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The relationship between teacher candidates' creative thinking skills and writing anxiety

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ABSTRACT

This study examines the relationship between creative thinking tendencies and writing anxiety levels among teacher candidates enrolled in Turkish language teaching, classroom teaching, and English language teaching programs. A quantitative correlational research design was employed. The study group consisted of 74 teacher candidates (24 Turkish language teaching, 24 English language teaching, and 26 classroom teaching) enrolled in the 1st to 4th grades of a foundation university during the 2024–2025 academic year. Data were collected using the Marmara creative thinking tendencies scale (MCTTS) and the writing anxiety scale, and analyzed with SPSS 25. The results of Pearson correlation analysis indicated a weak to moderate, positive, and statistically significant relationship between creative thinking tendencies and writing anxiety ($r=0.309$, $p<0.01$). This finding suggests that higher writing anxiety is associated with higher creative thinking tendencies among teacher candidates. Therefore, it questions the traditional assumption that anxiety negatively affects creativity. In addition, independent samples t-test and one-way ANOVA results revealed that neither creative thinking nor writing anxiety differed significantly according to gender or field of study ($p>0.05$).

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1. INTRODUCTION

Writing skills play a crucial role in the accurate and effective communication of individuals' feelings and thoughts, in other words, in their ability to communicate correctly. Writing skills develop depending on the individual's motivation, background knowledge (world knowledge), subject knowledge (e.g., text knowledge, writing approaches and methods), vocabulary, and native language proficiency. Therefore, text production, language awareness, vocabulary knowledge, and thinking skills are considered the basic components of writing skills [1]. Writing, which involves the active functioning of both the right and left hemispheres of the brain [2], is a complex, multidimensional, linguistic, and cognitive skill that activates higher-level skills, such as mental planning, revision, ensuring semantic consistency, goal setting, morphology, phonological awareness, and syntax [3], [4], writing can be considered a challenging skill area for students due to its complexity and the higher-order skills it activates. Indeed, studies in the literature support this view [5]–[9].

Writing is not only an individual cognitive activity but also a core professional competence for teacher candidates. Their ability to express ideas clearly and effectively in written form plays a critical role in their future teaching practices, particularly in supporting students' writing development. However, writing anxiety has been associated with decreased motivation, avoidance behaviors, and lower academic

achievement, affecting both learners and educators [10], [11]. In the context of teacher education, such anxiety may weaken candidates' self-efficacy and instructional effectiveness, suggesting that writing-related difficulties experienced during training can have long-term implications for classroom practices.

Despite a growing body of research on writing anxiety, the specific experiences of prospective language and primary school teachers remain relatively underexplored [12], [13]. Existing studies indicate that writing anxiety can negatively influence teaching performance; however, there is still limited understanding of how this anxiety can be effectively addressed within teacher education programs [14]. Furthermore, the literature presents differing perspectives regarding intervention approaches. While some studies emphasize cognitive and metacognitive strategies such as self-regulation, others highlight the role of creative and experiential practices in reducing anxiety and enhancing engagement. This gap in the literature highlights the need for a more comprehensive understanding of the factors shaping teacher candidates' writing processes, particularly the interaction between cognitive and affective dimensions such as creative thinking and writing anxiety.

Creativity can be defined as activities that give new identities to old ideas and create new syntheses from the known [15]. Creative thinking is a way of sensing and internalizing the problems individuals encounter, establishing cause-and-effect relationships between events, finding various predictions and suggestions regarding the solution to the problem, producing alternative solutions to solve these problems, creating various products open to change by comparing the results, and going beyond the conventional with an original and innovative perspective. Accordingly, creative thinking is a way of thinking that is investigative, inventive, pursues innovations, can develop new solutions to problems, and enables original ideas to emerge [16]–[20]. This thinking skill is one of the important skills that individuals actively use in many areas of their lives.

