, students who reported more favorable classroom emotional experiences experienced lower levels of academic anxiety. The findings also indicated that self-compassion had a significant negative relationship with academic anxiety, meaning that students with greater self-compassion reported lower academic anxiety. However, tolerance of ambiguity

did not show a significant relationship with academic anxiety. The first finding, namely the negative relationship between classroom emotion and academic anxiety, is consistent with the theoretical and empirical literature emphasizing the central role of emotional experiences in learning environments. According to the control-value theory of achievement emotions, students' academic emotions are shaped by their perceptions of control over learning tasks and the value attached to academic outcomes. When students perceive the classroom as emotionally supportive, predictable, and responsive, they are more likely to experience adaptive academic emotions and less likely to interpret learning tasks as threatening (Pekrun, 2024). Therefore, the present finding can be explained by the idea that positive classroom emotions reduce the perceived threat of academic evaluation and increase students' sense of psychological safety. In such classrooms, mistakes are more likely to be viewed as part of the learning process rather than as signs of personal failure, and this emotional climate can reduce academic anxiety.

This finding is also aligned with the work of Titsworth and colleagues, who conceptualized classroom emotion as a meaningful part of teaching and learning and developed the Classroom Emotions Scale to assess emotional support, emotional struggle, and emotional capacity in educational contexts (Titsworth et al., 2010). The Iranian validation of this instrument also confirms the relevance of classroom emotion in local educational settings (Ghodsi et al., 2018). In the present study, the significant negative correlation between classroom emotion and academic anxiety suggests that the emotional quality of the classroom is not a peripheral feature of schooling but a direct psychological context in which academic anxiety may be intensified or reduced. This interpretation is consistent with research showing that academic emotions of students, teachers, and parents are related to students' academic performance and psychological functioning (Soleimani Shabilou et al., 2019). It is also supported by evidence indicating that abnormal classroom interactions are associated with distinguishable student emotion patterns, suggesting that classroom dynamics and emotional responses are closely intertwined (Han et al., 2023).

The predictive role of classroom emotion in the regression model further highlights its importance. Classroom emotion alone explained 15.50% of the variance in academic anxiety, making it the strongest predictor in this study. This finding may be interpreted in light of the fact that senior high school students spend a substantial part of their daily life in classroom environments, where teacher communication, peer relations, academic expectations, evaluative practices, and emotional support shape their psychological responses to learning. Studies on academic stress and anxiety detection in classroom settings have emphasized that anxiety is not only an intrapersonal condition but also a phenomenon that is expressed and shaped in educational environments (Jiménez-Mijangos et al., 2023). Similarly, studies on students' anxiety and academic performance have shown that anxiety can impair learning outcomes and reduce effective academic functioning (Jia, 2024; Langah et al., 2024). Therefore, when the classroom climate supports emotional security and engagement, it may weaken the psychological mechanisms through which academic pressure becomes anxiety.

The second major finding showed that self-compassion had a significant negative relationship with academic anxiety. This result is consistent with previous research indicating that self-compassion serves as a protective psychological resource in the face of stress, failure, and

emotional distress. Self-compassion allows students to respond to academic difficulties with self-kindness, mindfulness, and recognition of shared human imperfection rather than harsh self-judgment, isolation, and over-identification with negative experiences. The short form of the Self-Compassion Scale developed by Raes and colleagues has provided a reliable basis for assessing this construct (Raes et al., 2011), and the Persian validation of the scale has supported its applicability in Iranian research contexts (Shahbazi et al., 2015). In academic settings, self-compassion may reduce anxiety by helping students reinterpret academic mistakes as manageable experiences rather than as threats to self-worth.

The present finding is consistent with research showing that self-compassion has a protective effect on emotional responses among students experiencing chronic academic stress (Zhang et al., 2016). It also aligns with evidence that self-compassion is associated with lower perceived stress and healthier behavioral patterns (Homan & Sirois, 2017). More recent findings have also shown that self-compassion is related to improved well-being and healthier cortisol profiles among undergraduate students, suggesting that its benefits may involve both psychological and physiological stress-regulation pathways (Cowand et al., 2024). Therefore, in the present study, students with higher self-compassion may have experienced less academic anxiety because they were more capable of managing negative self-evaluations, reducing excessive worry, and maintaining emotional balance in academic situations.

