Full Length Research Paper

Developing a scale for strategies used during the practice and learning of instrumental music

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The purpose of this study is to develop a valid and reliable scale to identify the strategies students who study instrumental music use during the practice and learning of instrumental music based on their own responses. The study group comprised of 358 students studying music education in five universities in the academic year of 2015 to 2016. The scale developed within the scope of this study includes five dimensions: attention strategies, rehearsal strategies, elaboration strategies, articulation-organization strategies and comprehension monitoring strategies. The scale has 39 items. There are seven items in the attention strategies dimension, five in rehearsal strategies dimension, six in elaboration strategies dimension, seven in articulation-organization strategies dimension and 14 in comprehension monitoring strategies dimension. The factor loading values of the items in the scale ranged from 0.513 to 0.813. Reliability coefficients for the scale's sub-dimensions were found to be 0.89 for attention strategies dimension, 0.81 for rehearsal strategies dimension, 0.85 for elaboration strategies dimension, 0.87 for articulation-organization strategies dimension and 0.93 for comprehension strategies dimension. It is believed that the scale will be a powerful tool for researchers in explaining levels of strategies students use during the practice and learning of instrumental music.

Key words: Instrument, practice and learning strategies, scale, attention, rehearsal, elaboration, articulation-organization, comprehension monitoring.

INTRODUCTION

Just like in every dimension of learning, the use of various learning strategies is crucial for easy and permanent learning of instrumental music, and in learners attaining the skill to learn independently. Learning strategies have been defined by many educators in various ways. Mayer (1988) defined learning strategies as behaviors intended to influence how learners process information. Learning strategies are the processes students use in learning on their own (Gagné and Driscoll, 1988). In a broader sense, learning strategies are behaviors and thoughts that learners engage in during learning that are intended to influence their encoding process (Weinstein and Mayer, 1986).

According to Riding and Rayner (1998), individuals develop their learning strategies while they engage in learning materials that are initially inappropriate for their cognitive styles. Strategies can be learned and changed. Strategies, on the other hand, are individuals' fixed (unchangeable) essential characteristics. Learning strategy is a group or more of processes an individual

gains to ease the performance in a learning task. Strategies change depending on the nature of the task. Different learning strategies are used for different learning tasks. In this regard, educators have divided learning strategies into categories. Accordingly, learning strategies in each category include methods that will influence certain aspects of the encoding process to ease one or more types of learning outcomes and performance.

Learning strategies are divided into eight groups in the most recognized classification regarding learning strategies. According to this classification, learning strategies include rehearsal, elaboration and organization strategies for basic and complex learning tasks, rehearsal, elaboration and organization strategies for complex learning tasks and affective and motivational strategies (Mayer, 1988; Weinstein and Mayer, 1986). According to another classification, learning strategies are divided into five groups (Gagné and Driscoll, 1988). These strategies are attention strategies, short-term memory development strategies, encoding enhancement strategies, retention enhancement strategies and monitoring-guiding strategies. Some studies (Yokuş, 2009; Yokuş, 2010) in the field of music discuss learning strategies according to this classification.

Furthermore, learning strategies make up one of the two main dimensions of the Motivated Strategies for Leaning Questionnaire (MSLQ) developed by Pintrich, Smith, García and McKeachie in 1991. The strategies in the learning strategies dimension of Motivated Strategies for Learning Questionnaire (MSLQ) are collected in three groups. These strategies are cognitive strategies, metacognitive strategies and resource management strategies. Two (McCormick and McPherson, 2003; Nielsen, 2008) or three (Nielsen, 2004) of these strategies were focused on determining the practice and learning strategies used by students in the field of music.

Weinstein and Mayer (1986) emphasize that students should be aware of learning strategies in order for them to learn more effectively, to remember the information that has been stored and to motivate themselves. Moreover, frequent use of learning strategies can lead to a desire to be more successful in learning because these strategies are the most important parts of the learning process, and this process requires determining whether students use learning strategies or not (Güven, 2008). Measurement of levels of practice and learning strategies used in instrumental music can be possible with a valid and reliable scale developed on this subject. In order to understand how the practice and learning strategies classification used in this measurement tool, it will be useful to discuss the related studies in the field of music.

Strategies in studies in the field of music

The first practice and learning strategies found in studies in the field of music is rehearsal strategies. Strategies like

problem solving, decision-making, participation in performance products come to mind when rehearsal strategies are discussed. These strategies can change according to musical learning areas. For example, rehearsal strategies in choir training include strategies designed to develop the critical thinking skills of the conductor. Rehearsal strategies designed within this structure necessitate performance skills, music literacy and music comprehension skill (Field, 1997).

