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Predictors of Music Teaching Self-Efficacy Among Pre-Service Preschool Teachers: The Role of Musical Experience, Music Interest, and Course Achievement

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Abstract

This study aimed to examine the roles of gender, year level, musical experience, music interest, and early childhood music education course achievement in explaining music teaching self-efficacy among pre-service preschool teachers. The study was designed as a predictive correlational study within a quantitative research framework. The study group consisted of 418 pre-service preschool teachers. Data were collected through a personal information form, a music interest scale, and a music teaching self-efficacy scale. Relationships among the variables were examined using Spearman's rank-order correlation, while the predictors of music teaching self-efficacy were analyzed through a three-step hierarchical multiple regression analysis. The findings showed that music teaching self-efficacy was positively but weakly related to music interest and course grade. Although the final regression model was statistically significant, the proportion of explained variance was limited. In the model, early childhood music education course grade emerged as a positive predictor, while gender was also significant with a small effect. Year level, musical instrument practice experience, receiving music education outside formal education, and music interest were not significant individual predictors in the final model. The findings suggest that music teaching self-efficacy should be considered together with course-based achievement experiences and pedagogical practice processes.

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Introduction

In preschool education settings, music can be viewed as an activity area intertwined with children's play, movement, language, and social interaction processes. Research syntheses showing that active engagement with music is associated with children's intellectual, social, and personal development indicate that music should be considered a learning area that supports multidimensional development from an early age (Hallam, 2010). Research on early childhood music education shows that music has an important place in

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children's daily educational experiences, interactions, and participation processes (Ruokonen, Tervaniemi, & Reunamo, 2021). In addition, bibliometric analysis findings indicate that music and rhythm studies in early childhood focus on themes of language, cognitive, motor, social, and emotional development, and that this field is becoming an increasingly broad interdisciplinary area of research (Bilgen, 2026). In the preschool period, music activities contribute to children's self-expression, interaction within the group, and development of aesthetic sensitivity through various practices such as singing, rhythm activities, musical games, creative movement, listening activities, and sound exploration (Karakuş & Karakuş, 2026; Sökezoğlu Atılgan & Türkkaş Özer, 2021). Therefore, music, as an artistic activity, also has a pedagogical function in preschool education by supporting children's multidimensional development.

In preschool education institutions, teachers have an important role in carrying out music activities. As in many education systems, music activities at the preschool level in Türkiye are mostly carried out not by teachers specialized in music, but by preschool teachers (Burak, 2014; E. Şen, 2024). The confidence problems experienced by teachers who are not specialists in music are closely related to the music education they receive during teacher education, professional support, teaching experience, and musical background (de Vries, 2013; Holden & Button, 2006; Vannatta-Hall, 2010). This situation makes preschool teachers' perceptions of competence in music teaching particularly important. Preschool teachers are expected not only to sing songs with children or conduct rhythm activities, but also to plan and implement music activities appropriate to children's developmental characteristics, manage classroom participation, and connect musical experiences with other learning areas. In this context, music teaching self-efficacy can be regarded as an important variable in understanding the extent to which pre-service preschool teachers may feel confident in carrying out music activities in their future classrooms.

In Bandura's (1997) social cognitive theory, self-efficacy is defined as an individual's belief in their capacity to successfully perform a specific task. According to this theoretical approach, self-efficacy beliefs are among the basic psychological constructs that influence individuals' behaviors, level of effort, persistence in the face of difficulties, and performance. Self-efficacy beliefs are shaped particularly through mastery experiences, vicarious experiences, verbal/social persuasion, and physiological-affective states. In this respect, self-efficacy in learning and teaching processes is related not only to what individuals know, but also to the extent to which they perceive themselves as competent in performing specific tasks. In academic contexts, self-efficacy beliefs are reported to be associated with motivation, self-regulation, and performance (Pajares, 1996). In the field of teaching, self-efficacy is considered an important construct that influences teachers' instructional decisions, classroom practices, ways of coping with difficulties, and commitment to the teaching process (Tschannen-Moran & Hoy, 2001).

Music teaching self-efficacy differs from general teacher self-efficacy in that it concerns perceived competence in performing tasks specific to music teaching. This construct includes tasks such as teaching songs, conducting rhythm activities, preparing music materials, organizing musical games, supporting musical participation in the classroom, and planning music activities appropriate to children's developmental characteristics (Koca, 2016). For this reason, music education relies not only on basic musical skills but also on pedagogical knowledge, classroom application skills, and the ability to adapt musical content to children's developmental levels. Findings showing that music teaching self-efficacy is related to personal, social, and cognitive dimensions also indicate that this construct cannot be reduced solely to musical skill (Biasutti & Concina, 2017). Previous studies have shown that the music teaching self-efficacy of teachers and pre-service teachers outside the field of music is associated with many variables, including musical background, instrumental experience, practice opportunities, pedagogical support, professional experience, and the quality of teacher education (Burak, 2019; de Vries, 2013; Garvis & Pendergast, 2011; Hallam et al., 2009; Russell-Bowie, 2009; Vannatta-Hall, 2010).

