Examining perceived self-regulation beliefs of pre-service music teachers in musical instrument practice

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Abstract
The aim of this study is to investigate whether there are significant differences between perceived self-regulation beliefs of pre-service music teachers in their instrument practice and their genders, ages, universities, hours of daily practice, instruments and their career goals. Also under investigation is the correlation between perceived self-regulation beliefs of pre-service music teachers and their academic achievement scores of their principal instrument lessons. The study is a quantitative descriptive study. Participants of the study consisted of 249 pre-service music teachers (F=131; M=118). The participants were receiving education from the universities that are found in the western part of Turkey. Criterion sampling was used for the study. The Self-Regulation in Instrumental Practice Scale (Özmenteş, 2007) and a personal information form were used as data collection tools. The results showed that there are significant differences between levels of perceived self-regulation beliefs of participants and their career goals and the time they spent on instrument practice. Also discovered was a small positive significant correlation between perceived self-regulation beliefs of participants and their academic achievement scores on instrument practice/performance. The results were discussed in the light of the literature.

Keywords: Self-regulation; music education; perceived self-regulation beliefs; pre-service music teachers; instrument education.

1. Introduction

In this current era of increased technology and information, educators need to consider new approaches to research, as scientific knowledge within every field continues to increase. In this regard many terms regarding teaching and learning research are making their way into education literature for the last several decades, such as lifelong learning, critical thinking and self-regulated learning. These terms are not new to education literature. However, they are becoming more common in describing the act of learning as more than merely recording formal learning environment activity. In this sense individuals, who can set realistic goals, monitor their learning process, seek help if necessary and give feedback about their learning process and use this loop in new learning tasks, briefly; individuals, who can regulate their own learning, are more successful than the ones that don't have a learning strategy.

Self-regulation is one of the methods used in many fields, such as psychology, education, economy, and industry. It is also becoming a popular research area in educational psychology. Although there are several definitions of self-regulation in the literature, they are not completely

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dissimilar from each other. The differences arise from the distinct understanding of theoretical perspectives and conceptual frameworks on self-regulation.

Numerous descriptions and models of self-regulation can be found in the literature. For example, Panadero (2017) discussed and analised the six models of self-regulation in his paper. They are the models of Zimmerman; Boekaerts; Winne, & Hadwin; Pintrich; Efklides; and Hadwin, Järvelä, & Miller. Albert Bandura, who is known as the originator of the social learning theory, described self-regulation from a social cognitive perspective as an "interaction of personal, behavioral, and environmental triadic processes" (Bandura, 1986). According to educational psychologist Barry J. Zimmerman self-regulation is a "self-generated framework of thoughts, feelings, and actions used for attaining specific academic goals" (Zimmerman, 1998). According to Pintrich, who is a foremost researcher on self-regulation described this phenomena as "an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, which is guided and constrained by their goals and the contextual features in the environment" (Pintrich, 2000).

From a social cognitive perspective, Zimmerman (2000) asserted a model of self-regulation as a triadic structured cycle, which resembles Bandura's triadic model of social cognition. This model is known as reciprocal determinism (Bandura, 1978), or triadic reciprocal causation which is clarified by Bandura as "internal personal factors in the form of cognitive, affective and biological events, behavioral patterns and environmental events which all operate as interacting determinants that influence one another bidirectionally" (Bandura, 1999). This triadic model is a cyclical loop, interacting with each other, both in a positive as well as in a negative way. Likewise Zimmerman's model of self-regulation operates in the same way that personal, behavioral and environmental factors affect each other cyclically because the prior performance consequences are used to make adjustments in new tasks. Zimmerman (2000) claimed that these were necessary adjustments. Because all factors are changing during the process of learning and performance, and "they must be observed or monitored using three self-oriented feedback loops."