In another related study, rehearsal strategies include the strategies an expert conductor-teacher uses in improvisational teaching. These strategies are verbal rehearsal strategies used for narration and evaluation during rehearsals and a series of active rehearsal strategies like modelling, creating links, doing vocal exercises and critical listening (Cruse, 2011). In studies, different than the studies of Field (1997) and Cruse (2011), rehearsal strategies are discussed as a sub-dimension of cognitive strategies (McCormick and McPherson, 2003; Nielsen, 2004, 2008).

Task strategies are the other practice and learning strategies encountered in studies in the field of music. Task strategies are the strategies used in organizing the parts of the piece meaningfully, selecting the problem areas and bringing together parts of the piece as a whole (Nielsen, 2001). Practice strategies are also among the strategies encountered in studies in the field of music. These strategies include students getting motivated, setting goals, self-assessing and their strategy use processes (Oare, 2007).

In another study on university students playing string instruments, practice strategies consist of strategies like repetition of the entire piece, repetition of little sections of the piece, doing technical works and analyzing the piece. Also, hand position transitions, practicing in unknown chords, playing slowly, using metronome for slow practice tempo, increasing gradually and playing the section many times are given as examples to practice strategies (Sikes, 2013).

Writing strategies in the field of music include writing or piece writing for learning in the pedagogical approaches used in the field of music theory (Kelley, 1997). Correction strategies are the strategies used to teach the transposition skill, and to correct orchestration errors (Dobroski, 1981).

Some studies on learning strategies in the field of music used the classification of the MLSQ. Strategies in this context are comprised of cognitive, metacognitive and resource management strategies (Pintrich et al., 1991). Cognitive strategies include strategies like rehearsal, elaboration, organization and critical thinking. Sample items taken from the scale in order to determine these strategies are:

"I select important technical and musical parts, repeating these over and over again", "I try to develop musical ideas by making connections between alternative

interpretations from listening to music and from lecturers" and "When I practice, I go through the music and try to find the most important musical ideas" (McCormick and McPherson, 2003; Nielsen, 2004; 2008).

Although metacognitive strategies in the field of music are also called self-regulation strategies, comprehension monitoring strategies, executive cognitive strategies, they are all used in similar context. Scales related to metacognitive strategies focus on how much students plan and observe and how much they organize their problem-solving during the practice time. Sample items are:

"When practicing, I set goals for myself in order to direct my practicing" and "I test my performance on the instrument to better manage my strength". Students' use of metacognitive strategies while practicing their instruments was determined in some related studies (McCormick and McPherson, 2003; Nielsen, 2004, 2008).

Similar to metacognitive strategies, in another study (Nielsen, 2001), under the name of self-regulation strategies, whether students exhibited enough self-regulation strategies or not through setting specific goals, strategic planning, self-monitoring and self-judgment was determined.

Resource management strategies include managing time and study environment, effort regulation, peer learning and help seeking sub-dimensions. Sample items from the "*managing time and study environment*" sub-dimension (Nielsen, 2004) are:

"I find it hard to stick to a practice schedule" and "I use my practice time wisely". The sample items (Nielsen, 2004) from the *"effort regulation"* sub-dimension are "I often feel so lazy or bored when practicing that I quit before I finish what I planned to do" and "I continue to practice even the music is boring and uninspired". The sample item in the "*peer learning sub-dimension*" is "When practicing repertoire, I often try to perform the piece for a classmate or friend".

Finally, the sample items in the *"help seeking"* sub-dimension are:

"Even if I have trouble learning the music, I try to work on my own, without help from anyone" and "I seek help from the teacher when I have trouble learning the music".

Another study on strategies in the field of music was conducted by Nielsen (1999a). Nielsen (1999a) determined a series of primary and support strategies helping the learning process. Primary strategies are strategies of selection, organization, making connections between the learning material and the preexisting knowledge, classification of learning material, making connections between the kinesthetic pictures and performing the material, and making connections between the playing of the piece and audiovisual, and visual elements.

Selection strategies are strategies that can be used to select the problem areas of the piece to be learned. These strategies include strategies like visual examination of the score, playing the sections close to the final tempo from beginning to the end, repetition by dividing the piece into different sections.