One variable that may be related to pre-service preschool teachers' music teaching self-efficacy is

musical background and experience. Experience of playing an instrument or receiving music education outside formal education may support pre-service teachers' musical knowledge and skills. Previous studies have shown that instrumental experience and musical background may be associated with self-efficacy or confidence in music teaching (Akpınar & Kaya, 2025; Burak, 2019; Gülle & Akay, 2019; Hallam et al., 2009; Köksoy, 2017). However, the mere presence of musical experience may not automatically translate into perceived competence in a teaching context. Studies in pre-service teacher education indicate that pre-service teachers' confidence in teaching music may develop not only through their musical background but also through practice, modeling, and mastery experiences gained within music courses in teacher education programs (Jeanneret, 1997; Vannatta-Hall, 2010). Musical background may support pre-service teachers' music teaching self-efficacy when it is connected with pedagogical practice, when candidates have opportunities to design and conduct music activities for children, and when they receive feedback during the teaching process. Therefore, the role of musical experience variables in music teaching self-efficacy needs to be examined in greater detail.

Another variable that may be related to music teaching self-efficacy is music interest. Interest in music may reflect an individual's tendency to spend time with music, listen to music, participate in musical activities, or remain open to musical experiences. Interest is not merely an affective state of liking, but a motivational construct that can develop over time and includes both cognitive and affective components (Hidi & Renninger, 2006). In this respect, music interest may provide an affective basis that supports pre-service teachers' approach to music teaching. However, self-efficacy differs from general liking or positive attitudes because it refers to a context-specific judgment about one's capacity to perform a particular task (Bandura, 1997). Therefore, being interested in music and feeling competent to teach music are not the same. Açılmış & Kuşdemir Kayıran (2021) reported a positive but low-level relationship between music interest and music teaching self-efficacy. This suggests that music interest may be related to music teaching self-efficacy, but that this relationship should be considered together with instructional experience, pedagogical competence, and mastery experiences.

Another indicator that may be related to music teaching self-efficacy is course achievement. In Bandura's (1997) theory of self-efficacy, mastery experiences are considered one of the strongest sources of self-efficacy beliefs. From this perspective, achievement in the early childhood music education course may support pre-service teachers' perceptions of their ability to perform tasks related to music teaching. Course achievement is not only an academic outcome; it may also be considered an indicator of candidates' experiences in understanding, planning, implementing, and evaluating music activities during the course. This relationship is worth examining in order to better understand the connection between pre-service teachers' mastery experiences and their perceived competence in music teaching.

Previous studies examining the music teaching self-efficacy of teachers and pre-service teachers outside the field of music have shown that this construct may be associated with variables such as gender, year level, instrumental experience, receiving music education, attitudes, and music interest (Açılmış & Kuşdemir Kayıran, 2021; Akpınar & Kaya, 2025; Burak, 2019; Çevik, 2011; Gülle & Akay, 2019; Koca, 2016; Köksoy, 2017). However, the existing literature appears to include relatively fewer studies that examine music teaching self-efficacy together with musical experience, music interest, and early childhood music education course achievement within a hierarchical prediction model. Therefore, considering experiential, affective, and achievement-based variables together may provide a more comprehensive perspective for explaining pre-service preschool teachers' music teaching self-efficacy and for understanding how music education courses in teacher education programs should be structured.

The purpose of this study was to examine the roles of gender, year level, musical experience, music interest, and early childhood music education course achievement in explaining music teaching self-efficacy among pre-service preschool teachers.

Accordingly, gender and year level were treated as control variables, and the predictive roles of musical experience variables, namely previous regular musical instrument practice experience and receiving music education outside formal education, along with music interest and early childhood music education course achievement, were tested through hierarchical multiple regression analysis. The present study was guided by the following research questions:

1. What are the levels of music teaching self-efficacy, music interest, and early childhood music education course achievement among pre-service preschool teachers?
2. Are there significant relationships among music teaching self-efficacy, music interest, and early childhood music education course achievement?
3. When gender and year level are controlled, do musical experience variables make a significant additional contribution to explaining music teaching self-efficacy?
4. When gender, year level, and musical experience variables are controlled, do music interest and early childhood music education course achievement make a significant additional contribution to explaining music teaching self-efficacy?

Method

Research Design

This study was conducted as a predictive correlational study within a quantitative research approach to examine the variables predicting music teaching self-efficacy among pre-service preschool teachers (Creswell, 2012). In the study, hierarchical multiple regression analysis was used to examine the predictive roles of musical experience variables, namely previous regular practice on a musical instrument and receiving music education outside formal education, as well as music interest and early childhood music education course achievement, in music teaching self-efficacy. In addition, gender and year level were considered as control variables in the analyses.

