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Research Article ♪ Araştırma Makalesi

Examining the relationship between instrument practice habits, motivation towards instrument lessons, and instrument performance self-efficacy in music education

Müzik eğitiminde, çalgı çalışma alışkanlıkları ile çalgı dersine yönelik motivasyon ve çalgı performansı öz-yeterlik inancı arasındaki ilişkinin incelenmesi

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ABSTRACT

This study aims to determine the relationship between the individual instrument practice habits of students receiving vocational music training and their motivation toward instrumental lessons, as well as their self-efficacy beliefs regarding instrumental performance. In this study, a multifactor predictive correlational research model was employed to test direct and indirect relationships within the framework of quantitative research. The data used in this study were obtained from 255 students receiving professional music education at three different faculties of a university, following a purposive sampling approach. During the data collection process, the Individual Instrument Practice Habits Scale, the Individual Instrument Lesson Motivation Scale, and the Instrument Performance Self-Efficacy Belief Scale were utilized in a single session to collect data. The results show that, all three variables were positively related to each other, but the relationship between instrument practice habits and instrument lesson motivation was the strongest. This means that individual's instrument practice habits play a significant role in determining motivation toward their instrument lesson. Using structural equation modeling, we analyzed the effects of students' instrument practice habits on their instrument lesson motivations and instrument performance self-efficacy beliefs. Our model predicted that instrument practice habits directly influence both motivation and self-efficacy beliefs and that motivation has a direct effect on self-efficacy beliefs. In this case, instrument practice habits may have an indirect effect on self-efficacy beliefs.

Keywords: professional music education, musical instrument training, musical performance

ÖZ

Bu araştırmanın amacı mesleki müzik eğitimi alan öğrencilerin bireysel çalgı çalışma alışkanlıkları ile çalgı dersine yönelik motivasyonları ve çalgı performansına ilişkin öz-yeterlik inançları arasındaki ilişkiyi belirlemektir. Bu araştırmada nicel araştırma çerçevesinde doğrudan ve dolaylı ilişkileri test etmek için çok faktörlü öngörücü ilişkisel araştırma modeli kullanılmıştır. Araştırmada kullanılan veriler, amaçlı örnekleme yaklaşımı izlenerek bir üniversitenin üç farklı fakültesinde mesleki müzik eğitimi alan 255 öğrenciden elde edilmiştir. Veri toplama sürecinde, tek bir oturumda veri toplamak için Bireysel Çalgı Çalışma Alışkanlıkları Ölçeği, Bireysel Çalgı Dersi Motivasyon Ölçeği ve Çalgı Performansı Öz-yeterlik İnancı Ölçeği adlı ölçekler kullanılmıştır. Sonuçlar, her üç değişkenin de birbirleriyle pozitif ilişkili olduğunu, ancak çalgı çalışma alışkanlıkları ile çalgı dersi motivasyonu arasındaki ilişkinin en güçlüsü olduğunu göstermiştir. Bu durum, bireylerin çalgı çalışma alışkanlıklarının, çalgı dersine yönelik motivasyonlarını belirlemede önemli bir rol oynadığı anlamına gelmektedir. Yapısal eşitlik modellemesini kullanarak, öğrencilerin enstrüman çalışma alışkanlıklarının enstrüman dersi motivasyonları

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ve enstrüman performansı öz yeterlilik inançları üzerindeki etkileri analiz edilmiştir. Ortaya çıkan model, enstrüman çalışma alışkanlıklarının hem motivasyonu hem de öz yeterlilik inançlarını doğrudan etkilediğini ve motivasyonun öz yeterlilik inançları üzerinde doğrudan bir etkiye sahip olduğunu öngörmüştür. Bu durumda, enstrüman çalışma alışkanlıklarının öz yeterlilik inançları üzerinde dolaylı bir etkisi olabilir.