Organization strategies include strategies like combining segments of the piece to form a whole, playing by dividing the piece into sections with different lengths, playing segments in different tempi, playing each hand (unilateral play), and playing both hands (bilateral play). At the same time, strategies like playing by systematically altering the rhythmical structure of a segment, and playing segments in different tempi by using metronome can be included among the organization strategies.

Strategies to make connections the learning material with existing knowledge (integration) are finding different solutions for a problem, keeping to only one fingering of a segment to alter the solution for the problem and developing exercises based on parts of the piece. Strategies to sort the learning material (categorization) include strategies like dividing the piece into working areas (larger sections), doing markings in the score, minimizing patterns of movements to chords and overdoing the segments. Strategies to relate kinesthetic pictures to the performing of the material include mental rehearsal. These strategies are for mentally rehearsing the kinesthetic (physical) movements done while playing music without touching the instrument. Strategies to relate auditory factors to the performing of the material include playing segments along with a vocal expression and listening to others' performance recordings.

Strategies to relate visual factors to the performing of the material are strategies of identifying similarities and dissimilarities in the piece. In Nielsen (1999a) study, support strategies aim to influence indirectly the acquisition of new knowledge by focusing on the learner's state of mind. This category includes strategies of maintaining concentration on the task at hand, mastering anxiety and securing the efficient use of time. Strategies to direct attention to the task at hand are the strategies of activating and maintaining concentration or activating and maintain motivation. Strategies to master anxiety include strategies of mentally preparing for a public performance.

Strategies to secure efficient use of time are strategies that utilize the distribution of practice over time (massed vs. distributed practice, short-term vs. long-term). In addition to these strategies, they include strategies like pausing/resting, preparing the body and muscles for the practice activity, constructive self-talk, help from others, mental exercises and relaxation exercises.

A study on learning strategies in the field of music was also conducted by Leon-Guerrero (2008). Under the title

of self-regulation strategies, Leon-Guerrero (2008) described 21 types of strategies including strategies like playing from the beginning, repeating a measure, repeating a segment, practicing a group of notes and playing a group of notes backwards.

Practice and learning strategies classification the current study is based on

In the examples given from the studies in the field of music it seen that the definitions and classifications of practice and learning strategies differ according to researcher's approach to the subject. For example, while strategies described as self-regulation strategies correspond to the rehearsal (repetition) strategies (Leon-Guerrero, 2008) of Weinstein and Mayer (1986) classification, in some studies (Hallam, 2001a; Nielsen, 2001) these strategies correspond to comprehension monitoring (metacognition) strategies of Weinstein and Mayer (1986) classification.

When classification related to learning strategies are examined in studies in the field of music, it is seen that learning strategies sometimes discussed as characteristics include special behaviors and sometimes a combination of a set of behaviors. In addition to different classifications, learning strategies are generally gathered around certain strategies. However, Weinstein and Mayer's (1986) classification is generally recognized and used in many studies (Aicher, 1998; Aydıner-Uygun and Kılınçer, 2012a, 2012b; Kılınçer and Aydıner-Uygun, 2013a, 2013b; Nielsen, 1999a, 1999b, 2001).

The current study is based on Weinstein and Mayer (1986) classification of learning strategies. However, while some of the learning strategies (rehearsal, elaboration and organization) in Weinstein and Mayer (1986) classification are discussed in two separate groups, that is, basic and complex, no such separation has been made in this study. In addition to the classification made in this way, one of the sub-dimensions of learning strategies classification developed by Gagné and Driscoll (1988), attention strategies, are also included in the study. One of the strategies developed based on the theory of information processing is the attention strategies (O'Malley et al., 1988; Gagné and Driscoll, 1988; Senemoğlu, 2010; Öztürk, 1995; Subaşı, 2004). This is the reason why attention strategies are included in the study. Furthermore, just like in all learnings, it is believed that learning process in the learning of instrumental music starts with attention.

For the adaptation to the field of music, all the strategies categorized as cognitive by Weinstein and Mayer (1986) can also be used to phrase the psychomotor strategies. In fact, in order to conform to music's nature, there are some psychomotor behaviors expressed in items of the measurement tools used in related studies (Nielsen, 1999a, 1999b) based on Weinstein and Mayer's learning

strategies approach. Some of these items are playing parts with different tempos, playing each hand differently or together, systematically playing by changing the rhythmic structure of a part, playing only with one finger in a part, etc.