Ethical Procedure and Data Collection

The study was approved by the ethics committee of a state university in Türkiye with decision number 2022/172. The data were collected through an online questionnaire form at the end of the spring semester of 2023. The questionnaire link was sent to universities in Türkiye as an attachment to the university's official permission letter, and faculty members in preschool education departments were asked to share it within their institutions. In this process, only second-, third-, and fourth-year pre-service preschool teachers were asked to participate in the questionnaire, as they had taken the early childhood music education course. Participation was voluntary, and participants were informed about the purpose of the study and the confidentiality of the data. Electronic informed consent was obtained from all participants before they accessed the questionnaire.

Participants

The initial dataset consisted of 425 preservice preschool teachers enrolled in undergraduate programs at 18 different universities across Türkiye. The study was conducted only with second-, third-, and fourth-year pre-service preschool teachers. This decision was based on the fact that the early childhood music education course is offered in the second year of the relevant programs and that the study focused on variables related to the music teaching self-efficacy of pre-service teachers who had taken this course.

Before the main analyses, the dataset was examined for outliers and influential observations. As a result of the preliminary data screening process, 7 observations were excluded from the analyses. Therefore, the final analyses were conducted with 418 participants. In the final sample, 373 participants were female (89.2%) and 45 were male (10.8%). In terms of year level, 101 participants were second-year students (24.2%), 139 were third-year students (33.3%), and 178 were fourth-year students (42.6%). Regarding musical experience, 125 participants (29.9%) reported that they had previous regular musical instrument practice experience, whereas 293 participants (70.1%) reported no such experience. In addition, 85 participants (20.3%) stated that they had received music education outside formal education, while 333 participants (79.7%) had not. Table 1 presents the demographic characteristics of the participants.

Table 1: Participant characteristics

Variable	Category	*n*	%
Gender	Female	373	89.2
	Male	45	10.8
Year level	2nd year	101	24.2
	3rd year	139	33.3
	4th year	178	42.6
Musical instrument practice experience	No	293	70.1
	Yes	125	29.9
Music education outside formal education	No	333	79.7
	Yes	85	20.3

Data Collection Instruments

Personal information form

A personal information form prepared by the researcher was used to collect information about participants' demographic characteristics and musical experiences. The form included questions about participants' gender, year level, university, grade in the early childhood music education course, whether they had received music education outside formal education, and whether they had previous regular musical instrument practice experience.

Music interest

Participants' interest in music was measured using the "Music Interest" subscale of the Vocational Interest Inventory developed by Otrar & Canel (2015). The Vocational Interest Inventory was developed to identify individuals' interests in different vocational fields. In the present study, the 7-item subscale designed to measure music interest was used. The subscale is a four-point Likert-type measure, with response options ranging from "Not suitable for me at all" (1) to "Very suitable for me" (4). In the present study, Cronbach's alpha reliability coefficient for the scale was calculated as .94. This result indicates that the measurement tool had a high level of reliability (Field, 2024). A confirmatory factor analysis (CFA) was conducted to test the fit of the one-dimensional structure of the scale to the current data. The standardized factor loadings of the items ranged from .76 to .91. The goodness-of-fit values were as follows: *CMIN/DF (x2/df)* = 2.50; *RMSEA* = .06; *SRMR* = .02; *CFI* = .99; *TLI* = .99; *IFI* = .99; and *NFI* = .99. These results indicated that the theoretical structure of the scale was confirmed and that the model was compatible with the data (Byrne, 2016; Kline, 2016; Schumacker & Lomax, 2004).

Pre-service preschool teachers' self-efficacy for music teaching

Pre-service preschool teachers' self-efficacy for music teaching was measured using the Self-Efficacy Questionnaire Towards Music Activities developed by Koca (2016). The five-point Likert-type scale consists of 20 items. Response options range from "Strongly disagree" (1) to "Strongly agree" (5). The scale has three subdimensions: "Planning Music Activities," "Preparing Music Materials," and "Preparing Music Environments." In the present study, Cronbach's alpha reliability coefficient for the overall scale was .96. The reliability coefficients for the subdimensions were .93, .88, and .93, respectively. These results indicate that the measurement tool had a high level of reliability (Field, 2024). Since the purpose of the present study was to examine the general level and predictors of music teaching self-efficacy, the total scale score was used in the analyses. A first-order confirmatory factor analysis (CFA) was conducted to test the fit of the three-dimensional structure of the scale to the current data. The standardized factor loadings of the items ranged from .69 to .85. The goodness-of-fit values were as follows: *CMIN/DF (x2/df)*=3.24; *RMSEA*=.07; *SRMR*=.04; *CFI*=.94; *TLI*=.93; *IFI*=.94; and *NFI*=.92. These results indicated that the theoretical structure of the scale was confirmed and that the model was compatible with the data (Byrne, 2016; Kline, 2016; Schumacker & Lomax, 2004).

