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Self-Efficacy and Achievement among Secondary School Vocalists: An Exploratory Study

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Abstract

The purpose of this study was to investigate music performance self-efficacy and achievement among secondary school choral music students. I specifically examined the relationships between the four sources of self-efficacy (enactive mastery experience, vicarious experience, verbal/social persuasion, and physiological and affective state) and the composite construct, as well as years of private lessons and practice time. In addition, I compared self-efficacy beliefs by grade, school, voice part, camp attendance, and voice lessons. Participants ($N = 42$) completed the Music Performance Self-Efficacy Scale (Zelenak, 2011), provided demographic data, and reported average weekly practice time in preparation for a competitive choral event. Results indicated a significant negative correlation between Verbal/social persuasion and competitive ranking ($r_s = -.36, p = .02$). Those with higher scores on the verbal/social persuasion subscale were ranked higher (received a lower number ranking) than those with lower scores. I found no significant differences in composite self-efficacy beliefs among voice parts, grade levels, or those engaged in private vocal instruction. The results contribute to the literature linking musical self-efficacy and achievement and replicate previous findings of the relationship between the verbal/social persuasion factor of musical self-efficacy and achievement.

Keywords: self-efficacy, performance achievement, choral music education, Music Performance Self-Efficacy Scale, choral performance

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Human thought has a powerful influence on a range of behaviors. An individual's self-perception can have a substantial impact on how they feel, what they are motivated to do, and their overall psychological and physical well-being (Pruthi, 2022). Psychologist Albert Bandura (1977, 1997) was the first to define self-efficacy as a person's set of beliefs that determine how well they can execute a plan of action in prospective situations. Since the late 1970s, researchers have observed that self-efficacy beliefs influence both psychological and biological processes and contribute to performance in many contexts (e.g., Bandura, 1997; McCormick & McPherson, 2003; Pajares, 1996). Different people who share a similar skill level or even the same individual in different circumstances may perform expertly, adequately, or poorly depending on fluctuations in their self-efficacy beliefs (Schunk, 1989).

Bandura (1977, 1997) identified four sources that influence an individual's self-efficacy: (a) enactive mastery experience, (b) vicarious experience, (c) verbal/social persuasion, and (d) physiological and affective state. He noted that enactive mastery occurs when a person experiences success at a given activity. The repeated instances of success on a particular task then positively influence self-efficacy. In a choral setting, a student might experience enactive mastery experiences by successfully performing in a concert setting or participating in a mock audition. Vicarious experience occurs when an individual observes another person successfully attempting a task, such as when a singer observes a peer's successful performance. Bandura described verbal/social persuasion as the influence of others, including peers, teachers, and family who may encourage or discourage an individual through comments and actions. In a choral setting, this may manifest through positive affirmations of a musical performance by peers or a teacher encouraging a student to pursue advanced musical challenges. Finally, he labeled how a person experienced nervousness or anxiety that resulted in symptoms such as faster heart rate, shortness of breath, sweating, or other physical reactions as physiological and affective state. Researchers have confirmed the four sources of self-efficacy in various academic subjects (e.g., Usher & Pajares, 2006, 2009), including music (Hendricks, 2016; Lewis & Hendricks, 2022; MacAfee & Comeau, 2020; Martin, 2012; Zelenak, 2011, 2019).

Self-Efficacy Beliefs in Music

Within the context of music, scholars have investigated the four sources of self-efficacy among jazz performers (Wehr-Flowers, 2007), non-music major collegiate music participants (Karki, 2023), collegiate vocalists (Lewis & Hendricks, 2022) and secondary ensemble members (Hendricks, 2013; Long, 2016; Zelenak, 2011, 2019). Consistent with Bandura's (1997) theory, most investigators have reported enactive mastery experience to be the most influential source of self-efficacy beliefs in music performance (Hendricks, 2009; Karki, 2023; Long, 2016; Zelenak, 2015). Zelenak (2019) noted that enactive mastery experience has consistently exhibited the strongest relationship to composite self-efficacy followed by