Anahtar kelimeler: mesleki müzik eğitimi, çalgı eğitimi, müzikal performans

1. INTRODUCTION

Instrumental education, a fundamental dimension of music education, is a domain of learning and teaching that varies according to its target audience and purpose. The aim of instrumental education is to provide basic knowledge and skills related to an instrument, thereby cultivating a musical culture (Kalaycıoğlu, 2019). Instrument training is a step-by-step process shaped by practices ranging from basic posture and instrument hold to performance. Performance, as a critical component of this process, also serves as an outcome of the education received throughout. Once a student acquires the necessary foundational skills, they are expected to practice various pieces and then perform. Performing with an instrument is challenging, and encountering numerous issues during this performance is a potential situation (Can & Yorulmaz-Birdal, 2021; Konakcı, 2010). The learning situation and performance are interrelated. Good performance requires regular, continuous, and planned effort. At the end of this process, an individual displays a skill/performance better than before (Günal, 1999). In instrument education, various factors can influence the efficiency and performance of students during their daily individual practice sessions. These factors include preparation for practice, planning their sessions, adhering to the plan, utilizing metacognitive skills, practice methods, practice duration, guidance from instructors, and overall practice habits (Dönmez, 2019; Hart Jr., 2014; Şen & Akçay, 2021). Barry (1990) suggested that structured practice is more effective than unstructured, or free, practice. As Miksza (2007) emphasized, "Researchers and practitioners recognize the need to determine which practice approaches and specific practice behaviors are most effective in enhancing performance success" (p. 359). According to Özmenteş (2013), teachers must instill effective practice habits in their students to achieve successful instrument performance. This approach is essential for both success and motivation in instrument education. These studies demonstrate that motivation is a significant factor influencing success (Akçay & Şen, 2021; Çalışkan, 2008; Durgun, 2018; Gottfried, 1985; Özmenteş, 2012, 2013; Pintrich & De Groot, 1990). Additionally, empirical evidence supports that factors such as expectancy for success, the meanings attributed to success and failure, and perceptions of self-efficacy also have a significant impact on motivation (Kelecioğlu, 1992; Özmenteş, 2012, 2013). Research findings also indicate that when motivating learning-teaching environments are provided during the instrumental education process, success increases (Legutki, 2010; Tucker, 2018).

In the demanding process of instrument training, students' individual practice habits are among the key factors that directly influence their playing skills and motivation for practice (Kılınç, 2017). Students form their practice habits through regular, planned, and conscious methods, and their active and disciplined participation in lessons is vital. Unplanned, inconsistent, and aimless practices can lead to physical and mental fatigue in students, reducing their desire to practice their instrument and possibly resulting in failure (Önder, 2009). Various factors determine students' achievements and perspectives regarding their instrument lessons. These include their interest in instruments, attitudes, practice habits, motivations, self-efficacy beliefs, and anxieties (Çaylak, 2022).

In instrumental education, teachers require students to engage in various technical knowledge and musical exercises related to cognitive, affective, and psychomotor skills. Achieving the objectives set in instrumental training depends on an individual's musical behavior tendencies, the practices they engage in to shape these tendencies, their performance, and their motivation during this process (Akın, 2019; Erten, 2022; Günal, 1999).

In music education, motivation is a multifaceted construct influenced by various factors, including personal connections with music, teaching methods, and self-efficacy. Understanding these dynamics can positively impact the education of music students. The findings of Ngobeni's (2024) study highlight the vital role of fostering passion, providing diverse musical experiences, and creating supportive environments in enhancing motivation in higher education music performance courses. A desire and positive attitude toward learning are at the forefront of factors ensuring student motivation. A motivated individual continuously learns more easily than an unmotivated one (Büyükkayıkcı, 2004). Several studies argue that there is a positive correlation

between motivation and performance, suggesting that the higher a student's motivation, the better their performance will be (W. Chen, 2024; Vatansever-Bayraktar, 2015), and that efforts to enhance motivation can enrich the overall educational experience for students (Ngobeni, 2024). In music education, students' motivation can even lead them to take risks of physical discomfort and injury, continuing to practice their instruments despite the potential for harm (Park et al., 2007). An individual's judgments about a task can be influenced by various factors, such as intrinsic and extrinsic reasons. Gottfried (1985) proposed that academic intrinsic motivation is positively correlated with school achievement and perceptions of academic competence. Mathews (2005) emphasized that an individual's motivation and ability to accomplish a task are determined not solely by talent and knowledge but by their self-efficacy perceptions toward that task. The level of knowledge and skill acquisition required for a task is also shaped by self-efficacy beliefs. Similarly, Pajares (1996) argued that the higher the sense of efficacy, the greater the effort, persistence, and resilience in the face of challenges. In the relationship between self-efficacy and motivation, some studies highlight the determining effect of self-efficacy on motivation and success (Durgun, 2018; Özmenteş, 2012; Pintrich & De Groot, 1990), while others argue that motivation itself is a critical factor in shaping individuals' perceptions of competence (Gottfried, 1985). In this context, it becomes clear that the causal relationship between self-efficacy and motivation is not unidirectional.