Regulating its own learning incorporating the triadic cyclic loop of self-regulation for its own benefit is useful for all learners in many fields, including instrument practice. Instrument practice in music education is a long-term commitment/process that practically never ends after it started. Therefore, instrument practice requires long hours of systematic, comparative and purposeful practicing over a long period of time. Jorgensen had stated that (2002) most of the masters have spent 7000-8000 hours of instrument practice between the ages of 4-6 when they start to practice their instruments, to ages of 15-16. Likewise, pianists have accumulated more than 10.000 hours of practice, including formal training from around the age of 6, up to the age of 20 (Ericsson, Krampe, & Tesch-Romer, 1993). Formal training has a crucial role in instrument practice on the other hand, instrumental music students spend most of their time practicing away from the intervention of their teachers (Sloboda, Davidson, Howe, & Moore, 1996). In this sense instrument practice and managing this practice process purposefully, is as important as formal training. A large part of the instrument practice is individual music practice. Although the quantity of hours spent practicing the instrument plays a major role in the individual music practice, the quality and the content of practicing is more important than the quantity of time spent practicing the instrument.

According to Bathgate, Sims-Knight, & Schunn, (2011) expertise and skill acquisition literature has been frequently used music education and performance as a platform for understanding the progression from novice to expert" (e.g. Ericsson, Krampe, & Tesch-Romer, 1993; Sloboda, Davidson, Howe, & Moore, 1996). In this regard, examining the practice strategies of expert musicians is an excellent way for amateur musicians and music students to improve themselves. There are various strategies that can be used in music practice. According to Nielsen (2001) all learners will attempt to self-regulate their learning and performances in some way, but their methods widely differ. It is the learners' responsibility to choose one or more strategy/strategies according to the task, monitor the strategies' effectiveness and then decide to continue in the same way or to modify it in a pragmatic fashion. Ericsson stated that (1997) "expert

musicians use more effort and concentration during their practice than less skilled musicians, and they are more likely to monitor and control their playing by focusing their attention on what they are practicing and how it can be improved." Therefore, one of the most important questions in instrumental practice is, 'what do the master performers do differently and what are their beliefs about themselves when compared to novice instrumentalists'. For to improve the act of instrumental practice in music education, distinct levels of performers' practice habits must be examined from the point of view of their self-regulation strategies they employ, along with their perceived self-regulation beliefs and to which variables they are related.

Some possible limitations of this paper have to be emphasised. Primarily participants are music students who receive education from the faculty of education. Their priority is not becoming a performer. Although they are supposed play an instrument that they have selected for 8 semesters, nearly all will become music teachers at preschool, secondary school, or at the high school level. A research made by Lehimler (2015) with a sample of 270 music teachers in Turkey showed that 37% of music teachers in charge never use their instrument in the classroom, 39% of music teachers in charge rarely use their instrument in the classroom and 24% of music teachers in charge always use their instrument in the classroom. Due to participants' future expectations of becoming a music teacher, higher levels of motivation must not necessarily be expected from all participants on instrument practice.

In this regard the purpose of the present study is to investigate whether there are significant differences between perceived self-regulation beliefs of pre-service music teachers in their instrument practice and their genders, ages, universities, hours of daily practice, types of instruments and career goals. Also relationship between perceived self-regulation beliefs of pre-service music teachers and their academic achievement scores of instrument lessons was investigated.