Data Analysis

The data were analyzed using SPSS 27 and AMOS 22. Confirmatory factor analysis was conducted using the maximum likelihood (ML) estimation method. Before the analyses, the dataset was examined for missing data, coding errors, outliers, and regression assumptions. The distributional characteristics of the main variables were evaluated using skewness and kurtosis values. Music teaching self-efficacy and music interest showed acceptable distributional characteristics (Schumacker & Lomax, 2004), whereas the course grade variable showed negative skewness

and high kurtosis due to the concentration of scores in the upper achievement categories (see Table 2). Therefore, the course grade variable was evaluated not as a continuous and normally distributed variable, but as an ordered achievement indicator.

Before the regression analyses, outliers and influential observations were examined using standardized residuals (Çokluk, Şekercioğlu, & Büyüköztürk, 2021), *Mahalanobis distance* (Tabachnick & Fidell, 2013), *leverage values*, and *Cook's distance* (Field, 2024). The screening criteria were $|z| > 3$ for standardized residuals, $x^2 = 24.32$ for Mahalanobis distance corresponding to $p < .001$ with 7 degrees of freedom, $3(k+1) / N = .056$ for leverage values, and values above 1 for Cook's distance. Based on the combined evaluation of these indicators, 7 observations identified as outlying and/or influential were excluded from the analyses. Thus, the final analyses were conducted with 418 participants.

Regression assumptions were examined in terms of multicollinearity, distribution of residuals, linearity, homoscedasticity, and influential observations. In the final model, *Variance Inflation Factor (VIF)* values ranged from 1.03 to 1.64, all *Condition Index (CI)* values were below 30, and all *Tolerance Value (TV)* values were above .10. These findings indicated no evident multicollinearity problem among the predictors (Çokluk et al., 2021). The *Durbin-Watson coefficient* was close to 2 (*DW*=2.11), indicating no evident problem regarding the independence of residuals (Montgomery, Peck, & Vining, 2021). All *Cook's distance* values were below 1, suggesting that there were no observations exerting excessive influence on the regression coefficients in the final model (Field, 2024). Visual inspection of the *normal P-P plot* showed no marked deviation of the residuals from normality. The *scatterplot* of standardized residuals against standardized predicted values also showed no clear pattern indicating violations of linearity or homoscedasticity assumptions (Tabachnick & Fidell, 2013).

The internal consistency of the scales used in the study was evaluated using *Cronbach's alpha* coefficient. Means, standard deviations, minimum values, and maximum values were calculated for the main variables. Considering the ordered structure and distributional characteristics of the course grade variable, *Spearman's rank-order correlation* coefficient was used to examine the relationships among the variables.

A three-step hierarchical multiple regression analysis was conducted to determine the variables predicting music teaching self-efficacy among pre-service preschool teachers. In the first block, gender and year level were included in the model as control variables. Gender was coded as female=0 and male=1. For year level, the second year was taken as the reference category, and two dummy variables were created for the third and fourth years (Çokluk et al., 2021). In the second block, the musical experience variables, namely regular musical instrument practice experience and receiving music education outside formal education, were added to the model. Both variables were coded as no=0 and yes=1. In the third block, music interest and early childhood music education course grade were included in the model. The course grade variable was treated as an ordinal variable created by grouping achievement scores on a 0–100 scale into nine categories. Accordingly, scores between 0 and 29 were coded as 1, 30–49 as 2, 50–54 as 3, 55–59 as 4, 60–64 as 5, 65–69 as 6, 70–78 as 7, 79–87 as 8, and 88–100 as 9. The course grade variable was included in the model as an ordinal measure of achievement with nine categories. In the analyses, this variable was assumed to represent a linear trend in relation to music-teaching self-efficacy. Given its ordinal structure and distributional characteristics, *Spearman's rank-order correlation* was used in the correlation analyses (Field, 2024), while the regression findings were interpreted in light of these characteristics in the limitations section.

The explanatory power of the regression model was evaluated using R^2 and adjusted R^2 values. The additional explanatory contribution of each block was examined through ΔR^2, and the statistical significance of the increase in explained variance was tested using the *F-change test* (Field, 2024). The individual predictors in the model were evaluated using standardized beta coefficients (β), *t* values, and *p* values. The level of statistical significance was set at $p < .05$.

Table 2: Descriptive statistics for the main variables

Variable	N	Min.	Max.	Mean	SD	Skewness	Kurtosis
Music teaching self-efficacy	418	52	100	83.76	9.17	.04	−.02
Music interest	418	7	28	15.75	5.19	.32	−.34
Course grade	418	2	9	8.30	1.21	−2.34	6.14

Table 3: Spearman rank-order correlations among the variables

Variable	1	2	3
1. Music teaching self-efficacy	—	.12*	.21**
2. Music interest		—	.09
3. Course grade			—

Note. N = 418. *p < .05. **p < .01.