Self-efficacy beliefs regulate human functioning through cognitive, motivational, emotional, and decision-making processes. They influence whether individuals think in ways that enhance or undermine their development, how well they motivate and persist in the face of challenges, the quality of their emotional lives, and the choices they make at critical decision points that determine the course of their lives (Bandura, 2002). In other words, self-efficacy beliefs shape how individuals think, feel, behave, and motivate themselves (Bandura, 1994, 2002). Therefore, self-efficacy is one of the key features of learning motivation. However, Bandura (2002) noted that in social cognitive theory, competence beliefs are not limited to judgments about personal abilities; the theory also encompasses perceived collective efficacy, which represents shared beliefs about the power to produce desired effects through collective action (p. 271). Jackson (2002) stated that an increase in self-efficacy is significantly related to an increase in academic success. According to Yusuf (2011), self-efficacy beliefs are an important factor in enhancing learning success. "Self-efficacy significantly affects motivation in music education" (L. Chen, 2024). Therefore, self-efficacy is one of the key elements in the development of music education (Akçay et al., 2021; Zarza-Alzugaray et al., 2020). It is well known that a student's confidence is important for motivation, and that seeing what they can achieve and developing a sense of this is more motivating. Thus, it is argued that gradual progress in musical practices, selecting repertoire suitable for the students' levels, allocating time to both technique and exercises, and providing a piece or song they feel they can play to motivate them are crucial (Teke, 2023, p. 84). McCormick and McPherson (2003) proposed that self-efficacy is the best predictor of performance. The researchers argue that while practice plays a vital role in developing a musician's capacity to perform well, it should not be evaluated separately from motivational and related variables (McCormick & McPherson, 2003; McPherson & McCormick, 2006). According to Zelenak (2019, 2020), there is a positive relationship between self-efficacy and musical performance success. He suggests that students' musical performance success will also improve as music educators develop self-efficacy using various strategies.

In the process of instrumental training, it is clear that there are complex relationships between individuals' practice habits, motivations, and self-efficacy perceptions. Various studies examining these relationships have focused on binary relationships between these variables. However, a review of the literature reveals a lack of studies addressing the combined role of practice habits, motivation, and self-efficacy perceptions within the same sample in the context of instrumental education. Particularly, there is a clear need for empirical evidence that illuminates the cause-and-effect relationships between these three variables and informs innovative approaches to developing teaching strategies.

1.1. Purpose

This research aims to identify the relationship between the individual instrument practice habits, motivation toward instrument lessons, and self-efficacy beliefs related to instrumental performance of students receiving professional music education. In this study, the following research questions were investigated:

1. Is there a significant relationship between students' individual instrument practice habits and their motivation towards instrument lessons?

2. Is there a significant relationship between students' individual instrument practice habits and their self-efficacy beliefs regarding instrumental performance?
3. Is there a significant relationship between students' motivation towards instrument lessons and their self-efficacy beliefs regarding instrumental performance?
4. Do students' individual instrument practice habits predict their motivation towards instrument lessons and their self-efficacy beliefs regarding instrumental performance?

2. METHOD

In this study, a multifactor predictive correlational research model was employed to test direct and indirect relationships within the framework of quantitative research. In predictive correlational studies, relationships between variables are examined to predict one variable based on another. Direct and indirect relationships among variables can be tested using path analysis, based on either latent (hidden) or observed variables (Büyüköztürk et al., 2013, p. 186). If there is a noticeable linear correlation between two variables, it is generally assumed that there is something causing them to move together. However, from the mere fact that two variables are correlated, the direction of causality (what causes what) cannot be determined (Aron et al., 2014). This feature is a fundamental limitation of correlational research. To overcome this fundamental limitation, structural equation modeling (SEM) analysis was conducted following correlation analysis to determine possible cause-and-effect relationships between variables.

2.1. Data Collection

The data used in this study were obtained from students receiving professional music education at three different faculties of a university, following a purposive sampling approach. The factors of easy accessibility and effective use of time were also considered in the selection of the research sample. The data for the study were collected in the spring semester of the 2018-2019 academic year from a total of 255 students: 108 students from the Department of Musicology at the Faculty of Fine Arts (FAF) of Atatürk University, 85 students from the Department of Music Education at the Kazım Karabekir Faculty of Education (FE), and 62 students from the Turkish Music State Conservatory (TMSC). In the data collection procedure, three different data collection tools were used to gather data in a single session.

2.1.1. Instrument Practice Habit Scale

To determine the individual instrument practice habits of music education students, the scale developed by Küçükosmanoğlu et al. (2016) consists of four sub-dimensions: 1) valuing practice, 2) preparation for practice, 3) interest and willingness, and 4) using time effectively and practicing regularly. The scale consists of 18 items, 7 of which are negative and 11 positive, using a five-point Likert-type format, with a possible total score ranging from 18 to 90. Negative items are reverse scored for calculation. The Cronbach's Alpha reliability coefficient of the scale was found to be 0.89 (pp. 2360-2361). In the reliability test conducted by our research team, the Cronbach's Alpha reliability coefficient was determined to be 0.85. A high total score from the scale indicates that the students value their instrument practice, prepare for practice, are interested and willing, and make an effort to use their time effectively and practice regularly.