In this study, the concept of learning strategy is used in accordance with the definition given by Weinstein and Mayer (1986). According to Weinstein and Mayer (1986), learning strategies are thoughts and behaviors a learner engages in during learning that influences the learner's encoding process. Thus, the purpose of any learning strategy may be the way the learner reaches new information or behavior that he or she chose, obtained, organized or integrated. According to this interpretation, a strategy includes both thought and action. Strategy is not only a "pure" cognitive information process, but it also consists of different action types directed to the learning material.

According to the classification on which this study is based, learning strategies are divided into five groups: attention strategies, rehearsal strategies, elaboration strategies, articulation-organization strategies and comprehension monitoring strategies. Below, these strategies are briefly introduced and examples related to the practice and learning of instrumental music is given (Appendix 1 presented the status of these strategies in the scale).

Attention strategies

Learning activities start with the attention process. Attention is, in the broadest sense, socializing of a cognitive activity (Matlin, 1989). Attention is the most important process that ensures that the information necessary for an individual is transmitted to the short-term memory. For this reason, the first step in teaching is to attract student's attention and enhance it (Subaşı, 2004). Attention strategies allow the student to focus on cognitive activity by making markings on the material to be learned. Some of the examples of attention strategies used during the practice and learning of instrumental music are marking the instrumental music's tone/mode changes, marking the tempo or places of tempo changes, marking the speed and nuance terms, marking the difficult passages and marking the ornaments and explanations.

Rehearsal strategies

According to Weinstein and Mayer (1986), rehearsal is the learner effectively reading and counting the presented items during the learning. The purpose of this action is to choose and acquire the units to be transmitted to long-term memory. Rehearsal strategies are effective in acquiring the information through cognitive rehearsal

after determining what information is important or in making the information permanent. Consequently, rehearsal strategies are quite effective in learning the information that needs to be remembered (for example, poetry, composition, etc.). Some examples of the rehearsal strategies that can be used during the practice and learning of instrumental music are repetition of the entire music piece, the difficult passages or the parts where mistakes have been made on the instrument until the hand positions are easily done or cognitive rehearsal of the piece without playing an instrument until it can be easily played. However, to make learning permanent, learning strategies including higher-level cognitive actions are used. These actions may be possible with elaboration and articulation-organization strategies.

Elaboration strategies

Elaboration strategies enable students to understand the new information by activating their preexisting information, and to create analogies (Wernke et al., 2011). The purpose of elaboration strategies is to create links between the preexisting information or the information stored in the long-term memory and the information that is believed as important to remember. Successful learning includes establishing links between the preexisting information and the new information. The new information should be built on and linked with the previous information (Conford, 2002). An example of elaboration strategies that can be used during the practice and learning of instrumental music is establishing similarity and difference relationships between the tonal-modal, rhythmic and technical characteristics of the newly learned music and the tonal-modal, rhythmic and technical characteristics of the previously learned music.

Articulation-organization strategies

Articulation-organization strategies are among the ways to elaborate the material to be learned. Articulation strategies are the strategies that increase the meaning of the information and that increase the number of associations between the information and its parts (Senemoğlu, 1997). Organization strategies include grouping common characteristics between different examples in the learning material, sequencing the given words in a meaningful way and to reorganize complex information (Weinstein & Mayer, 1986). In other words, organization strategies involve transforming information into different forms and developing a schematic system between the parts (Cornford, 2002). Some of the examples of articulation-organization strategies that can be used during the practice and learning of instrumental music are concretization of abstract situations in music by, using visual markings or developing visual images in mind, attempting to visualize musical statements in mind,

encoding the codes that will make the music permanent, and grouping structures in music that show similarities or differences.

Comprehension monitoring strategies

Weinstein and Mayer (1986) point out that comprehension monitoring strategies involve students determining learning objectives in a learning activity, evaluating the extent to which these objectives are achieved and, when necessary, changing the strategies used to achieve these objectives. According to Pintrich (2004), comprehension monitoring strategies include students planning, supervising, regulating and changing their learning process. Some of the examples of comprehension monitoring strategies that can be used during the practice and learning of instrumental music are: thinking about the contributions of instrumental music on technical and musical development, using practice methods appropriate to music, identifying the reasons for difficulties that were encountered and developing methods to overcome these difficulties.