Results

This section first presents the descriptive statistics for the main variables, followed by the correlations among the variables and the results of the hierarchical multiple regression analysis conducted to identify the predictors of music teaching self-efficacy. The analyses were conducted with 418 participants following the preliminary data screening process.

Descriptive Results

Descriptive statistics for the main variables included in the study are presented in Table 2. Pre-service preschool teachers' mean total score for music teaching self-efficacy was 83.76 (SD = 9.17) within a possible score range of 20–100. Their mean total score for music interest was 15.75 (SD = 5.19) within a possible score range of 7–28. The mean course grade in early childhood music education was 8.30 (SD = 1.21) on a 1–9 scale.

Relationships among the Variables

The results of Spearman's rank-order correlation analysis are presented in Table 3. The findings showed a positive and weak significant relationship between music teaching self-efficacy and music interest (ρ = .12, p = .013). Similarly, a positive and weak significant relationship was found between music teaching self-efficacy and course grade (ρ = .21, p < .001). The relationship between music interest and course grade was positive but not statistically significant (ρ = .09, p = .071).

Findings on the Prediction of Music Teaching Self-Efficacy

A three-step hierarchical multiple regression analysis was conducted to identify the variables predicting music teaching self-efficacy among pre-service preschool teachers. Gender and year level were included in the first model, musical instrument practice experience and receiving music education outside formal education were added in the second model, and music interest and early childhood music education course grade were included in the third model.

In the first model, gender and year level together did not significantly predict music teaching self-efficacy, $F(3, 414) = 1.22$, $p = .303$. The amount of variance explained by this model was quite limited ($R^2 = .01$).

In the second model, the addition of instrument practice experience and receiving music education outside formal education significantly increased the explanatory power of the model, $\Delta R^2 = .03$, $\Delta F(2, 412) = 7.10$, $p < .001$. The second model was significant overall, $F(5, 412) = 3.59$, $p = .003$. In this model, instrument practice experience positively and significantly predicted music teaching self-efficacy ($B = .14$, $p = .013$).

In the third model, the addition of music interest and course grade again significantly increased the explained variance, ΔR^2=.03, $\Delta F(2, 410)$=6.40, p=.002. The final model was significant, $F(7, 410)$=4.46, p<.001, and explained 7.1% of the variance in music teaching self-efficacy (R^2=.07, adjusted R^2=.05).

In the final model, course grade was a positive significant predictor (B = 1.15, SE = .37, β = .15, t = 3.14, p = .002). Accordingly, when the other variables were controlled, pre-service teachers with higher course grades in early childhood music

education tended to have higher music teaching self-efficacy scores. Gender was also a significant predictor in the final model ($B = -2.88$, $SE = 1.44$, $\beta = -.10$, $t = -2.01$, $p = .045$). Since gender was coded as female = 0 and male = 1, this finding indicates that, when the other variables were controlled, male participants had lower music teaching self-efficacy scores than female participants. Year level, instrument practice experience, receiving music education outside formal education, and music interest were not significant individual predictors in the final model. The regression analysis results are presented in Table 4.

Discussion

In this study, several variables related to experience, affect, and achievement were examined as predictors of music teaching self-efficacy among pre-service preschool teachers. The hierarchical regression results showed that the final model was significant, but explained only a limited part of the variance in music teaching self-efficacy. The musical experience variables—previous regular instrument practice and receiving music education outside formal education—made a significant additional contribution to the model. When music interest and early childhood music education course grade were added, the explanatory power of the model increased again. In the final model, course grade and gender were significant individual predictors. Year level, musical instrument practice experience, receiving music education outside formal education, and music interest were not significant individual predictors. These results show that music teaching self-efficacy among pre-service preschool teachers is related to the variables examined in this study, but that it is also too multidimensional to be explained only by these variables.

One of the striking findings of the study is that the course grade in early childhood music education positively predicts music teaching self-efficacy. The course grade can be considered not only as an indicator of academic achievement but also as an indicator of prospective teachers' learning experiences and performance in the field of early childhood music education. This finding is consistent with Bandura's (1997) self-efficacy theory. According to Bandura, successful experiences (mastery experiences) in a particular task area are one of the strongest sources in the formation of self-efficacy beliefs. In this context, it can be expected that prospective teachers who show higher achievement in the early childhood music education course will perceive themselves as more competent in performing tasks related to music teaching. Similarly, Pajares (1996)

Table 4: Hierarchical regression analysis for variables predicting music teaching self-efficacy

Predictors	Model 1 *β*	Model 2 *β*	Model 3 *B*	*SE*	*β*	*t*	*p*
Gender	−.09	−.09	−2.88	1.44	−.10	−2.01	.045
3rd year	.04	.04	.82	1.19	.04	.70	.487
4th year	.03	.01	.21	1.13	.01	.18	.855
Musical instrument practice experience	—	.14*	1.78	1.19	.09	1.49	.137
Music education outside formal education	—	.07	1.19	1.27	.05	.93	.352
Music interest	—	—	.14	.10	.08	1.44	.151
Course grade	—	—	1.15	.37	.15	3.14	.002
R^2	.01	.04	.07				
Adjusted R^2	.00	.03	.05				
ΔR^2	.01	.03	.03				
F change	1.22	7.10***	6.40**				
Model F	1.22	3.59**	4.46***				