Developing creative thinking skills is considered important for language education and teaching. This is because creative level in the effective and correct use of language is seen as one of the most important goals to be achieved [21]. In this context, creative thinking allows individuals to establish relationships between concepts in their written productions, express their thoughts in an original way, and ensure consistency between sentences [22]. In other words, creative thinking skills elevate the writing process beyond the ordinary, making it more original, compelling, and profound.

There are many situations that negatively affect writing skills. One of these is "writing anxiety". Writing anxiety refers to the anxiety and stress a person experiences while writing text [23]. Excessive writing anxiety causes several problems in structuring thoughts, transferring them to paper, and making corrections within the text. Psychologically, these problems can manifest as avoidance of writing activities, while physically, they can manifest as trembling, palpitations, cramps, stuttering, sweating, and rapid breathing [24]–[28].

There are three factors underlying writing anxiety. These are: negative criticism of writing, fear of individual evaluation, and anxiety about failure in writing classes [29]. Negative feedback on written work can cause individuals to lack self-confidence. Consequently, lack of self-confidence leads to fear of personal evaluation and increases feelings of failure [30]. Therefore, there is a direct relationship between low self-confidence and writing anxiety [31]. This relationship is shown in Figure 1 [30].

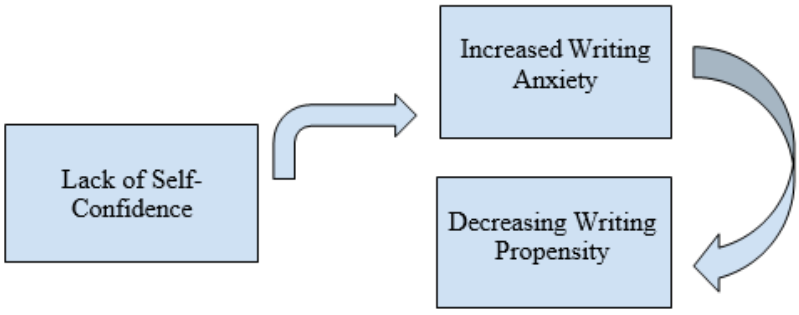


Figure 1. The relation between students' writing anxiety with writing disposition

Studies also indicate an inverse relationship between writing anxiety and creative thinking skills. Recent studies, in particular, explain this relationship through the concept of "creativity anxiety". According to these studies, creativity anxiety is a type of anxiety that arises in situations requiring creative thinking and, unlike general anxiety, negatively affects an individual's creative performance in a specific way [32].

The increased cognitive load and multitasking requirements during creative thinking can cause anxiety to increase, especially in stressful environments or those where the pressure to be evaluated is felt [33], [34]. In summary, the main reasons for increased writing anxiety when creative thinking skills improve include creativity anxiety, fear of evaluation, avoidance behavior, and cognitive load.

These findings suggest that the relationship between creative thinking and anxiety may not be linear or uniformly negative. While anxiety is generally assumed to inhibit creativity, it may, under certain conditions, coexist with or even intensify cognitive engagement during complex tasks such as writing. Therefore, examining the relationship between creative thinking and writing anxiety requires a more nuanced and context-sensitive approach.

A literature review reveals that many studies have been conducted on teacher candidates' text production and writing anxiety [1], [7], [35]–[40]. However, these studies have generally focused on writing anxiety or writing performance as separate constructs. Although there are also studies examining creative thinking skills, research investigating the direct relationship between creative thinking tendencies and writing anxiety remains limited. Moreover, existing studies tend to focus on single disciplines, and comparative research across different teacher education programs is scarce. This indicates a significant gap in understanding how cognitive (creative thinking) and affective (anxiety) factors interact in shaping teacher candidates' writing processes.