2. Method
2.1. Participants
The study was designed as a quantitative descriptive study. The data was collected from 249 pre-service music teachers enrolled in the Department of Music Education at Adnan Menderes University (ADU), Aydın, Turkey, the Department of Music Education at Balıkesir University (BAU), Balıkesir, Turkey, and the Department of Music Education at Sıtkı Koçman University (MU), Muğla, Turkey. Criterion sampling was used for the study. Three of the music departments are found in the western part of Turkey and they were all established nearly in the same years (ADU, 2005; BAU, 2002; MU, 2001). They can be considered as "new music departments" in Turkey. It is thought that the year of establishment is important for the departments because physical environmental factors and experience of the academic staff will be similar in these departments. They are the only three departments of similar background in western Turkey. 52.6% of the participants were male (f=131) and 47.4% were female (f=118). 16.9% of the participants were between 17-19 years old (f=42), 63.5% of the participants were between 19-21 years old (f=158) and 19.6% of the participants were ages 23, and above 23 years old (f=49). 36.1% of the participants were receiving education from Adnan Menderes University (f=90), 31.7% of the participants were receiving their education from Balıkesir University (f=90) and 32.2% of the participants were receiving their education from Muğla University (f=80). 43.7% of the participants practice their instruments one hour or less for each day (f=109), 42.2% of the participants practice their instruments above one hour and less than two hours for each day (f=105) and 14.1% of the participants practice their instrument three or more hours for each day (f=35). 25.7% of the participants play the violin (f=64), 6.9% of the participants play the viola (f=17), 11.6% of the participants play the cello (f=29), %8.8 of the participants play the piano (f=22), 10.8% of the participants play the guitar (f=27), 16.1% of the participants paly flute, 11.3% of the participants are singers (f=28) and 8.8% of the participants play the bağlama, and ney, which are

Turkish traditional instruments (*f*=22). 47.8% of the participants want to be preschool, secondary school or high school music teachers (*f*=119), 32.1% of the participants want to be academicians (*f*=80), 12.9% of the participants want to be music teachers in a fine arts high school (*f*=32) and 7.2% of the participants want to have some other job that is not related with music and music teaching in the future. 24.8% of the participants are in the first grade (f=62), 26.9% of the participants are in the second grade (f=67), 24.5% of the participants are in the third grade (f=61) and 23.7% of the participants are in the forth grade (f=59). Descriptive statistics are shown in Table 1.

Table 1: Descriptive statistics of the participants

Variable		n	%	Variable		n	%
Gender	Male	131	52.6		ADU	90	36.1
	Female	118	47.4	University	BAU	79	31.7
	Total	249	100		MU	80	32.2
Instrument	Violin	64	25.7		Total	249	100
	Viola	17	6.9	Hours of daily	≤ 1 hours	109	43.7
	Cello	29	11.6	practice	1-2 hours	105	42.2
	Piano	22	8.8		≥ 3 hours	35	14.1
	Guitar	27	10.8		Total	249	100
	Flute	40	16.1	Career goal	M. Teacher	119	47.8
	Bağlama & Ney	22	8.8		Academician	80	32.1
	Singing	28	11.3		M.Teacher F. A. H. S.	32	12.9
	Total	249	100		Others	18	7.2
Grade	1.	62	24.8		Total	249	100
	2.	67	26.9	Age	17-19	42	16.9
	3.	61	24.5		20-22	158	63.5
	4.	59	23.7		23-above	49	19.6
	Total	249	100		Total	249	100

For the purpose of this study, a personal information form was developed in order to investigate variables such as gender, age, university, instrument, performance scores of the instrument lessons, daily instrument practice time, and career goals and the of the participants.

2.2.2. The Self-Regulation In Instrumental Practice Scale

Participants' levels of self-regulated learning beliefs in their instrumental practice were measured by the Self-Regulation In Instrumental Practice Scale, which was developed by Özmenteş (2007) in the light of Zimmerman's cyclic phase model of self-regulation (2002). It is a self-report scale, which is used to measure the self-regulated learning beliefs of the participants in their instrumental practice. The scale is a 36-item 5 point Likert scale ("strongly agree", "agree", "neutral", "disagree", "strongly disagree"). There are 30 positive items and 6 negative items in the scale. Cronbach alpha reliability coefficient of the scale is .89. Some of the items of the scale is as follows; "I'm committed to my hours of instrument practice", "I frequently record my performance in order to determine the goo d an the bad aspects of it", I'm frequently loyal to my practice schedule".