verbal/social persuasion, physiological and affective state, and vicarious experience. However, other researchers have reported that the degree of influence of each source of self-efficacy beliefs varied according to individual personality differences and that any source of self-efficacy may emerge as most influential to the composite score (Lewis & Hendricks, 2022). Additionally, Karki (2023) observed that among collegiate non-music-majors, physiological and affective state was more influential than verbal persuasion on composite self-efficacy beliefs. Together, the varied observations indicate that the relative strength of the relationships may differ depending on temporal, contextual, and demographic factors.

Scholars have reported mixed results when examining differences in self-efficacy between variables, including gender, grade level, and musical instrument. Some researchers found no significant differences between gender and self-efficacy (Cahill Clark, 2008; White, 2010; Zelenak, 2019). Others reported that differences were dependent on age/level and observed higher musical self-efficacy perceptions for females than males in primary school (Ritchie & Williamon, 2011), high school (Hewitt, 2015), and college (Karki, 2023). In contrast, some scholars observed that males had higher musical self-efficacy beliefs than females in middle school (Hewitt, 2015) and high school (Hendricks, 2009). Hendricks (2013) posited that gender differences in music performance self-efficacy may be related to environment. Among high school orchestra students participating in a competitive festival, she found that particularly for females, musical performance self-efficacy increased as participants perceived competition among ensemble members to diminish. In a follow-up study with members of an all-state orchestra, Hendricks and colleagues (2015) again observed that for females, as ensemble focus shifted away from competitive ranking and toward collaborative interactions, their musical performance self-efficacy beliefs improved. Findings have also been inconsistent among studies examining self-efficacy by musical instruments. Hendricks (2009) reported higher self-efficacy among wind and percussion students when compared to string students, but Zelenak (2015) observed no differences among band, choral, and orchestra students. The varied observations suggest that more research is needed to understand the relationships between variables such as grade level, musical context, gender, and music performance self-efficacy.

Music Performance Self-Efficacy and Achievement

During a musical performance, musicians display a complex set of acquired skills including musical knowledge, technical facility, and physical ability. The quality of performance (musical achievement) is often determined by content experts evaluating the performance using pre-determined criteria (McPherson & McCormick, 2006; Smith, 2004; Zelenak, 2019). Two seminal studies in music education provide the foundation for the line of research on the effects of self-efficacy on musical achievement. McCormick and McPherson (2003) reported that in young adult musicians from Australian secondary schools, performance quality was positively correlated with self-efficacy. Furthermore, they found self-efficacy to be a stronger predictor of performance quality than the quantity of practice time.

In a replication of this study, McPherson and McCormick (2006) confirmed that self-efficacy beliefs predicted performance quality in a sample of secondary instrumental students. They also reported that students with high self-efficacy beliefs engaged in more cognitive practice strategies during their preparation for performance. Ultimately, they concluded, “Teachers should pay more attention to their students’ perceptions of their own personal competence, given evidence that these types of perceptions accurately predict their motivation and the future decision they make about their desire to continue improving” (p. 337). In later studies, researchers observed that self-efficacy was related to practice strategies employed by high school (Cahill Clark, 2013) and university music students (Nielsen, 2004). Participants who reported higher musical self-efficacy beliefs used more learning and study strategies during practice sessions. These studies corroborate nuanced relationships between an individual’s music performance self-efficacy, motivation, and performance.

Additional research confirmed the relationship between self-efficacy beliefs and competitive music performance in various contexts (e.g., Cahill Clark, 2008; Ritchie & Williamon, 2012; Zelenak, 2019). In a recent meta-analysis, Zelenak (2024) identified 19 studies that examined the relationship between the composite construct of musical self-efficacy and achievement in music performance and calculated an overall moderate effect size ($r = .44$) between the two variables. Across demographic variables and musical context, researchers consistently report a positive relationship between an individual’s composite self-efficacy beliefs and the evaluation of their musical performance.