Addressing this gap is important for both theoretical and practical reasons. From a theoretical perspective, examining the relationship between creative thinking and writing anxiety may contribute to the literature by questioning the widely accepted assumption that anxiety negatively affects creativity. From a practical perspective, understanding this relationship is crucial because teacher candidates' writing anxiety may influence not only their own performance but also their future ability to teach writing effectively, which in turn may affect students' writing development. Furthermore, unlike previous studies that treat writing anxiety and creativity as separate constructs, this study examines their direct relationship across different teacher education programs and challenges the prevailing assumption of a negative association.

In this context, the aim of this study is to examine the relationship between the creative thinking tendencies and writing anxiety levels of teacher candidates enrolled in Turkish language teaching, classroom teaching, and English language teaching programs. By comparatively examining these three groups, the study seeks to determine whether this relationship is specific to language-related fields or reflects a broader pedagogical phenomenon. In line with this aim, the main and sub-problems of the research were formulated:

- Main problem statement: is there a significant relationship between the creative thinking skills and writing anxiety of Turkish, classroom, and English teacher candidates?
- Sub-problem statement 1: do the creative thinking skills and writing anxieties of Turkish, classroom, and English teacher candidates show a significant difference according to gender?
- Sub-question 2: do the creative thinking skills and writing anxiety of Turkish, classroom, and English teacher candidates show a significant difference according to their field?

2. METHOD

2.1. Research model

This study was designed using a correlational research design, one of the quantitative research methods. Correlational research aims to identify and analyze the relationship between two or more variables when the researcher only observes, rather than manipulates them [41], [42]. The correlational design was preferred because the aim of the study was not to manipulate variables, but rather to determine whether a statistically significant relationship exists between them and to evaluate the direction and strength of this relationship. Within this framework, the study examined the relationship between teacher candidates' creative thinking skills (creative thinking tendencies) and their writing anxiety levels.

2.2. Study group

The maximum diversity method, one of the purposive sampling methods, was used to determine the study group for this research. This method aims to create a relatively small sample and to reflect the diversity of individuals who may be involved in the problem being studied in this sample to the maximum extent. The aim is not to ensure diversity for the sake of generalization; on the contrary, the aim is to try to find out whether there are common or shared phenomena and differences among diverse situations and to reveal different dimensions of the problem according to diversity [41], [42]. In this context, it was deemed appropriate for the study group in this study to consist of teacher candidates whose writing anxieties were to be compared, namely Turkish and English teacher candidates who were primarily studying "language education" and classroom teacher candidates who would lay the foundations of the individual's language education in the future.

The study group for this research consisted of a total of 74 teacher candidates enrolled in the 2024–2025 academic year at a foundation university, including 24 Turkish-speaking, 24 English-speaking, and 26 prospective classroom teachers from the 1st, 2nd, 3rd, and 4th grades. For the use of correlational statistics, the study group should have a sufficient sample size, typically at least N=30 [41]. In this respect, the sample size of the present study was considered adequate. Detailed information about the study group is presented in Table 1.

Table 1. Information about the study group

Gender	Turkish language teaching program	English language teaching program	Classroom teaching program	Total
Female	20	15	20	55
Male	4	9	6	19
Total	24	24	26	74

The inclusion of teacher candidates from these three programs is justified, as Turkish and English teacher candidates are directly involved in language teaching, while classroom teacher candidates are responsible for establishing foundational language skills in early education. Turkish and English teacher candidates are directly engaged in teaching language skills within their respective disciplines, whereas classroom teacher candidates focus on developing foundational literacy and language competencies in early childhood education. Therefore, comparing these groups allows for a broader understanding of whether writing anxiety and creative thinking are discipline-specific or represent a more general pedagogical phenomenon.

2.3. Data collection tools

Two different scales were used in this study to determine teacher candidates' creative thinking tendencies and writing anxieties. The first scale was used to measure creative thinking tendencies among teacher candidates. The second scale was employed to assess their writing anxiety levels.

2.3.1. Marmara creative thinking tendencies scale

The Marmara creative thinking tendencies scale (MCTTS) was developed to measure individuals' general tendencies toward creative thinking [43], [44]. This scale is a 5-point Likert-type measure comprising 25 items. The score range on the scale is a minimum of 25 and a maximum of 125 points. A high score on the scale indicates a high tendency toward creative thinking.