2.3. Data Collecting Procedure

The "Self-Regulation in Instrumental Practice Scale" and the "Personal Information Form" were administered during the fall semester of the 2016-2017 academic year. Participants answered the questions in between 20 to 30 minutes in the classrooms, which they have been regularly attending.

2.4. Data Analysis

Before measuring the differences between gender, ages, universities, instruments, daily instrument practice times, academic achievements, career goals of the students, and the perceived

self-regulation beliefs on their instrument practice, analysis were performed (Kolmogorov-Smirnov $p > .05$) to find out whether the data was distributed normally (Coakes, 2005) and whether the variances were homogenous (Levene F, $p > ,05$) (Morgon, Leech, Gloeckner, & Barret, 2004). After establishing that the groups were normally distributed, a t-test for independent samples was used to determine the difference between gender and perceived self-regulation beliefs of the participants. In order to investigate the differences between ages, universities, instruments, daily instrument practice times, career goals of the students and perceived self-regulation beliefs of the participants, a one-way analysis of variance tests (ANOVA) was performed after finding that the groups were homogenous. The Pearson Moments Correlation was used to analyse the relationship between the academic achievement on instrument practice and the perceived self-regulation beliefs of participants, on their instrument practice. Reliability analysis was performed for this study group and Cronbach alpha reliability coefficient of the scale for this study is .88.

3. Results

In order to find out whether there is a significant difference between the perceived self-regulation beliefs of pre-service music teachers according to gender, independent samples t-test was used. Findings are shown in Table 2.

Table 2: The difference between perceived self-regulation beliefs of pre-service music teachers according to gender

Self-Regulation Beliefs	Gender	n	Mean	sd	t	df	p
	Female	131	129.24	17.35	.247	247	0.805
	Male	118	128.69	18.26			

As illustrated in Table 2, there is no significant difference between levels of perceived self-regulation beliefs of pre-service music teachers and their genders ($t_{247} = .247$, $p = .805$). In order to find out whether there is a significant difference between the perceived self-regulation beliefs of pre-service music teachers according to their ages and educational variables, one-way analysis of variance (ANOVA) was performed. Findings are shown in Table 3.

Table 3: The difference between perceived self-regulation beliefs of pre-service music teachers according to their ages and educational variables

Educational Variables	Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Age	Between groups	315.54	2	157.77	0.626	0.536	
	Within groups	77868.06	246	316.54			
	Total	78183.60	248				
University	Between groups	441.03	2	220.52	0.698	0.449	
	Within groups	77742.57	246	316.03			
	Total	78183.60	248				
Grade	Between groups	2850.31	3	950.01	3.090	0.028	
	Within groups	75333.57	245	307.48			
	Total	10359.80	248				
Instrument	Between groups	54406.32	7	772.33	2.558	0.015	
	Within groups	72777.27	241	301.98			
	Total	78183.60	248				
Hours of Daily Practice	Between groups	9272.75	2	4636.38	16.55	0.000	1- ≤1 h.-1-2 h.
	Within groups	68910.85	246	280.12			2- ≤1 h.-≥ 3 h.
	Total	78183.60	248				
Career Goal	Between groups	4416.20	3	1472.07	4.889	0.003	academician-
	Within groups	73767.40	245	301.09			others
	Total	78183.60	248				