Study purpose

The purpose of this study is to develop a valid and reliable scale identifying the strategies students who study instrumental music use during the practice and learning of instrumental music based on their own responses. As a result of examining the related studies, it was believed that there was a need for a measurement tool focusing on attention, rehearsal, elaboration, articulation-organization and comprehension monitoring strategies as a whole. Studying the strategies used during the practice and learning of instrumental music requires the development of a valid and reliable scale. This necessity became the starting point of this study.

METHODOLOGY

This study is a scale development study employing the survey model. A descriptive item analysis, an exploratory factor analysis, and a scale's performance analysis were adopted. Research design is a descriptive item analysis since the study is about revealing the existing relationship between the items.

Study group

The study group comprised of 358 2nd, 3rd and 4th year undergraduate students studying music education in five Turkish universities in the 2015 to 2016 academic year. The students making up the study group were studying at Atatürk (n=62, 17.3%), Cumhuriyet (n=54, 15.1%), İnönü (n=64, 17.9%), Karadeniz Technical (n=93, 26.0%) and Necmettin Erbakan (n=85, 23.7%) universities. Fifty seven and three tenths of the students in the study group (n=205) are female and 42.7% (n=153) are male.

37.7% (n=135) of the students are 2nd year, 33% (n=118) 3rd year and 29.3% (n=105) 4th year students. In instrument courses, student learn to play bağlama (a Turkish instrument with three double strings) (n=59, 16.5%), cello (n=37, 10.3%), flute (n=58, 16.2%), guitar (n=50, 14%), violin (n=109, 30.4%), oud (n=24, 6.7%) and viola (n=21, 5.9%).

Procedure

In the study's procedure phase, first scale's candidate form was developed. For this purpose, items that need to be in the candidate form were decided upon after examination of related literature data regarding practice and learning strategies (Cangro, 2004; Chung, 2006; Green, 2012; Hagans, 2004; Hallam 2001a, 2001b; Kılınçer and Aydıner-Uygun, 2013a; Leon-Guerrero, 2008; McCormick and McPherson, 2003; Nielsen 1999a, 1999b, 2001, 2004, 2008; Pitts and Davidson, 2000; Santos and Gerling, 2011; Sikes, 2013).

After developing the candidate form, the validity and reliability were established ensured. Reliability is the degree to which an assessment tool produces stable and consistent results. Types of reliability are test-retest, parallel forms, inter-rater and internal consistency. Internal consistency is used in this study. Validity refers to how well a test measures what it is purported to measure. Types of validity are face validity, criterion-related validity, construct validity, formative validity and sampling validity. Construct validity is used in this study.

Expert opinions were sought for the scale's content validity. One of the experts is an expert in the field of measurement and evaluation from Gazi University (Ankara, Turkey). The other two are experts in the field of music education from Ömer Halisdemir University (Niğde, Turkey). To determine the scale's validity and reliability of the scale a pre application was conducted with the 358 students making up the study group.

For the validity of the scale, the candidate form consisting of 55 items was presented to experts. In accordance with the expert opinions, one item was excluded from the scale because it was inadequate to measure the related structure; five items were excluded because they were not clear enough. Thus, content validity for 49-item scale was met. The 49-item scale was reproduced on paper and administered to the students making up the study group. The scale's structural validity and reliability analyses were conducted through 358 observations.

Comrey and Lee (1992) characterized a sample size of 100 as poor, 200 as fair, 300 as good, 500 as very good and 1000 or more as excellent. Guilford (1954) suggested that sample size should be at least 200. Tavşancıl (2002) expressed that the number of items should be between five items and ten items. Based on the aforementioned, it can be said that the sample size in this scale development study is appropriate.

Research and data analysis

Exploratory Factor Analysis (EFA) was administered for the structural validity of the scale. The factor analysis is one of the methods used for transforming correlated data structures to new independent and less data structures, for presenting common factors by grouping variables that are supposed to explain a phenomenon or event and for grouping variables influencing a phenomenon (Özdamar, 2002). Some hypothetical criteria must be sought in factor analysis studies. The suitability of the data for factor analysis was examined with Kaiser-Meyer-Olkin (KMO) coefficient and Barlett sphericity tests. For the suitability to be met, KMO value should be higher than .60 and the chi-square value calculated for the Barlett sphericity test should be statistically significant (Büyüköztürk, 2008).

RESULTS AND DISCUSSION

This section includes the results obtained from the structural validity and reliability of the Scale for Strategies used during the practice and learning of instrumental music.