The scale development study was conducted with a sample of 410 teachers. The initial draft form consisted of 40 items. The suitability of the data for factor analysis was confirmed by the Kaiser-Meyer-Olkin (KMO) value of 0.897 and a significant Bartlett's test of sphericity (χ^2=5499.64), indicating that the data were appropriate for factor analysis. As a result of the exploratory factor analysis, a 25-item structure with six factors was obtained. This structure was further confirmed through confirmatory factor analysis. The six factors were identified as novelty seeking, courage, self-discipline, curiosity, skepticism, and flexibility.

The scale explains 55.904% of the total variance, which indicates an acceptable level of construct validity for social sciences. The internal consistency coefficient (Cronbach's alpha) for the overall scale was calculated as 0.87, demonstrating high reliability. To assess stability over time, a test–retest analysis was conducted, and the correlation coefficient for the overall scale was found to be r=0.88 ($p<0.001$), indicating a high level of temporal reliability. Based on these findings, the MCTTS is considered a valid and reliable instrument for measuring individuals' creative thinking tendencies.

2.3.2. Writing anxiety scale

This scale is a 5-point Likert-type measure comprising 35 items [44]. Each item is rated on a scale ranging from 1 to 5, reflecting the degree to which respondents agree with the statements. The maximum score that can be obtained on the scale is 175, and the minimum score is 35.

The scale was administered to 202 third-year students from Turkish language teaching, classroom teaching, and elementary mathematics teaching programs. To determine construct validity, exploratory and confirmatory factor analyses were conducted. The results of the exploratory factor analysis indicated that the data were highly suitable for factor analysis (KMO=0.95; $p<0.001$). Although an initial multi-factor structure emerged, the dominance of the first factor and the scree plot suggested a unidimensional structure. After removing items with low communalities and cross-loadings, the final scale consisted of 35 items. The total variance explained was 65.24%, and item loadings and correlations indicated that the scale adequately measured the intended construct.

Confirmatory factor analysis supported the structure obtained from the exploratory analysis. Fit indices (root mean square error of approximation (RMSEA)=0.09; standardized root mean square residual (SRMR)=0.061; comparative fit index (CFI=0.95); and non-normed fit index (NNFI)=0.97) indicated an acceptable model fit. The internal consistency of the scale was found to be very high (Cronbach's alpha=0.97), demonstrating strong reliability. These findings indicate that the writing anxiety scale is a valid and reliable instrument for measuring writing anxiety in educational contexts.

2.4. Data collection and analysis

The data were analyzed using SPSS 25 statistical software. Prior to conducting the main analyses, the dataset was screened for accuracy, missing values, and the assumptions required for parametric tests. To assess whether the data met the normality assumption, skewness and kurtosis values were examined. The results of these analyses are presented in Table 2.

As shown in Table 2, all skewness and kurtosis values fall within the acceptable range of -1.50 to +1.50. This indicates that the data are normally distributed. Therefore, parametric tests were deemed appropriate for further analysis. In line with the research questions, Pearson product-moment correlation analysis was conducted to examine the relationship between creative thinking tendencies and writing anxiety levels, providing information about both the direction and strength of the relationship. Additionally, an Independent Samples t-test was used to determine whether these variables differed significantly according to gender, while a one-way analysis of variance (ANOVA) was performed to examine differences across teacher education programs. In addition to statistical significance, the effect size of the correlation coefficient was interpreted based on commonly accepted criteria to provide a more meaningful understanding of the findings. All statistical analyses were conducted at a significance level of $p<0.05$.