Note. N=418. The dependent variable was music teaching self-efficacy. The second year was used as the reference category for year level; therefore, only the coefficients for the third and fourth years are reported in the table. B, SE, ß, t, and p values are reported for Model 3. ***p<.05. **p<.01. ***p<.001**.

emphasizes that self-efficacy beliefs in an academic context are related to motivation, self-regulation, and performance. Therefore, it can be said that the positive relationship between course grade and music teaching self-efficacy is theoretically significant. This result suggests that pre-school teacher candidates' self-efficacy in music teaching may be related not only to musical skills but also, more broadly, to their perceptions of academic and professional competence. Indeed, academic self-efficacy has been found to positively predict both preschool teaching self-efficacy and music teaching self-efficacy, while preschool teaching self-efficacy was identified as the strongest predictor of music teaching self-efficacy (Ç. Şen, 2025). In this regard, the emergence of course grade as a significant predictor in the present study suggests that music teaching self-efficacy should be considered not only in relation to music interest or previous musical experiences, but also together with candidates' course-based achievement experiences and competence beliefs within the teaching context. This finding also has particular significance in the context of preschool teacher education. Preschool teachers are expected to carry out practices such as singing songs in the classroom, conducting rhythm activities, organizing musical games, planning movement and music activities, and supporting children's musical participation (Karakuş & Karakuş, 2026; Sökezoğlu Atılgan & Türkkaş Özer, 2021). Therefore, successful experiences in the early childhood music education course may support pre-service teachers' perceptions of competence in carrying out such music activities in the future. In other words, achievement experiences gained in this course may help pre-service teachers perceive music teaching not merely as a theoretical area of knowledge, but as an applicable and manageable teaching process. However, because this study used a cross-sectional and correlational design, this finding should not be interpreted as a causal effect. The findings only indicate a positive and significant relationship between early childhood music education course achievement and music teaching self-efficacy.

Gender was also identified as a significant predictor in the final model. Male pre-service teachers had lower music teaching self-efficacy scores than their female counterparts. However, the standardized coefficient was small in magnitude (ß=−.10), and the p value was very close to the .05 significance threshold (p=.045). Therefore, this finding should be interpreted with caution. Therefore, this finding should be considered not as evidence of a strong and generalizable gender difference, but as a limited difference observed in the present sample after controlling for the other variables. This cautious interpretation is consistent with the general pattern of findings in the literature on gender. Studies conducted in Turkish samples do not present a consistent or unidirectional pattern regarding gender. Some studies have reported results in favor of women (Çevik, 2011; Koca, 2016), whereas others have reported results in favor of men (Koca, 2013; Şeker & Çilingir, 2022). Other studies have found no significant effect of gender on self-efficacy levels related to music teaching (Burak, 2019; Topoğlu, 2014). This variation is also consistent with meta-analytic findings from Türkiye. Sen (2026) reported that the overall tendency was in favor of women with a small effect size, but that this tendency was sensitive to contextual and sample characteristics. The broader music self-efficacy literature also indicates that gender-related results may vary depending on context, sample, the specific domain of self-efficacy being measured, and the measurement tool used (Zelenak, 2024). Accordingly, the difference observed in the present study cannot be adequately explained by gender alone. Musical background, teaching experience, cultural expectations, the gender distribution within preschool teacher education, and other social experiences may also contribute to this difference. Given the relatively small number of male participants in the sample, it is more appropriate to interpret this finding as a small, context-specific difference that warrants further investigation.

Previous regular musical instrument practice was a significant predictor in the second model, but it no longer made an independent contribution after music interest and course grade were added. Instrument practice therefore appears to be related to music teaching self-efficacy, although its contribution becomes less distinct when affective and course-based variables are considered. Earlier studies have similarly linked musical background, instrument practice, and previous musical experiences with confidence or

self-efficacy in music teaching (Açılmış & Kuşdemir Kayıran, 2021; Burak, 2019; Eren & Engür, 2019; Hallam et al., 2009; Köksoy, 2017). The educational value of such experience may nevertheless depend on how it is used during teacher education. Research with generalist teachers and pre-service teachers has associated music teaching self-efficacy with opportunities for practice, pedagogical support, and classroom music-teaching experience (de Vries, 2013; Garvis & Pendergast, 2011; Jeanneret, 1997; Russell-Bowie, 2009, 2010; Vannatta-Hall, 2010). Karakuş & Karakuş (2026), for example, found that pre-service preschool teachers with concert experience reported higher music self-efficacy than those without such experience. Taken together, these findings suggest that instrument practice may provide a useful musical foundation, but its contribution to music teaching self-efficacy may become stronger when it is connected with course achievement, pedagogical practice, and feedback.