Need for the Study

Despite the body of research investigating the composite construct of musical self-efficacy and performance achievement, I found only one study that investigated the four sources of self-efficacy and achievement in music performance (Zelenak, 2019). In that study, secondary school band and orchestra students ($N = 73$) in a large school district in the southeastern United States completed measurements of musical self-efficacy prior to auditioning for elite county ensembles. Student performances were evaluated by panels of music educators and ranked in order from highest to lowest for ensemble placement. For string students, there was a significant positive correlation ($r = .46, p = .02$) between composite musical self-efficacy beliefs and performance achievement. Additionally, self-efficacy beliefs predicted 15% of the variance in performance achievement. Verbal/social persuasion was the strongest positive predictor of performance among the four sources followed by enactive mastery experience. This finding warrants further investigation in other populations. Additionally, there is a lack of research with choral participants. When examining differences in effect sizes in the relationship between self-efficacy and achievement between instrumental and vocal participants, Zelenak (2024) acknowledged that most self-efficacy studies examined instrumentalists with very few investigating the self-efficacy of vocalists. Considering the observation of Lewis and Hendricks (2022) that self-efficacy beliefs may be particularly salient for vocalists because, unlike other musicians, their instruments were

part of their bodies, further investigation using populations of choral musicians is needed.

Therefore, the purpose of this study was to investigate music performance self-efficacy and achievement among secondary school choral music students. I specifically examined the relationships between the four sources of self-efficacy (enactive mastery experience, vicarious experience, verbal/social persuasion, and physiological and affective state) and the composite construct, as well as years of taking private lessons and practice time. The primary research question guiding this study was: What relationships, if any, exist between the four sources of musical self-efficacy, composite music performance self-efficacy, voice part, practice time, and achievement? Additionally, because of the known relationship between enactive mastery experience and the composite self-efficacy construct, I explored relationships between the overall audition preparation strategies (private voice instruction, attendance at all-state preparatory camps, and estimated practice time), self-efficacy, and achievement.

Method

Participants

Teachers from choral programs ($N = 3$) in a single school district in the southwest United States comprised of three large comprehensive high schools agreed to participate in the study, allowed their students to be recruited, and shared audition results with the researcher. The schools comprised a convenience sample accessible to the researcher's institution which were preparing and auditioning at a common competition. I distributed printed parent consent forms to the 53 students participating in the preliminary region-level audition for the all-state choir at the three schools. Ultimately, I obtained consent for 43 participants (School 1, $n = 7$; School 2, $n = 22$; School 3, $n = 14$) who then completed the survey, resulting in an 81.13% participation rate. Examination of stem-and-leaf plots and scatterplots revealed one extreme outlier, which I removed, resulting in a final sample size of $N = 42$. Participants were in grades 9–12 (9th, $n = 4$; 10th, $n = 12$; 11th, $n = 14$; 12th, $n = 12$). For all-state choir auditions, singers were classified into eight voice parts. Participants in the study represented all auditioned voice parts (Soprano 1, $n = 8$; Soprano 2, $n = 4$; Alto 1, $n = 3$; Alto 2, $n = 5$; Tenor 1, $n = 4$; Tenor 2, $n = 6$; Bass 1, $n = 9$; Bass 2, $n = 3$). I did not include gender in the questionnaire in this study because of concerns from school district research review boards about research with minors that allowed for gender identification beyond a binary variable. However, teacher participants indicated that most treble voice students ($n = 20$) identified as female while most tenors and basses ($n = 22$) identified as male.