The relationship between self-compassion and academic anxiety can also be explained through emotion regulation. Academic anxiety often arises when students are unable to regulate worry, fear of failure, and negative expectations regarding performance. Recent research has shown that self-compassion can moderate the relationship between emotion regulation and adolescent mental health, indicating that self-compassion may strengthen the adaptive effects of emotional regulation and reduce vulnerability to psychological symptoms (Nguyen et al., 2025). Similarly, research among medical students has shown that test anxiety is closely connected with emotional regulation and academic performance, emphasizing the importance of students' ability to manage emotional responses in evaluative academic situations (Alshareef et al., 2025). The findings of the present study are also compatible with intervention research showing that reducing anxiety and improving emotional regulation can positively affect academic functioning (Gomis et al., 2025). Thus, self-compassion may

reduce academic anxiety by improving students' capacity to tolerate academic pressure without becoming overwhelmed by self-critical thoughts.

The significance of self-compassion may be particularly relevant for female students. Academic anxiety among girls may be associated with self-evaluation, interpersonal sensitivity, fear of judgment, perfectionistic expectations, and concern about social comparison. In this regard, previous Iranian research has shown that self-compassion plays a mediating role in the relationship between self-concept, body image, and social anxiety among female students, indicating that self-compassion is closely related to anxiety-related experiences in this population (Harouni & Khosh Akhlaq, 2022). Although that study focused on social anxiety rather than academic anxiety, its findings support the broader role of self-compassion in reducing anxiety among female students. In the present study, self-compassion added 2.20% to the prediction of academic anxiety after classroom emotion was entered into the model. Although this added variance was smaller than that of classroom emotion, it was statistically significant and meaningful, suggesting that self-compassion contributes uniquely to explaining academic anxiety beyond the emotional climate of the classroom.

The third finding showed that tolerance of ambiguity did not have a significant relationship with academic anxiety and did not enter the final regression model. This finding is not fully consistent with some previous studies that have emphasized the role of ambiguity tolerance and uncertainty-related processes in stress and anxiety. For example, research has shown that lower tolerance for ambiguity can be associated with higher stress and anxiety, partly through the need for cognitive closure (Zuo, 2025). Other studies have also shown that ambiguity and uncertainty tolerance are associated with stress among professional populations (Iannello et al., 2017), and that intolerance of uncertainty, cognitive test anxiety, and academic self-handicapping jointly influence learner outcomes (Cassady et al., 2024). Based on these findings, it might be expected that students who have difficulty tolerating ambiguity would experience greater academic anxiety. However, the present study did not support this direct relationship.

Several explanations may clarify this result. First, academic anxiety among female senior high school students may be more strongly influenced by immediate emotional and relational factors, such as classroom climate and self-evaluative processes, than by broader cognitive tolerance of ambiguity. In other words, students' anxiety may be activated more by concrete academic pressures, teacher-

student interactions, examinations, grades, and self-criticism than by general discomfort with ambiguous conditions. Second, tolerance of ambiguity may not directly predict academic anxiety but may operate through mediating variables such as cognitive closure, resilience, self-regulation, or academic engagement. Previous research has suggested that ambiguity tolerance is related to student engagement and resilience (Yu et al., 2022), and structural equation modeling evidence has shown that ambiguity tolerance is associated with learning effectiveness and peer collaboration in language learning contexts (Lin et al., 2023). Therefore, the absence of a significant direct relationship in the present study does not necessarily mean that tolerance of ambiguity is irrelevant; rather, its influence may be indirect, conditional, or context-dependent.