The results of ANOVA analysis (Table 3) have shown that there is no significant difference between levels of self-regulation beliefs of pre-service music teachers and their ages ($F_{2-246}= .626$, $p= .536$), their universities ($F_{2-246}= .698$, $p= .449$), their grades ($F_{3-245}= 3.090$, $p= .028$), or their instruments ($F_{7-241}= 2.558$, $p= .015$). For grade and instrument variables the Bonferroni correction method was applied in order to reduce 'type II' errors. The Bonferroni correction is determined by the level of significance/number of groups formula (Miller, 1991). In this study, grade variable has 4 groups, and the 'instrument variable' has 8 groups. In this regard the level of significance for grade is determined as (.05/4) .012 and level of significance is determined as (.05/8) .006. Likewise Bonferroni correction is also applied for hours of daily practice variable, which has 3 groups, and for career goal variable, which has 4 groups. In this sense the level of significance for the hours of daily practice variable is determined as (.05/3) .016 and the level of significance for career goal is determined as (.05/4) .012. The results in Table 3 display that there is a significant difference between levels of self-regulation beliefs of pre-service music teachers and their hours of playing their instruments ($F_{2-246}= 16.55$, $p= .000$). A complementary post-hoc test was used to compare and to determine which groups were significantly different. The results have shown that the levels of perceived self-regulation beliefs of pre-service music teachers who practice their instruments between one and two hours are significantly higher than the levels of perceived self-regulation beliefs of pre-service music teachers who practice their instruments less than one hour every day. Likewise, the levels of perceived self-regulation beliefs of pre-service music teachers who practice their instruments more than three hours are significantly higher than the levels of perceived self-regulation beliefs of pre-service music teachers who practice their instruments less than one hour every day. The results have also shown that there is a significant difference between levels of self-regulation beliefs of pre-service music teachers and career goals in the future ($F_{3-245}= 4.889$, $p= .003$). The complementary post-hoc test has demonstrated that the significant difference had arisen from the perceived self-regulation beliefs of the participants who want to be academicians and the participants who want to have some other job that is not related with music and music teaching in the future. In the interest of finding the relationship between the levels of perceived self-regulation beliefs and the academic achievement on instrument practice, the participants' final scores of instrument lessons and the participants' "Self-Regulation in Instrumental Practice Scale" scores were compared by using the Pearson Moments Correlation Technique. Results of the correlation analysis are shown in Table 4.

Table 4: Correlation between perceived self-regulation beliefs of pre-service music teachers and their academic achievement scores of instrument lessons

	Academic achievement	*Self-regulation*
Academic achievement	1	0.29*
Self-regulation		1

*p<.01

Results of correlational analysis showed (Table 4) positive, small correlations between perceived self-regulation beliefs and academic achievement scores of instrument lessons of the participants ($r= .29$, $p= .000$). When the effect size of this finding is established ($r^2 = .8$) it is proven that the variances' 8% can be explained by academic achievement scores of instrument lessons.

4. Discussion and Conclusion

The study investigated differences between perceived self-regulation beliefs of pre-service music teachers in their instrument practice, including gender, age, universities, hours of daily practice, kinds of instruments, career goals and the relationship between perceived self-regulation beliefs of pre-service music teachers and the academic achievement scores of their instrument lessons.

The results show that although female participants' perceived self-regulation beliefs are higher than male participants' the difference is not significant. In the literature there are various results indicating the difference between self-regulation and gender among diverse fields. Sağırlı, & Azapağagı (2009) found no significance difference between university students' self-regulated learning abilities and their genders in their studies. To the contrary, according to an investigation of year 11 students by Bezzina (2010) showed that that girls reported greater use of self-regulated learning strategies, while boys were more self-efficacious and intrinsically motivated to learn. Bidjerano (2005) found in her study that female students tended to use rehearsal, organisation, metacognition, time management skills, elaboration, and effort more effectively than boys. There were no statistically significant differences between genders regarded to studying with peers, help seeking, and critical thinking skills in the related study.

In the literature there are various results between self-regulated learning and gender. These results can differ from the characteristics of the samples and the difference of fields that are compared with self-regulated learning (instrument practice, mathematics, science etc.). The developmental differences in the acquisition of self-regulated learning skills and knowledge must also be taken into consideration (Wigfield, Klaudia, & Cambria, 2011). Although age is an important variable in self-regulated learning, the results indicated that there is no significant difference between the students' perceived self-regulation beliefs and their ages. This can be observed from the proximity of age groups. This result aligns the study of Tezel Şahin (2015) who investigated the self-regulation sufficiency's of the students attending universities of physical education and sport. The results of the study also showed that there are no significant differences between the students' perceived self-regulation beliefs and their universities. This result can be originated from similar characteristics of the universities themselves. Since the universities are in the same region of Turkey and therefore have similar features, the student profile does not greatly differ from one another. Featured music departments in different regions can be investigated and compared in further studies.