Instrument

The questionnaire included three sections: demographic information, questions relevant to preparation for region choir auditions, and the Music Performance Self-Efficacy Scale

(Zelenak, 2011). Demographic information included school attended, grade, and voice part. Participants reported information relevant to their preparation for region choir auditions, including enrollment in private voice instruction, attendance at all-state preparatory camps, and individual practice time. Previous literature indicated that private voice teachers were a significant source of self-efficacy beliefs for vocalists (Lewis & Hendricks, 2022); therefore, participants indicated whether they were enrolled in private voice instruction outside of choir and if so, how many years they had taken lessons. Because it is common for students who engage in the region choir audition process to attend summer workshops to prepare for auditions that may provide additional mastery experiences such as small group rehearsals, performances of the audition music, and mock auditions, participants answered a single question indicating if they attended a summer all-state camp. Following the model of McCormick and McPherson (2003; McPherson & McCormick, 2006), to measure practice time, participants estimated the number of days practiced and average minutes of each session over the three weeks preceding the audition.

Musical Performance Self-Efficacy Scale (MPSES; Zelenak, 2011)

Although some researchers have used single self-report questions to measure musical self-efficacy, I used the MPSES in the current study as a robust measure of composite self-efficacy and the four sources of self-efficacy. I obtained permission to use the MPSES through email correspondence with the author. Using the principles of Bandura (1977, 1997), Zelenak developed the MPSES to measure self-efficacy in music performance among secondary school music students participating in large ensembles. The MPSES contains 24 statements that participants answer on a 100-point scale ranging from 1 (*strongly disagree*) to 100 (*strongly agree*). Of the 24-items, eight measure enactive mastery experience, five measure vicarious experience, six measure verbal/social persuasion, and five measure physiological and affective states. Researchers have established the validity of the MPSES by examining content, scale structure and relationships with other self-efficacy measures, and the relationships with other variables and the scale (Börekci et al., 2023; Zelenak, 2011).

In the current study, data generated by the MPSES showed excellent internal reliability (Kline, 2000) both for the composite self-efficacy construct ($\alpha = .88$) and for the subscales of enactive mastery experience ($\alpha = .75$) and verbal/social persuasion ($\alpha = .82$). Reliability statistics within this sample for vicarious experience ($\alpha = .50$) and physiological and affective state ($\alpha = .22$) raised concerns. I examined each subscale and discovered that the assumption of tau equivalence required for Cronbach's alpha was not met. Additionally, one question (question 23) in the physiological and affective state subscale had a negative loading to the factor. Accordingly, I removed question 23 from the subscale and using SPSS version 28, I calculated reliability using McDonald's Omega which is appropriate for scales where tau equivalence is not assumed (McNeish, 2018). Omega values can be interpreted similarly to Cronbach's alpha (McNeish, 2018) and indicated improved reliability for each subscale (enactive mastery experience, $\omega = .75$; verbal/social persuasion, $\omega = .83$; vicarious

experience, $\omega = .57$; physiological and affective state, $\omega = .54$). Although still low, Kline (2000) notes that for psychological tests, values below $.70$ can be expected and Nunnally (1978) suggests that in exploratory studies values as low as $.50$ are sufficient. Zelenak (2022) reported that internal consistency was lower for physiological and affective state and vicarious experience subscales when verifying the reliability of the scale and highlighted the difficulty in constructing items to measure these sources. Because the subscales have consistently been proven reliable in similar populations (Börekci et al., 2023; Zelenak, 2010, 2015, 2019) and omega reliability estimates were acceptable, I proceeded with analysis; however, interpretation of results of the subscales of vicarious experience and physiological and affective state was limited.

Procedure

Following school district and university institutional review board approval, I distributed printed parent consent forms via the choir teacher at each school to prospective student participants approximately two weeks before region choir auditions. I created the questionnaire using Qualtrics software version 10/2023 beginning with informed assent as approved by the university institutional review board. Pajares (1996) suggested that when comparing self-efficacy to an achievement-related outcome, measurements were most accurate when taken in close proximity to the performance. Therefore, I distributed surveys 24 hours prior to the region choir auditions and participants completed them before the start of the audition.