2.1.2. Individual Instrument Lesson Motivation Scale

To determine the motivation of music education students toward individual instrument lessons, the scale developed by Girgin (2015a) consists of three sub-dimensions: 1) lack of motivation, 2) achievement motivation, and 3) study motivation. The scale contains 25 items, 10 negative and 15 positive, using a five-point Likert-type format, with a possible total score ranging from 25 to 125. Negative items are reverse scored for calculation. The Cronbach's Alpha reliability coefficient of the scale was found to be 0.77 (pp. 1731-1732). In the reliability test conducted by our research team, the Cronbach's Alpha reliability coefficient was determined to be 0.90. The total score from the scale reflects the "General Motivation" level.

2.1.3. Instrument Performance Self-Efficacy Belief Scale

To determine the level of music education students' self-efficacy beliefs regarding instrumental performance, the scale developed by Girgin (2015b) consists of 20 items and three sub-dimensions: 1) viewing oneself as

competent, 2) viewing oneself as incompetent, and 3) psychological indicators. The scale is a five-point Likert-type format, with a possible total score ranging from 20 to 100. Some items on the scale are reverse scored. The Cronbach's Alpha values for the subdimensions of the scale were found to be as follows: self-perceived competence (0.86), self-perceived incompetence (0.76), and psychological indicators (0.61) (pp. 111-112). Although the reliability coefficient for the overall scale was not specified by its developer, our reliability test determined the Cronbach's Alpha value for the entire scale to be 0.88. A high total score from the scale indicates that the students view themselves as competent in terms of their instrumental performance.

2.2. Analysis of the Data

The data from the articles in question, collected using three different data collection instruments from the same sample, were used in the research. Data obtained from the scales were analyzed using the Pearson correlation test to determine the correlation between the variables. The Pearson correlation test is a parametric statistical test used to measure the direction and degree (magnitude) of the relationship between two continuous variables on an interval (or ratio) scale (Durmuş et al., 2016; Uysal, 2020). The *r* value indicates the direction of the relationship, while *R2* indicates the proportion of explained variance (Durmuş et al., 2016, p. 144). We interpreted the obtained findings by considering the *r* and *R2* values together. The magnitude of the correlation coefficient indicates the strength of the relationship between the two variables. If the *r* value is between 0 and 0.5, the correlation is considered positive and weak; if it is greater than 0.5, it is considered positive and strong. If the *r* value is between 0 and -0.5, the correlation is considered negative and weak; if it is less than -0.5, it is considered negative and strong. The correlation coefficient detects only linear relationships and does not detect non-linear relationships between variables. If two variables are independent, the correlation coefficient is 0 (zero), but this does not mean that the two variables are unrelated. It simply means that there is no linear relationship between the two variables, and non-linear relationships may exist (Rajaretnam, 2016).

The causal relationship between the variables was analyzed using the structural equation model. Causality often requires complex statistical techniques and experimental design and implementation. However, experiments may not always be practical or ethical. In such cases, the structural equation modeling technique can be preferred to establish causality arguments. Structural equation modeling is a comprehensive statistical technique that goes beyond multiple regression analysis to model complex causal relationships. This allows researchers to determine potential causal pathways between a set of independent and dependent variables. This method enables modeling of the direct and indirect effects of one variable on other variables (Alkış, 2016; Kaya, 2014; Panchenko, 2019; Teo, 2010). Structural equation modeling, preferred to overcome the limitations of bivariate correlation analysis in basic statistical methods, allows for the statistical modeling and testing of complex phenomena. Particularly, structural equation modeling techniques, which involve greater acceptance of the validity and reliability of observed scores obtained from measurement instruments, explicitly account for measurement error while statistically analyzing data (Schumacker & Lomax, 2010).

In this study, we identified "individual instrument practice habits (PrH)" as the independent variable and "individual instrumental lesson motivation (Mtv)" and "instrumental performance self-efficacy beliefs (SEB)" as dependent variables. The hypotheses tested by the model are as follows:

H1: Individual instrument practice habits directly affect students' motivation for individual instrumental lessons and their self-efficacy beliefs of instrumental performance.

H2: Students' motivation for individual instrumental lessons directly affects their self-efficacy beliefs of instrumental performance.

For the correlation analyses, SPSS 20 software was used, whereas the structural equation modeling analyses were performed using the open-source R 4.2.3 software and the "lavaan (Latent Variable Analysis)" package.