According to the results there is no significant difference between perceived self-regulation beliefs of participants and their grades. As such it is expected that university training should increase the level of self-regulated learning dispositions hence self-regulated learning beliefs ought to be increased. This can be observed from the similar learning dispositions of the participants. These results also show that music education and instrument practice do not improve the self-regulated learning beliefs of the students. To investigate this phenomenon of different music departments, different grade levels of elementary and high schools in music education must also be investigated. The results of the study also demonstrated that there is no significant difference between the students' perceived self-regulation beliefs and their instruments, but the perceived self-regulation beliefs of participants who practice their instruments between one and two hours are significantly higher than the levels of perceived self-regulation beliefs of participants who practice their instruments less than one hour every day. Also, the levels of perceived self-regulation beliefs of participants who practice their instruments more than three hours are significantly higher than the levels of perceived self-regulation beliefs of participants who practice their instruments less than one hour every day. In fact, according to the literature, musical instrument achievement is closely related to the length of time spent for daily instrument practice (Ericsson, Krampe, & Tesch-Romer, 1993; Hallam, 2001; Sosniak, 1990). According to Jorgensen (2002) musicians whom spent much time for practicing are more successful musicians than the ones who spent less time. But this statement does not mean that time spent for daily instrument practice will foster self-regulatory processes as having intrinsic interest, setting realistic goals, self-observing and monitoring the practice process, self-evaluating and self-judging after the task, having satisfaction regarding the process of learning/practicing and having much more intrinsic interest and self-efficacy, which drives the cyclic loop of self-regulation (Schunk & Pajares, 2001) for the new task.

However, this result may also indicate that the participants whom spent less than one hour for daily instrument practice do not have enough time to organise their instrument practice process. In this sense further studies investigating the relationships between self-regulation and instrument practice time must be made. The results of the study also showed that pre-service music teachers who are planning to become academicians in the future have significantly higher scores on perceived self-regulation beliefs than those who are planning to have some other job that is not related to music and/or music teaching. Abele & Spurk (2007) indicated in their study that self-regulatory thoughts of individuals have an influence in their career. In other words, having positive future expectations and having higher career goals for the future may have a positive effect on self-regulation in music practice. Goal setting is one of the inherent components of self-regulated learning process and career goals can be distinguished as long-term goals. Further studies can be made for investigating the relationship between self-regulation, setting long-term goals, future time expectations and career goals. The results of the study also showed that there is a small positive correlation between perceived self-regulation beliefs and academic achievement scores of instrument lessons of the participants and 8% of the variances can be explained by academic achievement scores of instrument lessons. There is considerable evidence in the literature that emphasizes the relationship between self-regulation and academic achievement (Chye, Walker, & Smith, 1997; Kovach, 1997; Turan, & Demirel, 2010; Pintrich, & De Groot, 1990; Young, & Vrongistinos 2002). Likewise, this study results show that self-regulation on instrument practice correlates positively with academic achievement on instrument practice. In this sense for enhancing instrument practice achievement of music students, instrument lessons must be thought in a fashion that enables them to use self-regulation strategies. Studio teaching is a very suitable setting for using and enhancing the self-regulatory processes of students. Doubtlessly music students use a set of the self-regulation strategies in their instrument practice unavoidably. It is the instrument instructors' responsibility to organize these strategies and make students use these in a systematic way and provide feedback for previous tasks. Further studies are recommended with different samples in various instrument levels, conservatories, ages and future time expectations. The use of self-regulation strategies of these diverse samples must be examined as the self-regulation beliefs are investigated.

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