The region choir audition is part of the multi-level process leading to the all-state choir. Students auditioning in this round of the all-state choir auditions prepared individual choral parts from three choral octavos designated by the state music education association. Students performed a selected excerpt from three choral pieces with recorded piano accompaniment and sight-sang a single melodic exercise. Panels of five content experts who were members of the state music education association and completed the required training blindly adjudicated the eight voice parts in independent audition rooms. Blind ranking of musical performances by content experts given general task descriptions has proven to be a valid and reliable method for ranking musical performances (Smith, 2004). Similarly, in his study of the sources of self-efficacy and musical performance achievement, Zelenak (2019) found that ranking by a panel of content experts demonstrated properties of valid and reliable measurement as defined by the American Educational Research Association and provided an “authentic assessment of musical performance” (p. 69).

In this study, eight panels of five adjudicators evaluated voice parts independently and scored each excerpt for accuracy, musical style and interpretation, and vocal tone with a possible 100 points for each excerpt. The teacher participant who chaired the audition process provided digital copies of all scores and audition reports to the researcher. Each evaluator assigned a raw score ranging from 1 to 300 on the combined choral excerpts and from 1 to 60 for the sight-singing exercise. The software used for adjudication automatically

converted raw scores to ranks for each singer within their voice part. The highest raw score was assigned a ranking of 1. The highest and lowest rankings of the five-member judging panel were dropped, and the final ranking was determined from the three remaining scores. Using the three judge rankings included in the final ranking of each performance, I calculated Kendall's *W* for each adjudication panel (see Appendix Table A1) and found inter-rater reliability to be excellent, ranging from .91 to .99, indicating a high degree of agreement among adjudicators (Howell, 2013). Sight singing comprised 20% of the final score and the choral excerpt represented 80% of the total. I matched the official ranking of the participants to the completed surveys for analysis.

Results

Overall, participants reported high levels of composite musical self-efficacy beliefs ($M = 1992.57$, $SD = 216.49$). Scores ranged from 1477 to 2380 out of a possible 2400 (see Appendix, Table A2). To standardize each factor of the scale, I calculated z-scores for each subscale prior to examining correlations to the total self-efficacy score. Examination of scatterplots revealed violations of normality for some subscales. Therefore, I calculated Spearman correlations which are robust to violations of the assumption of normality for each source of musical self-efficacy and the composite self-efficacy score (see Table 1). As expected, there were moderate to strong correlations (Miksza, 2018) between each source of musical self-efficacy and composite musical self-efficacy.

Table 1.

Correlation Matrix for Self-Efficacy, Years in Lessons, Practice Minutes, and Achievement

Variable	1	2	3	4	5	6	7	8
1. Years in Lessons	—							
2. Practice Minutes	-.06	—						
3. Enactive Mastery	-.04	.23	—					
4. Verbal/Social Persuasion	-.07	.28	.79**	—				
5. Physiological State	-.26	.08	.46**	.46**	—			
6. Vicarious Experience	-.14	.05	.29	.25	.19	—		
7. Composite Self-Efficacy	-.19	.19	.80**	.76**	.66**	.61**	—	
8. Achievement	-.12	-.13	-.27	-.36*	-.01	-.04	-.20	—

* $p < .05$ ** $p < .01$

Participants reported that in the three weeks before completing the survey and competing in the choral audition, they practiced their audition music on average 4.4 days per week ($SD = 1.21$) in sessions lasting 32.50 minutes ($SD = 9.32$). Approximately 83% of participants ($n = 35$) were enrolled in private voice instruction ($M = 3.10$ years, $SD = 1.69$) in addition to being part of their school choirs. Nearly all ($n = 40$) attended an all-state choir summer preparatory camp prior to the school year to assist them in preparing for the audition.

Before examining the relationships between music performance self-efficacy, practice time, and competitive ranking, I conducted ANOVAs to compare group means on composite self-efficacy by school, voice-part, those who attended preparatory all-state camps, and those enrolled in voice lessons. Because of the number of comparisons, I utilized a Bonferroni correction with an adjusted alpha $\alpha = .001$. There were no significant differences in composite self-efficacy scores between groups (see Appendix Table A3). There was, however, a general trend for increased self-efficacy as students progressed in grade level (see Appendix Table A4).