Table 2. Normality test results

Scales	Mean	Std. Dev.	Min	Max.	Skew.	Kurt.
MCTTS	94.50	2.35	39	125	-0.98	0.93
Writing anxiety scale	124.28	4.25	37	175	-0.31	-0.92

3. RESULTS AND DISCUSSION

To address the main research question, a Pearson product-moment correlation analysis was conducted. This analysis specifically examined the relationship between teacher candidates' creative thinking tendencies and their writing anxiety levels. The statistical results of this procedure are presented in Table 3.

Table 3. Relationship between creative thinking skills and writing anxiety among Turkish, classroom, and English teacher candidates

Variables	n	r	p
Creative thinking – writing anxiety	74	0.309**	0.007

**Correlation is significant at the .01 level (two-tailed).

The results indicated a positive and statistically significant relationship between the two variables ($r=0.309$, $p<0.01$). According to commonly accepted criteria, this coefficient reflects a weak to moderate effect size, suggesting that the relationship, while not strong, is meaningful. This finding indicates that higher levels of writing anxiety are positively associated with higher creative thinking tendencies among the participants. Because this study utilizes a correlational design, this shared variance does not imply a cause-and-effect relationship; it simply demonstrates that these two constructs tend to co-occur within the studied cohort.

A substantial body of research suggests a negative relationship between anxiety and creativity, indicating that higher levels of anxiety tend to inhibit creative thinking and reduce creative performance [45], [46]. From this perspective, anxiety is considered a factor that constrains idea generation, limits cognitive flexibility, and weakens engagement in creative tasks. However, the findings of the present study point to a more complex and context-dependent interaction between these variables. Writing—particularly creative writing—is a cognitively demanding process that involves planning, idea generation, organization, and revision simultaneously. Such processes may inherently give rise to a certain level of anxiety.

In this context, anxiety may not function solely as an inhibiting factor but may also emerge as a natural byproduct of cognitively intensive creative processes. Furthermore, the findings can be interpreted in light of research suggesting that moderate levels of anxiety may have facilitative effects on cognitive performance [47]. Certain levels of anxiety may increase attention, enhance task focus, and lead to deeper

cognitive engagement. Neurocognitive evidence indicates that moderate anxiety can activate mechanisms related to error monitoring and attentional control, resulting in more efficient processing of relevant stimuli and suppression of irrelevant information [48]. From this perspective, the positive relationship identified in this study may reflect a state in which anxiety and creativity coexist within cognitively demanding tasks rather than a simple cause–and–effect relationship.

From an educational perspective, this finding suggests that teacher education programs should not aim to eliminate writing anxiety entirely, but rather regulate it at an optimal level while maintaining cognitive engagement. For instance, incorporating low-stakes writing activities, where evaluation pressure is minimized, may help students engage more freely in the writing process. In addition, process-based feedback focusing on idea development rather than error correction can reduce fear of evaluation while supporting creative expression. Such practices may enable teacher candidates to experience writing as a cognitively stimulating rather than threatening activity.

An independent samples t-test was conducted in relation to the first sub-problem of the study. This statistical procedure evaluated whether the scores differed significantly based on the gender of the participants. The comprehensive test results of this comparison are presented in Table 4.

Table 4. Distribution of writing anxiety and creative thinking skill scores of Turkish, classroom, and English teacher candidates according to gender

Variable	Gender	N	Mean	SD	Levene f	Levene p	t	p
Creative thinking	Female	55	92.20	20.99	2.167	0.14	-1.72	0.09
	Male	19	101.16	14.43				
Writing anxiety	Female	55	121.05	37.72	1.796	0.18	-1.29	0.19
	Male	19	133.63	32.37				

The findings indicated that creative thinking and writing anxiety did not differ significantly according to gender. Although male participants had slightly higher mean scores, these differences were not statistically significant. This finding is consistent with several studies reporting no significant gender differences in writing anxiety among teacher candidates [11], [36], [44], [49]–[51]. While some studies suggest that gender may influence creative thinking [52], [53], many others report no significant effect [54], [55], indicating that such differences may depend on contextual and methodological factors.