2.3. Ethical Permissions of the Research

This study was conducted in full compliance with all the regulations outlined in the "Higher Education Institutions Scientific Research and Publication Ethics Directive". None of the violations specified under the section "Violations of Scientific Research and Publication Ethics" in the directive were committed. The data collection procedure of the study was approved in terms of ethical principles by the Fine Arts Unit Ethics

Committee, affiliated with the Atatürk University Social and Human Sciences Ethics Committee, with the decision dated 18/03/2020 and numbered 1.

3. FINDINGS

3.1. Findings Obtained from Correlation Analysis

The Pearson correlation values, based on the total scores students received from the scales related to their instrument practice habits, individual instrumental lesson motivation, and self-efficacy beliefs about instrumental performance, are given in Table 1.

Table 1

Pearson Correlation Values Based on the Total Scores Obtained by Students from the Scales

		Instrument practice habits	**Individual instrument course motivation**	**Instrument performance self-efficacy beliefs**
Instrument practice habits	Pearson Correlation	1	.766**	.548**
	Sig. (2-tailed)		.000	.000
	N	255	255	255
Individual instrument course motivation	Pearson Correlation	.766**	1	.488**
	Sig. (2-tailed)	.000		.000
	N	255	255	255
Instrument performance self-efficacy beliefs	Pearson Correlation	.548**	.488**	1
	Sig. (2-tailed)	.000	.000	
	N	255	255	255

** Correlation is significant at the 0.01 level (2-tailed)

There was a high positive correlation between PrH and Mtv levels (r=.776; $R2$=0.60) and a moderate positive correlation with SEB (r=.548; $R2$=0.30). A weak positive correlation (r=.488; $R2$=0.23) was found between Mtv levels and SEB.

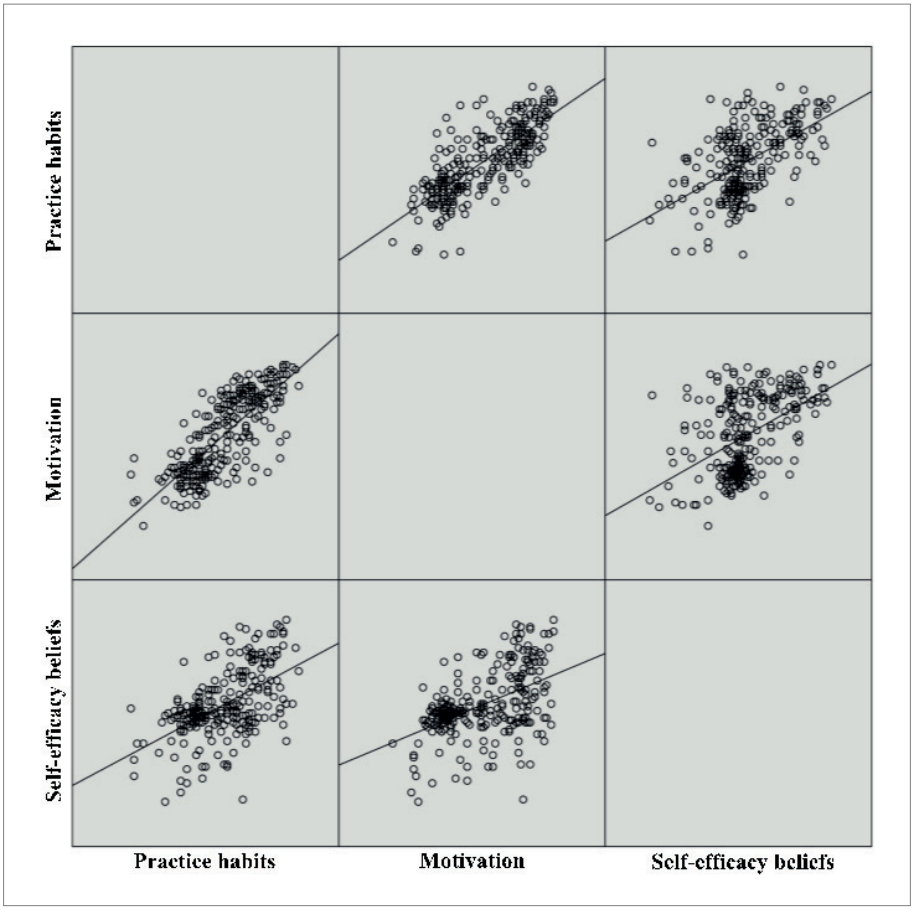
The correlation between PrH and Mtv is 0.766, which explains 60% of the variance. This indicates a strong positive relationship between the two variables. In other words, the stronger individual's instrument practice habits, the higher their motivation toward individual instrumental lessons.