I calculated Spearman rank correlations to examine relationships among self-efficacy, practice time, years enrolled in private voice lessons, and achievement (i.e., competition ranking) (see Table 1). I was unable to make meaningful comparisons between those who attended all-state preparatory summer camps and those who did not, as only three participants indicated they did not attend a summer camp.

There was a moderate and statistically significant negative correlation ($r_s = -.36, p = .02$) between the verbal/social persuasion source of self-efficacy and achievement. Participants with higher verbal/social self-efficacy beliefs ranked higher (lower numbers). Years of private voice study, estimated practice time, and the three other sources of self-efficacy were not significantly correlated with achievement.

Discussion

The purpose of this study was to investigate the relationship between musical performance self-efficacy beliefs and achievement among secondary choral music students, specifically examining the relationships between the four sources of self-efficacy (enactive mastery experience, vicarious experience, verbal/social persuasion, and physiological and affective state), practice time, and other demographic variables. Relationships between each source of self-efficacy and the composite construct replicated previous findings (Zelenak, 2019). Unlike other studies, I did not observe a significant relationship between the composite construct of musical self-efficacy and achievement. However, like Zelenak (2019), I found the subscale of verbal/social persuasion to be significantly related to achievement. Results add to the body of research that reports no differences in self-efficacy beliefs among demographic variables of instrument and gender.

Enactive mastery experience had the strongest relationship with composite self-efficacy beliefs followed by verbal/social persuasion, physiological and affective state, and vicarious

experience. For the participants in this study, previous successful musical performance was integral to their belief in their overall musical ability. The results mirror those reported by Zelenak (2015, 2019) who observed the same relative influence of the four sources of self-efficacy on composite musical self-efficacy among middle school and high school students. Additionally, the findings align with the theoretical framework proposed by Bandura (1977, 1997), which positions mastery experience as the most influential factor of overall self-efficacy.

Although the positive relationship between composite self-efficacy and musical achievement has been confirmed in previous studies, the correlation was not significant in this study ($r_s = -.20$). The relationship is weaker than the mean effect size reported by Zelenak (2024) in a meta-analysis of previous studies of ($r = .44$). Like the instrumentalists in Zelenak's (2019) study, enactive mastery experience had the strongest relationship with the composite construct of self-efficacy. However, verbal/social persuasion had the strongest (and only significant) relationship with musical achievement. Those who reported higher scores on the verbal/social persuasion subscale of the MPSES received a higher ranking (lower rank number) from adjudicators, suggesting that feedback singers receive from peers, teachers, and family members may have a substantial influence on musical self-efficacy and thus achievement. The importance of the verbal/social persuasion source of music performance self-efficacy beliefs is similar to the results reported by Hendricks et al. (2016), who observed a positive influence of peer support on the self-efficacy of female orchestra students in a competitive ensemble, and Lewis and Hendricks (2022) who found that encouragement from music teachers positively affected musical performance self-efficacy. The findings contribute to the literature by replicating the results of Zelenak (2019) among a population of vocal students. Together, the two studies suggest that for music students, the verbal/social persuasion factor of musical performance self-efficacy may be particularly salient and warrants further investigation.