Results obtained from the scale's structural validity analysis

In the study, sample adequacy coefficient (KMO) was found to be 0.93, and χ^2 value of Barlett sphericity test was found to be 9720.93 (p<.001). These results show that the data is suitable for factor analysis. Then, Varimax rotation AFA was applied to the 49-item scale and the items (i7, i14, i15, i22, i24, i29 and i36) with factor loads below 0.40 were excluded.

After this process, factor analysis was applied again. In the second application, items (i23, i33 and i34) in more than one factor were excluded and factor analysis was repeated for a third time. As a result of the last application, it is seen that factor loads were above 0.40 and the scale has five sub-dimensions (Table 1 and Figure 1). The exploratory percentage of the total variance of this five sub-dimensioned structure was found to be 60.3%. Table 1 shows the scale's distributions of the factor loadings. Table 2 presents the exploratory and item distributions of the scale's dimensions, and Figure 1 shows the eigenvalues of the scale's sub-dimensions

Results obtained from the scale's reliability and item analysis

The distribution of reliability coefficients according to the scale's sub-dimensions is presented in Table 3. As can be seen in Table 3, the reliability coefficients of the scale and its sub-dimensions were found to be high. Distributions of the scale's item analysis are given in Table 4. In Table 4, it is seen that *corrected item-total correlations* are above 0.30. Based on the results, it can be concluded that the five-dimensioned scale meets the validity and reliability criteria.

CONCLUSION

This study was aimed to develop a scale for strategies used during the practice and learning of instrumental music. The type of the scale can be described as self-assessment scale. Developed to determine strategy levels individuals use during the practice and learning instrumental music, the scale is a measurement tool based on individuals giving information about themselves. The scale includes attention, rehearsal, elaboration, articulation-organization and comprehension monitoring dimensions. There are a total of 39 items in the scale.

Table 1. Scale's distribution of factor loads on the scale.

Item	Dimension				
	1	2	3	4	5
i1	0.717	-	-	-	-
i2	0.811	-	-	-	-
i3	0.813	-	-	-	-
i4	0.799	-	-	-	-
i5	0.747	-	-	-	-
i6	0.707	-	-	-	-
i8	0.513	-	-	-	-
i9	-	0.721	-	-	-
i10	-	0.745	-	-	-
i11	-	0.528	-	-	-
i12	-	0.711	-	-	-
i13	-	0.711	-	-	-
i16	-	-	0.652	-	-
i17	-	-	0.734	-	-
i18	-	-	0.730	-	-
i19	-	-	0.640	-	-
i20	-	-	0.677	-	-
i21	-	-	0.703	-	-
i25	-	-	-	0.647	-
i26	-	-	-	0.697	-
i27	-	-	-	0.706	-
i28	-	-	-	0.778	-
i30	-	-	-	0.638	-
i31	-	-	-	0.657	-
i32	-	-	-	0.675	-
i35	-	-	-	-	0.614
i37	-	-	-	-	0.647
i38	-	-	-	-	0.637
i39	-	-	-	-	0.717
i40	-	-	-	-	0.616
i41	-	-	-	-	0.639
i42	-	-	-	-	0.740
i43	-	-	-	-	0.679
i44	-	-	-	-	0.668
i45	-	-	-	-	0.612
i46	-	-	-	-	0.725
i47	-	-	-	-	0.717
i48	-	-	-	-	0.557
i49	-	-	-	-	0.770

There are seven items in the attention strategies dimension, five in rehearsal strategies dimension, six in elaboration strategies dimension, seven in articulation-organization strategies dimension, and 14 in comprehension monitoring strategies dimension. Consisting of 39 items and showing a five-dimensional structure, the scale's total variance was 60.3%.

In multi-factor scales, the explained variance is expected to be higher than 30%. Higher explained variance is interpreted as an indication of how well the related concept or structure is measured (Büyüköztürk, 2008). In this respect, it can be said that the scale is adequate in differentiating the individuals in measuring the related structure. The factor loading values of the items in the scale ranges from 0.513 to 0.813. The fact that factor loading values of the items in the scale are