The correlation between PrH and SEB is 0.548, which explains 30% of the variance. This indicates a moderate positive relationship between the two variables. That is, the stronger an individual's instrument practice habits, the higher their self-efficacy beliefs about instrumental performance tend to be. However, this relationship is not as strong as that between PrH and Mtv.

The correlation between Mtv and SEB is 0.488, explaining 23% of the variance. This indicates a weak (below average) positive relationship between the two variables. In other words, the more motivated an individual is towards a musical instrument lesson, the higher their self-efficacy belief in their instrument performance might be. However, this relationship is not as strong as the relationship between PrH and Mtv or PrH and SEB. Additionally, the effect of Mtv on SEB and the effect of SEB on Mtv may not be equal. The direction and distribution of the relationship between these variables can also be seen in the scatter plot matrix shown in Figure 1. However, the graph on the right of the middle row and the graph in the middle of the bottom row in Figure 1 clearly show that the distributions are noticeably different. This suggests that the effects of Mtv and SEB on each other may differ, though the structural equation model emerging from the research does not explain this. Further studies are needed for this.

Figure 1

Scatter Plot Matrix Showing the Relationship Between Instrument Practice Habits, Motivation, and Self-Efficacy Beliefs

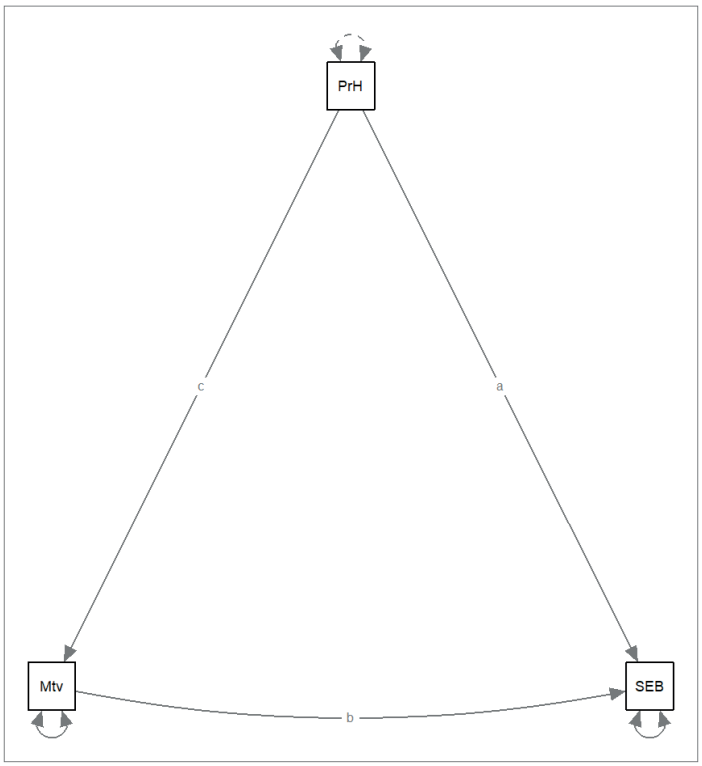


3.2. Findings Related to Structural Equation Modeling

According to the results of the structural equation modeling analysis, the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) values for our main model (Model 1) were found to be 1.0. These two criteria generally indicate a good model fit when they are 0.95 or higher (Kline, 2011). The Root Mean Square Error of Approximation (RMSEA) value is 0.0. When the RMSEA value is 0.05 or lower, the model fits the data well (Kline, 2011). The Standardized Root Mean Square Residual (SRMR) value is 0.0. When the SRMR value is 0.08 or lower, the model fits the data well (Kline, 2011). Therefore, all of these fit indices show that the model fits the data very well. Based on the regression coefficients, it was observed that PrH has a positive effect on Mtv (b1=1.178, p<0.001) and SEB (b2=0.558, p<0.001). This means that research hypothesis H1 is accepted. Additionally, both PrH and Mtv have a positive effect on SEB, but Mtv's effect is statistically marginal (b3=0.134, p=0.058). This means that the research hypothesis H2 is minimally acceptable (Figure 2). In summary, it was observed that PrH has a direct effect on both Mtv (coefficient=c) and SEB (coefficient=a), and that Mtv also exerts a direct effect on SEB (coefficient=b). Therefore, it can be stated that PrH has an indirect effect on SEB (c+b). The variance of the error terms for both Mtv and SEB were estimated to be 112.399 and 143.426, respectively. This indicates that a significant portion of the variance of both dependent variables originates from other factors not specified in the model. The explanatory power of the model (R^2) was calculated as 60.1% for motivation and 31.1% for self-efficacy beliefs.