The composite self-efficacy score of participants in this study ($M = 1992.57$, $SD = 216.49$) was higher and demonstrated less variance than those reported by Zelenak (2011) among secondary music students ($M = 1851.89$, $SD = 328.60$) and similar to those reported in Zelenak's (2019) study among secondary instrumental students auditioning for elite ensembles ($M = 2,019.60$, $SD = 206.81$). The results of these studies suggest that musical self-efficacy may be higher among advanced students who audition for elite ensembles when compared to the general population of music students. Analysis of composite self-efficacy scores by the variables of grade level, voice part, gender, private voice instruction, and attendance at summer camp revealed no significant differences. The results were similar to previous studies that reported no differences in musical self-efficacy according to gender, instrument played, or musical context (band, choir, orchestra) (Cahill Clark, 2008; White, 2010; Zelenak, 2019). Studies that identified differences by grade level reported scores categorized by primary school, middle school, and high school. Therefore, it was not surprising to find no significant differences within this sample of high school students. I did

however observe a general increase in both the composite self-efficacy score and all four subscales as grade level increased. It is plausible that a relationship may exist between grade level or musical experience and musical self-efficacy but significant differences may only be detectable when examining a longer time frame than four years of high school or a larger and more diverse sample.

The results of this study have multiple implications for music educators. As McPherson and McCormick (2006) advised, those involved in the training and support of musicians must recognize the role of an individual's self-beliefs on their musical achievement. Considering the relationship of the verbal/social persuasion source of musical self-efficacy beliefs to achievement, the impact of feedback cannot be overstated. Lewis and Hendricks (2022) noted the importance of instructor feedback for collegiate vocalists, especially during the early stages of their vocal development. Negative comments from studio teachers reduced individuals' self-efficacy beliefs and caused some to leave the program or change voice studios while positive feedback encouraged them. Particularly when approaching performance, providing opportunities for musical affirmation from teachers, peers, and family members can be helpful for students. Because feedback from peers may influence musical self-efficacy more than feedback received from teachers or parents (Martin 2012), teachers might create opportunities for peers to provide verbal or written encouragement to those engaging in competitive performance. The accolades a musician receives from competitive achievement support the verbal/social persuasion component of musical self-efficacy. Therefore, teachers should consider public recognition of individual student achievement at performances and via written and digital communication. Contrastingly, the competitive atmosphere among individual performers might diminish an individual's self-efficacy beliefs (Hendricks et al., 2015). Therefore, emphasizing individual student musical accomplishment without an emphasis on competitive results may support positive musical self-efficacy. The music teacher is faced with the challenge of delicately balancing these conflicting factors of competitive music performance.

There are several limitations to the current study. The small sample from a single school district situated in a competitive environment may not be representative of the general population. Additionally, selection bias may be present considering the students participating in the study voluntarily chose to engage in a competitive music event. It is plausible that the student's desire to participate in the region choir audition may be correlated with higher general musical performance self-efficacy. Indeed, the self-efficacy scores within this sample were generally high. It is important to recognize that competitive ranking is only one possible measurement of musical achievement. The ranking included in this study considers both the performance of musical literature and sight-singing skills but may not represent a comprehensive measurement of musical achievement. Although the MPSES has consistently proven to be a reliable measurement for each source of music performance self-efficacy, the reliability analysis of the subscales of physiological and affective state and vicarious experience within this sample indicate that interpretation of the results

of these subscales within this population is limited. Although the relationship between musical self-efficacy and achievement has been established in the literature, the findings of this study, like Zelenak's (2019) study suggest that there are nuanced relationships between each source of self-efficacy and achievement. Researchers investigating the relationship between musical self-efficacy and achievement should consider using measurements of each source of musical self-efficacy in addition to the composite score. Future investigations using a larger, more diverse population of students and other measures of musical achievement are needed to expand the findings of this exploratory study. Researchers might employ quantitative and qualitative methods to examine differences in musical self-efficacy between lower- and higher-performing students or the effects of competitive success or failure on musical self-efficacy. Additionally, a better understanding of what behaviors and activities directly influence the verbal/persuasion source of musical self-efficacy would be helpful in providing instructional strategies to practitioners.

The positive relationship between musical self-efficacy and achievement underscores the importance of nurturing the psychological development of student musicians in addition to mastering music fundamentals and skills. Musical self-efficacy, particularly that derived from verbal and social interactions, is a crucial element of musical achievement. Therefore, integrating strategies that cultivate music performance self-efficacy beliefs may be an effective tool to support student success.