Screen plot
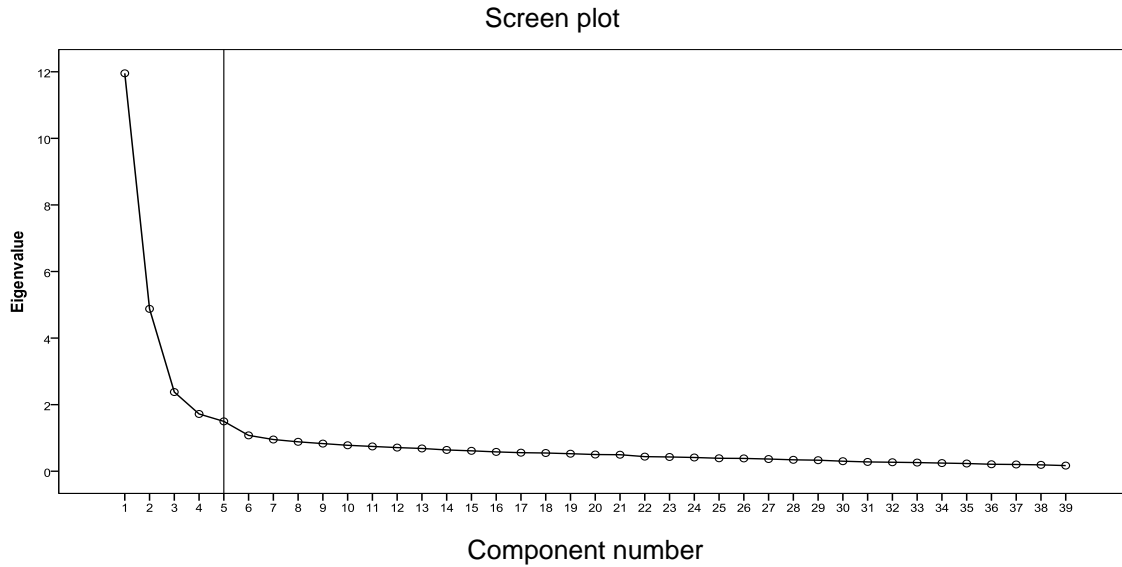
Figure 1. Eigenvalues for the scale's sub-dimensions.

Table 2. Exploratory and item distributions of the scale's dimensions.

Explanation	Item number	Items
Attention strategy	7	i1, i2, i3, i4, i5, i6, i8
Rehearsal strategy	5	i9, i10,i11, i12, i13
Elaboration strategy	6	i16, i17, i18, i19, i20, i21
Articulation-organization strategy	7	i25, i26, i27, i28, i30, i31, i32
Comprehension monitoring strategy	14	i35, i37, i38, i39, i40, i41, i42, i43, i44, i45, i46, i47, i48, i49

Table 3. Reliability coefficients of the dimensions.

Dimension	Item number	Reliability coefficients
Attention strategy	7	0.89
Rehearsal strategy	5	0.81
Elaboration strategy	6	0.85
Articulation-organization strategy	7	0.87
Comprehension monitoring strategy	14	0.93
Total	39	0.94

higher than 0.45 indicates that these items should be kept in the scale (Kline, 2000).

Reliability coefficients for the scale's sub-dimensions were found to be 0.89 for attention strategies dimension, 0.81 for rehearsal strategies dimension, 0.85 for elaboration strategies dimension, 0.87 for articulation-organization strategies dimension and 0.93 for comprehension strategies dimension. There are no reverse-coded items in the scale. The information regarding the strategies the individual use during the practice and learning instrumental music can be obtained by dividing the total score from the scale by the item number (39).

RECOMMENDATIONS

It is believed that the scale will be a powerful tool for researchers in explaining the levels of strategies students use during the practice and learning of instrumental music.

Table 4. Distributions of scale's item analysis.

Item	Item-total statistics			
	Scale average when item is excluded	Scale variance when item is excluded	Corrected item-total correlation	Cronbach alpha value when item is excluded
i1	18.59	34.702	0.676	0.874
i2	18.66	34.320	0.770	0.863
i3	18.74	35.021	0.748	0.866
i4	18.73	34.893	0.731	0.868
i5	18.76	34.570	0.711	0.870
i6	18.86	35.058	0.691	0.872
i8	18.13	38.413	0.470	0.898
i9	20.17	10.687	0.615	0.721
i10	20.16	10.547	0.643	0.714
i11	20.54	11.073	0.451	0.764
i12	20.08	10.697	0.652	0.713
i13	20.22	10.994	0.557	0.736
i16	20.65	12.190	0.381	0.776
i17	13.87	13.121	0.708	0.766
i18	13.79	13.442	0.651	0.780
i19	13.84	11.951	0.527	0.832
i20	13.82	13.628	0.608	0.791
i21	13.96	12.836	0.662	0.775
i25	17.98	32.417	0.633	0.856
i26	18.04	31.365	0.701	0.846
i27	18.05	32.524	0.637	0.855
i28	18.37	31.387	0.650	0.854
i30	17.83	33.936	0.610	0.859
i31	17.77	33.163	0.664	0.852
i32	17.71	33.356	0.660	0.853
i35	50.11	95.541	0.596	0.921
i37	50.17	93.374	0.684	0.918
i38	50.17	94.063	0.635	0.920
i39	50.20	92.667	0.697	0.918
i40	50.36	94.181	0.610	0.921
i41	50.29	93.648	0.649	0.919
i42	50.11	93.086	0.709	0.917
i43	50.03	94.932	0.640	0.920
i44	50.01	94.457	0.625	0.920
i45	50.10	94.466	0.615	0.921
i46	50.03	93.212	0.715	0.917
i47	50.15	92.411	0.727	0.917
i48	50.23	95.156	0.549	0.923
i49	50.18	91.927	0.730	0.917