Figure 2

Structural Equation Model of Instrument Practice Habits, Motivation, and Self-Efficacy Perceptions



PrH: Instrument Practice Habits; Mtv: Individual Instrument Course Motivation; SEB: Instrument Performance Self-Efficacy Beliefs

In conclusion, the model we tested fits the data very well. The perfect fit of the model (CFI=1.00, RMSEA=0.0) does not always imply that the model is ideal. The literature suggests that in small (N<200-300) and homogeneous samples, RMSEA may be artificially low, potentially indicating model overfitting (Kenny et al., 2015). Since fit indices vary depending on sample size and model complexity, interpreting them in isolation may be misleading (Marsh et al., 2004). The low RMSEA value may stem not only from sample size but also from its homogeneity. In homogeneous samples, the model may exhibit overfitting due to limited variance (Özdemir & Buzlu, 2020). In our study, the RMSEA and SRMR values being 0.0 suggest that the model may be overly fitted to the observed data. To assess the risk of overfitting, a bootstrap analysis was conducted, testing the model with 5,000 replications. The bootstrap results indicated that the standard errors of the estimated parameters were stable, and the model did not exhibit a high variance estimation tendency. Additionally, different modeling approaches (Model 2 and Model 3) were tested, and similar results were observed across alternative models. The fact that Model 1 achieved comparable fit indices with the fewest parameters suggests that it offers a more parsimonious structure (Marsh et al., 2004). Therefore, the bootstrap analyses confirmed that the model parameters were stable and that the regression coefficients exhibited a reliable distribution. Accordingly, it was concluded that the model provides a generalizable structure beyond the current sample. Furthermore, attention should be paid to the statistical significance of Mtv's effect on SEB, as its p-value is slightly above the commonly accepted significance level of 0.05. This may imply that Mtv's effect on SEB requires further investigation. However, the model presented in Figure 2 illustrates only the relationships among the observed variables. It does not include a relationship model for the latent variables. This is due to the model analysis being conducted based on the total scores from the data collection tools used for the three variables (as the sub-dimensions of the scales were not included in the model). This may have resulted in the model having a small number of variables and a low degree of freedom (Kline, 2011).

Based on the results of this model, a positive causal relationship exists between PrH and Mtv. This means that as the PrH value increases, the Mtv value also increases. This relationship, with an estimated value of 1.178, is statistically significant (p<0.001), indicating that the relationship is not by chance.

SEB is influenced by both PrH and Mtv. The relationship between PrH and SEB is positive and statistically significant (Estimate=0.558, p<0.001). This indicates that as the PrH value increases, the SEB value also increases.

On the other hand, the relationship between Mtv and SEB is positive, but this relationship is statistically marginal (Estimate=0.134, p=0.058). This means that as the Mtv value increases, the SEB value tends to increase, but there is uncertainty regarding whether this relationship is statistically significant.

4. DISCUSSION AND CONCLUSION

A high-level (strong) positive relationship was found between the level of individual instrument practice habits and individual instrument lesson motivation. There are studies in the literature suggesting that individual instrument practice habits can strengthen individual instrument lesson motivation (Barry, 1990; Çaylak, 2022; Kılınç, 2017; Önder, 2009). It can also be stated that this motivation may reflect more effectively in instrument performance (Akın, 2019; W. Chen, 2024; Çaylak, 2022; Erten, 2022; Günal, 1999; Legutki, 2010; Miksza, 2007, 2009; Ngobeni, 2024; Pitts et al., 2000; Tucker, 2018; Vatansever-Bayraktar, 2015). It is known that high motivation is associated with discipline, regular practice, preparation, and valuing the instrument practice (Dönmez, 2019; Hart Jr., 2014). In other words, increasing motivation alongside individual instrument practice habits can support students in performing better in their instrument practice, while highly motivated students can improve their performance by working more disciplined and regularly.

A moderate positive relationship was found between individual instrument practice habits and instrument performance self-efficacy beliefs. According to the literature, this relationship supports the idea that self-efficacy has a determining effect on motivation and success (Bandura, 1994, 2002; L. Chen, 2024; Durgun, 2018; Jackson, 2002; McCormick & McPherson, 2003; McPherson & McCormick, 2006; Özmenteş, 2012; Pintrich & De Groot, 1990; Yusuf, 2011; Zarza-Alzugaray et al., 2020; Zelenak, 2019, 2020). In other words, students having higher instrument performance self-efficacy beliefs can encourage more regular and effective individual instrument practice.