Receiving music education outside formal education was not a significant predictor in the final model. This finding should not be interpreted as meaning that music education outside formal education is entirely unimportant for music teaching self-efficacy. According to Bandura's (1997) theory of self-efficacy, self-efficacy beliefs are shaped not only by the existence of an experience, but also by the quality of that experience and how the individual interprets it, through sources such as mastery experiences, vicarious experiences, verbal/social persuasion, and physiological and affective states. In the present study, receiving music education outside formal education was measured only as a binary variable, coded as "yes" or "no." However, music education experiences outside formal education may vary considerably in terms of duration, intensity, content, continuity, and quality. Therefore, the present finding does not suggest that music education outside formal education is ineffective. Rather, it suggests that this variable may represent a heterogeneous area of experience that cannot be fully captured through binary coding. The relationship of a short-term course experience with music teaching self-efficacy may not be the same as that of long-term and systematic music education. This interpretation is consistent with studies showing that various difficulties may arise in transferring musical knowledge or experience into classroom practice. It has been reported that preschool teachers include music activities in their classrooms, but may experience difficulties in areas such as reading notation, playing an instrument, remembering rhythmic structures, and implementing activities (Sökezoğlu Atılgan & Türkkaş Özer, 2021). Similarly, studies conducted with non-music specialist general education teachers indicate that confidence problems in music teaching are often related not only to a lack of musical knowledge, but also to pedagogical uncertainties about how this knowledge can be used in the classroom (Garvis & Pendergast, 2011; Holden & Button, 2006; Russell-Bowie, 2010; Vannatta-Hall, 2010). Therefore, the contribution of music education outside formal education to music teaching self-efficacy should be considered not only in terms of whether such an experience exists, but also in terms of its quality, continuity, and transfer into classroom music teaching.

Music interest had a weak but statistically significant positive relationship with music teaching self-efficacy, yet it did not remain a significant individual predictor in the final model. Interest therefore appears to be related to music teaching self-efficacy, but its independent contribution is limited when the other variables are controlled. This pattern is consistent with the theoretical distinction between the two constructs. Interest is a developmental motivational construct with cognitive and affective components (Hidi & Renninger, 2006), whereas self-efficacy concerns a person's perceived capacity to perform a particular task in a specific context (Bandura, 1997). Açılmış & Kuşdemir Kayıran (2021) also reported a weak positive relationship between music interest and music teaching self-efficacy. Other studies have associated music interest, listening habits, musical background, and positive musical experiences with music teaching self-efficacy (Gülle & Akay, 2019; Hallam et al., 2009; Karakuş & Karakuş, 2026). However, these affective and experiential resources may need to be accompanied by practice, feedback, and pedagogical support before they contribute to perceived competence in teaching music (Karakuş & Karakuş, 2026; Sökezoğlu Atılgan &

Türkkaş Özer, 2021). The present result therefore does not diminish the value of music interest. Rather, it suggests that interest may provide an affective basis for music teaching self-efficacy when combined with achievement experiences and opportunities to practice music teaching.

Year level was not a significant predictor in the final model. This result indicates that, when the other variables were controlled, third- and fourth-year pre-service teachers did not differ significantly from second-year pre-service teachers in terms of music teaching self-efficacy. This finding suggests that year level may not always be an explanatory variable for music teaching self-efficacy. Although some previous studies have reported differences related to year level (Burak, 2019; Çevik, 2011; Topoğlu, 2014), other studies have found no such differences (Açılmış & Kuşdemir Kayıran, 2021; Gülle & Akay, 2019). These differences should be considered together with contextual variables such as which courses pre-service teachers have taken, what kinds of practice experiences they have gained, and how much feedback they have received regarding music teaching. In the present study, only pre-service teachers who had taken the early childhood music education course were included. Therefore, all participants shared a common experience related to music education coursework. This shared course experience may have limited differences based on year level. Year level does not directly indicate the quality of pre-service teachers' practice experiences in music teaching. Therefore, the present finding suggests that applied music teaching activities, music-based work with children, and feedback received during such processes may be more explanatory than year level itself.

The limited explanatory power of the final model is another important finding that should be discussed. Although the model was statistically significant, it explained only 7.1% of the variance in music teaching self-efficacy. This rate suggests that the musical experience, music interest, and course achievement variables examined in the present study are related to music teaching self-efficacy, but that this construct needs to be explained together with broader academic, pedagogical, and contextual variables. The limited explanatory power appears to be related to the multidimensional and context-sensitive nature of music teaching self-efficacy, which includes personal, social, cognitive, and pedagogical dimensions (Biasutti & Concina, 2017). This interpretation is also consistent with previous findings suggesting that music teaching self-efficacy should be considered together with broader academic and professional self-efficacy constructs (Ç. Şen, 2025). From the perspective of self-efficacy theory, individuals' competence beliefs are shaped by multiple sources, including mastery experiences, observing others' experiences, social persuasion, and affective/physiological states (Bandura, 1997). In the context of music teaching, other variables may also be important, such as previous positive and negative musical experiences, perceived musical competence, music teaching anxiety, experience conducting music activities with children, instructor support, the practice-oriented nature of the course, and general pedagogical self-efficacy. Meta-analytic findings from Türkiye also indicate that music teaching self-efficacy levels vary considerably across samples and measurement tools, and that this construct should be considered together with contextual, structural, and measurement-related characteristics (Sen, 2026). Therefore, the present model should not be interpreted as a model that fully explains music teaching self-efficacy. Rather, it should be considered a model that identifies some limited but significant predictors related to this construct.