Another possible explanation concerns the nature of the educational context. In structured school systems, especially at the senior high school level, students may experience academic anxiety primarily in relation to clearly defined tests, grades, expectations, and performance outcomes rather than ambiguous academic situations. In such contexts, uncertainty may be less salient than evaluation pressure. This interpretation is compatible with research showing that academic anxiety and self-regulated learning are closely related among students preparing for high-stakes examinations (Wu et al., 2022). It is also consistent with findings that online class-related anxiety can be associated with academic achievement when students experience learning environments as stressful or unfamiliar (Zeng et al., 2023). Furthermore, although cyberostracism and digital exclusion can create ambiguous and stressful social experiences (Hatun & Demirci, 2022), the present study measured tolerance of ambiguity as a general trait rather than as a school-specific or technology-specific experience. This difference may have weakened its direct relationship with academic anxiety.

The overall pattern of results indicates that academic anxiety in this sample was more closely related to emotional-contextual and self-relational variables than to ambiguity tolerance. Classroom emotion represented the strongest predictor, suggesting that the emotional climate of the classroom may be especially important in shaping students' anxiety. Self-compassion also had a significant protective role, indicating that students' internal relationship with themselves matters in academic situations. These findings are consistent with recent studies emphasizing the role of emotion regulation, academic stress perception, and motivation in learning (Liang & Mao, 2025). They also align

with longitudinal evidence showing that stress and anxiety among adolescents are reflected in both psychological and physiological indicators, reinforcing the importance of early identification and prevention in school settings (Stromájer et al., 2023). Taken together, the findings suggest that reducing academic anxiety requires attention to both the emotional organization of the classroom and students' internal coping resources.

5. Conclusion

The findings of the present study have important implications for educational psychology and school counseling. Since classroom emotion was the strongest predictor of academic anxiety, interventions aimed at reducing academic anxiety should not focus only on individual students but should also address classroom emotional climate, teacher communication, emotional support, feedback style, and classroom participation norms. At the same time, the significant role of self-compassion suggests that students need psychological skills that help them cope with mistakes, setbacks, and evaluative pressure without excessive self-criticism. Academic anxiety is therefore best understood as a product of interaction between the learning environment and the student's self-regulatory capacities. Programs that combine emotionally supportive classrooms with self-compassion-based strategies may be especially useful for female senior high school students who face academic pressure during a sensitive developmental stage.

6. Limitations & Suggestions

The present study had several limitations. First, the research design was descriptive-correlational; therefore, causal relationships cannot be inferred from the findings. Second, the sample was limited to female senior high school students in District 9 of Karaj, which restricts the generalizability of the results to male students, other educational levels, and students from different cities or cultural contexts. Third, the data were collected through self-report questionnaires, which may be influenced by response bias, social desirability, or students' temporary emotional states at the time of completion. Fourth, the study examined only three predictor variables, while academic anxiety may also be influenced by other factors such as family expectations, teacher behavior, academic achievement, personality traits, perfectionism, peer relations, and socioeconomic conditions.

Future studies are suggested to use longitudinal and experimental designs to examine the causal pathways among classroom emotion, self-compassion, tolerance of ambiguity, and academic anxiety. Researchers can also compare male and female students or examine different educational levels to determine whether the predictive pattern found in this study remains stable across groups. Future research may also investigate mediating and moderating variables such as emotion regulation, academic self-efficacy, resilience, perfectionism, perceived teacher support, and fear of failure. In addition, it would be useful to examine tolerance of ambiguity through more specific academic situations, such as uncertain examination outcomes, ambiguous teacher feedback, unclear classroom expectations, or future educational decision-making.

Based on the findings, school counselors, teachers, and educational planners are encouraged to pay closer attention to the emotional climate of classrooms and students' self-compassion skills. Teachers can reduce academic anxiety by creating supportive classroom environments, using constructive feedback, normalizing mistakes, encouraging participation, and reducing humiliating or excessively competitive practices. School counselors can design self-compassion-based training programs to help students manage self-criticism, academic failure, and performance pressure more adaptively. Educational authorities can also include emotional learning, stress management, and supportive teacher-student communication in school-based programs so that academic success is pursued alongside students' psychological well-being.

Acknowledgments

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

All authors equally contributed to this article.

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