A one-way ANOVA was conducted to determine whether creative thinking and writing anxiety differed across teacher education programs. This analysis specifically compared the Turkish language teaching, English language teaching, and classroom teaching departments. The final statistical results of this comprehensive analysis are presented in Table 5.

Table 5. Distribution of creative thinking skills and writing anxiety scores of Turkish, classroom, and English teacher candidates according to their field of study

Variable	Program	N	Mean	SD	p
Creative thinking	Turkish	24	92.29	23.057	0.175
	Classroom	26	90.85	22.150	
	English	24	100.67	11.087	
Writing anxiety	Turkish	24	131.75	37.169	0.462
	Classroom	26	122.23	38.913	
	English	24	119.04	33.771	

The findings revealed that there were no statistically significant differences between the groups in terms of either creative thinking or writing anxiety ($p>0.05$). This finding suggests that these variables are not discipline-specific but rather reflect broader cognitive and affective characteristics shared by teacher candidates. This result is consistent with previous research indicating that writing anxiety does not significantly differ across academic disciplines [49], [56].

From an educational policy perspective, this structural uniformity suggests that writing anxiety and creative thinking should be addressed as core competencies across all teacher education curricula. Overall, the findings of this study demonstrate that the relationship between creative thinking and writing anxiety cannot be fully explained by the traditional assumption of a strictly negative association. Instead, the results point to a more nuanced interaction in which anxiety may naturally coexist with creative cognitive processes under certain task conditions.

In conclusion, teacher education programs should not solely aim to eliminate writing anxiety, but rather manage it at an optimal level while fostering creative engagement. Instructional practices such as low-stakes writing tasks, process-based feedback focusing on idea development, and creative writing activities may help candidates balance cognitive challenge and emotional regulation. Integrating these structured yet flexible writing environments into teacher education curricula can holistically support the simultaneous development of creative thinking and emotional resilience, both of which are essential for effective future classroom practices.

4. CONCLUSION

This study examined the relationship between teacher candidates' creative thinking tendencies and their writing anxiety levels. The findings revealed a positive, statistically significant, and weak-to-moderate relationship between the two variables, suggesting that higher levels of writing anxiety are associated with higher levels of creative thinking. In addition, no significant differences were found in terms of gender or field of study, indicating that these variables may reflect broader cognitive and affective characteristics rather than discipline-specific differences.

These findings challenge the traditional assumption that anxiety negatively affects creativity and instead point to a more complex interaction in which writing anxiety may coexist with cognitively demanding processes such as creative thinking. From a practical perspective, the results highlight the importance of addressing both creativity and anxiety within teacher education programs. However, the findings should be interpreted in light of several limitations. First, the study was conducted with a relatively small sample drawn from a single institution, which limits generalizability. Second, the data were collected through self-report scales and may be affected by response bias. Third, the correlational design does not allow conclusions about causal relationships between creative thinking and writing anxiety. Given these methodological limitations, further research is needed to clarify the nature of the relationship between creative thinking and writing anxiety and to extend the findings to broader educational contexts. Future studies should be conducted with larger and more diverse samples to increase the generalizability of findings. In addition, mixed-method and longitudinal research designs may provide a deeper understanding of the dynamic relationship between creative thinking and writing anxiety. Future research may also incorporate variables such as self-efficacy, academic motivation, and performance anxiety. Furthermore, experimental studies examining the effects of creative writing practices and feedback approaches are recommended. Finally, teacher education programs may benefit from interventions that simultaneously support creativity and anxiety regulation while incorporating low-pressure writing activities into classroom practice.

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AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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C : **C**onceptualization
M : **M**ethodology
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D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

ETHICAL APPROVAL

The research involving human participants complied with all relevant national regulations and institutional policies and adhered to the principles of the Declaration of Helsinki. Permission for the research was obtained from the Başkent University Social and Human Sciences and Arts Research Ethics Committee.

DATA AVAILABILITY

Data are available from the corresponding author, [SŞT], on reasonable request.

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