A weak (below average) positive relationship was found between individual instrument lesson motivation levels and instrument performance self-efficacy belief levels. This weak correlation suggests that, despite high motivation and self-efficacy belief levels, the expected strong relationship between them may not exist. The literature provides evidence that high self-efficacy beliefs determine high motivation and success (Bandura, 1994, 2002; L. Chen, 2024; Durgun, 2018; Mathews, 2005; Özmenteş, 2012; Pajares, 1996; Pintrich & De Groot, 1990), or alternatively, that the reverse may also be possible (Gottfried, 1985).

In summary, all three variables were positively related to each other, but the relationship between instrument practice habits and instrument lesson motivation was the strongest. This means that individual's instrument practice habits play a significant role in determining motivation toward their instrument lesson. However, the results of the correlation analysis do not provide sufficient evidence to claim that "better instrument practice habits lead to higher instrument lesson motivation" or vice versa. Experimental or cohort studies are required to draw such causal conclusions. Therefore, we attempted to determine a model regarding possible cause-and-effect relationships using structural equation modeling.

Using Structural Equation Modeling, we analyzed the effects of students' individual instrument practice habits on their motivation for individual instrument lessons and their self-efficacy beliefs regarding instrument performance. Our model predicted that practice habits directly influence both motivation (coefficient=c) and self-efficacy beliefs (coefficient=a), while motivation also has a direct effect on self-efficacy beliefs (coefficient=b). Consequently, it can be inferred that practice habits have an indirect effect on self-efficacy beliefs (c+b). However, the model's perfect fit may pose the risk of overfitting the data set. Therefore, it is essential to retest the model with different samples and to conduct more comprehensive analyses by modeling measurement errors. Studies suggest that the duration and intensity with which individuals continue to practice music are largely dependent on their motivation and self-efficacy beliefs (Chandler et al., 1988; Hallam, 2002). Kılınç (2017) concluded that students' instrument practice habits are related to their practice motivation. He argues that when students use correct practice strategies, their practice efficiency increases, and their motivation rises. Doğan (2021) also found a positive relationship between music teacher candidates' individual instrument practice habits and motivation levels toward their individual instrument lessons. These findings are consistent with the results of our study. McPherson and McCormick (2006) conducted a similar study and found a positive relationship between music practice, motivation, and self-efficacy. However, they also argued that the impact of motivation on self-efficacy was insignificant. This contradicts our findings, as in our model, the effect of motivation on self-efficacy is significant and positive. Ritchie and Williamon (2011), in their study, found a positive relationship between music performance, self-

efficacy beliefs, and motivation. This finding, unlike our model, evaluates the effect of self-efficacy and motivation on music performance. Additionally, it should be noted that instrument practice motivation can be influenced by other factors. Some of these factors include instrument choice, health reasons, the physical adequacy of the practice environment, social feedback, exam feedback, teacher qualifications, economic status, professional goals, attitudes (Büyükkayıkcı, 2004), students' interest in the works/etudes assigned by teachers, and the teacher playing the instrument during lessons (Önder, 2009).

Our results show both similarities and differences with those of previous research. The similarities include the general positive relationship between music practice, motivation, and self-efficacy beliefs. The differences relate especially to the effect of motivation on self-efficacy. This suggests that our model by examining these relationships in more detail, expands knowledge in this field. However, considering the limitations of correlation studies, our results may not be broadly generalizable. Furthermore, the fact that our structural equation model provides similar fit indices with a small number of parameters indicates that it presents a simple structure. However, to enhance the generalizability of the model, it is recommended that confirmatory analyses be conducted with larger and more heterogeneous samples in the future. Therefore, there is a need for more experimental or cohort research findings to support the exploration of the interaction between types of motivation, the effectiveness of factors influencing self-efficacy, time spent on practice, the effectiveness of practice, and subsequent learning outcomes.

Ethical approval

The study was approved by the Fine Arts Unit Ethics Committee, affiliated with the Atatürk University Social and Human Sciences Ethics Committee (date: 18.03.2020, number: 1).

Author contribution

Study conception and design: ÜSŞ, ŞÖA, YŞ; data collection: ÜSŞ, ŞÖA, YŞ; analysis and interpretation of results: ŞÖA, YŞ, ÜSŞ; draft manuscript preparation: ÜSŞ, ŞÖA, YŞ. All authors reviewed the results and approved the final version of the article.

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Conflict of interest

The authors declare that there is no conflict of interest.

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Çalışmanın tasarımı ve konsepti: ÜSŞ, ŞÖA, YŞ; verilerin toplanması: ÜSŞ, ŞÖA, YŞ; sonuçların analizi ve yorumlanması: ŞÖA, YŞ, ÜSŞ; çalışmanın yazımı: ÜSŞ, ŞÖA, YŞ. Tüm yazarlar sonuçları gözden geçirmiş ve makalenin son halini onaylamıştır.

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