Limitations

This study has several limitations. First, the study used a cross-sectional and correlational design. Therefore, the relationships among the variables examined in the study should not be interpreted causally.

Music teaching self-efficacy and music interest were measured using self-report scales. Such measures may be influenced by participants' self-perceptions, social desirability tendencies, or response styles. Therefore, the findings reflect pre-service teachers' own perceptions of competence and interest in music teaching rather than their actual performance in classroom music teaching practices.

Early childhood music education course grade was included in the analysis after the 0–100

achievement scores were converted into a nine-category ordered achievement indicator. The scores were also concentrated in the upper achievement categories. For this reason, the course grade finding should be interpreted with attention to the ordered structure of the variable, its distribution, and the fact that it represents achievement only in a limited way. In addition, course grades were assigned at different universities and through the assessment practices of different instructors. This limits the extent to which this variable can be treated as a fully standardized achievement measure for all participants.

The gender distribution in the sample was not balanced. The number of male participants was much lower than the number of female participants. This limits the generalizability of the finding related to gender. Therefore, the gender finding should be viewed as specific to the present sample and interpreted with caution.

The musical experience variables were measured in binary form. Musical instrument practice experience and receiving music education outside formal education were coded only as "yes" or "no." No detailed information was collected about the duration, intensity, content, quality, or continuity of these experiences. This may have limited the explanatory power of the musical experience variables.

The final regression model explained only a limited part of the variance in music teaching self-efficacy. Therefore, the findings should be interpreted within the limits of the variables included in this study. Broader pedagogical, psychological, and contextual variables that may help explain music teaching self-efficacy should also be considered.

Implications and Recommendations

The results of this study point to something quite practical for preschool teacher education. In early childhood music education courses, it seems important to give pre-service teachers not only knowledge, but also real chances to try things out and feel that they can succeed in doing them. If the aim is to support self-efficacy in music teaching, then courses need to go beyond theory. Candidates should be able to work directly with activities such as teaching songs, doing rhythm exercises, using musical games, combining movement and music, planning listening tasks, and exploring creative sound activities. When these experiences are supported with regular and constructive feedback, it becomes easier for them to turn what they know about music into something they can actually use in the classroom.

At the same time, the findings suggest that musical experience should not be considered in isolation from teaching. Having engaged in musical pursuits or played an instrument in the past may have provided prospective teachers with a certain musical background. However, this background may not, on its own, translate into music teaching self-efficacy. Therefore, during teacher education, it is also important to connect pre-service teachers' existing musical experiences with music teaching practices for preschool children.

In future studies, music teaching self-efficacy may be examined together with different variables. For example, perceived musical competence, music teaching anxiety, previous positive and negative musical experiences, instructor support, opportunities for practical teaching, experience in conducting music activities with children, and general teaching self-efficacy may be listed among the potential variables. In addition, longitudinal studies may reveal more clearly how music teaching self-efficacy changes before and after the early childhood music education course.

It is also important to examine musical experience in more detail in future research. Aspects such as the length of instrument experience, the type of instrument, whether music-making is individual or group-based, as well as its content and continuity, could be considered more closely. Taking this kind of approach may help provide a more nuanced understanding of how musical background relates to music teaching self-efficacy.

Conclusion

This study examined music teaching self-efficacy among pre-service preschool teachers through the variables of musical experience, music interest, and achievement in the early childhood music education

course. The hierarchical regression model was significant, but the amount of variance explained by the model was limited. In the final model, early childhood music education course grade was a positive significant predictor. Gender also appeared as a predictor with a small effect and should therefore be interpreted cautiously. Year level, musical instrument practice experience, receiving music education outside formal education, and music interest were not significant individual predictors in the final model.

The positive role of course grade suggests that pre-service preschool teachers' achievement experiences in the early childhood music education course may be related to how they perceive their self-efficacy for music teaching. At the same time, the limited explanatory power of the model shows that music teaching self-efficacy is a multidimensional construct that cannot be explained only by musical experience, interest, and course achievement. In this respect, the study draws attention to the importance of course-based achievement experiences, connecting musical experiences with the pedagogical context, and practice-based learning processes in supporting music teaching self-efficacy among pre-service preschool teachers.

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