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Appendix

Table A1

Coefficient of Concordance (W) for Adjudication Panels

Adjudication Panel	Repertoire	Sight-Singing
Soprano 1	.92	.97
Soprano 2	.93	.97
Alto 1	.96	.98
Alto 2	.95	.98
Tenor 1	.95	.98
Tenor 2	.97	.96
Bass 1	.93	.99
Bass 2	.91	.97

Table A2
Self-Efficacy Scores Summary

Variable	M	SD	Maximum
Enactive Mastery Experience	682.02	89.01	800
Verbal/Social Persuasion	522.05	83.89	600
Physiological & Affective State	305.00	50.03	400
Vicarious Experience	388.79	66.96	500
Composite Self-Efficacy ^a	1992.57	216.49	2400

^a Scale item 23 was removed from the Physiological and Affective State subscale but included in the composite measure.

Table A3
ANOVA Summary for Composite Self-Efficacy Scores

Variable	df	F	η^2	p
Grade	3, 38	2.44	0.16	.080
School	2, 39	1.63	0.77	.210
Voice Part	7, 34	0.90	0.16	.516
Camp Attendance	1, 40	0.74	0.18	.394
Voice Lessons	1, 40	0.70	0.02	.407
Treble/Tenor-Bass	1, 40	1.04	0.03	.315

Table A4
Self-efficacy Scores by Demographic Variables

Variable	Mastery Experience		Verbal/Social Persuasion		Physiological & Affective State		Vicarious Experience		Total Self-Efficacy	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Grade										
9th	597.25	123.11	403.75	90.66	291.75	64.97	377.00	103.79	1769.75	340.88
10th	657.50	92.56	519.83	78.64	272.42	45.64	399.83	39.01	1944.92	211.17
11th	710.07	79.06	551.36	48.44	323.64	45.97	380.71	84.79	2056.14	206.35
12th	702.08	68.78	529.50	45.36	320.25	40.99	391.08	59.02	2040.33	141.66
Lessons										
Yes	682.51	81.98	521.06	83.23	300.91	47.81	381.20	63.02	1980.00	190.80
No	679.57	126.66	527.00	93.79	325.43	59.72	426.71	78.25	2055.43	329.29
Camp										
Yes	678.46	101.44	519.22	89.11	304.43	50.23	384.95	74.23	1974.61	266.25
No	587.50	84.15	491.00	16.97	316.50	62.93	370.00	7.07	1863.50	169.00
Voice Part										
Sop 1	692.75	80.68	538.63	35.69	315.13	20.85	412.75	38.01	2055.63	178.56
Sop 2	733.50	29.14	568.75	46.26	302.50	20.62	381.50	93.29	2084.50	152.49
Alto 1	667.00	152.86	513.33	133.17	246.00	36.72	418.67	2.31	1940.00	300.04
Alto 2	670.20	75.94	520.60	72.94	283.60	33.69	420.80	78.37	1992.20	231.86
All Treble	691.40	82.41	506.14	65.54	294.35	48.21	409.40	58.45	2028.20	196.89
Ten 1	682.25	37.32	541.25	43.84	271.50	32.18	375.25	24.82	1969.00	16.37
Ten 2	671.33	121.34	540.50	65.60	345.00	56.33	378.50	114.19	2018.83	296.13
Bass 1	704.89	88.59	521.78	71.73	319.00	43.88	354.33	56.17	1996.78	214.63
Bass 2	572.00	76.54	365.00	172.22	298.67	54.04	393.33	54.85	1721.33	249.54
All Tenor-Bass	676.53	20.77	489.66	65.25	314.68	50.77	369.21	58.73	1974.89	220.13

Note. Mastery Experience ranges from 0 to 800; Verbal/Social Persuasion ranges from 0 to 600; Vicarious Experience ranges from 0 to 500; Physiological & Affective State ranges from 0 to 400; Composite Self-Efficacy Ranges from 0 to 2400