Also, it can be used as an observation tool by teachers to measure their students' levels of practice and learning strategies. Through this scale, teachers can take measures to increase the diversity of their students' strategy use. They can experience which strategies are effective under which conditions on which student style.

This scale can also be considered as a measurement tool for researchers to use in their experimental studies.

For this, it is important to repeat the scale's validity and reliability works by employing the scale to different sample groups. It is also important to perform confirmatory factor analysis to confirm the factor structure. In future studies, a confirmatory factor analysis of the present scale with another related scale developed earlier (Kılınçer and Aydıner-Uygun, 2013a) can be performed in order to confirm the present scale's factor

structure.

In addition, the relations between the present scale and valid and reliable scales (Aydıner-Uygun, 2012; Aydıner-Uygun, 2016; Miksza et al., 2016) that measure structures related with practice and learning strategies (learning approach in instruments, achievement goal orientation in instrument) can be examined. Using this scale, scale's measurement power can be tested through future studies.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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Appendix 1. Scale for strategies used during the practice and learning of instrumental music (Coding 1: Never, 2: Seldom, 3: Sometimes, 4: Often, 5: Always).

S/N	Items	1	2	3	4	5
1	I mark instrumental music's tone-mode/tone-mode changes					
2	I mark instrumental music's tempo/places of tempo changes					
3	I mark the tempo terms found in instrumental music					
4	I mark the nuance terms found in instrumental music					
5	I mark the places of ornaments like mordan, trill and grupetto in instrumental music					
6	I underline explanations about practice of ornaments like mordan, trill and grupetto in instrumental music					
7	I mark the difficult passages of instrumental music					
8	I rehearse the *entire* instrumental music piece on my instrument until I gain a certain *ease in playing*.					
9	I rehearse the instrumental music's *difficult passages* on my instrument until I gain a certain *ease in playing* by determining the difficult passages.					
10	I rehearse the *notes* of entire instrumental music piece or a part of it visually in my mind					
11	I constantly rehearse the places where I made mistakes in instrumental music on my instrument until I can play them correctly					
12	I cement the hand positions found in instrumental music by constantly playing them					
13	I establish similarity relationships between the techniques of instrumental music and the techniques of instrumental music I have learned previously					
14	I establish difference relationships between the techniques of instrumental music and the techniques of instrumental music I have learned previously					
15	I establish similarity relationships between the rhythmic characteristics of instrumental music and the rhythmic characteristics of instrumental music I have learned previously					
16	I establish difference relationships between the rhythmic characteristics of instrumental music and the rhythmic characteristics of instrumental music I have learned previously					
17	I establish similarity relationships between the tonal/modal characteristics of instrumental music and the tonal/modal characteristics of instrumental music I have learned previously.					
18	I establish difference relationships between tonal/modal characteristics in the study/piece and the tonal/modal characteristics in the study/piece I have learned previously					
19	I concretize abstract information, concept and situations for me in instrumental music by using visual markings.(For ex. Drawing a triangles where there are trioles, using symbols for ligature beginnings and endings)					
20	I concretize abstract information, concept and situations for me in instrumental music by developing visual images in my mind. (For ex. To visualize a turtle's walk for the term lento)					
21	I try to create a short story by visualizing the statement in instrumental music in my mind					
22	I code certain note groups in instrumental music with a phrase or a sentence to make them permanent in my mind.					
23	I learn the notes of instrumental music by grouping them according to their movement directions.					
24	I learn melodic/harmonic structures moving with similar intervals in instrumental music by grouping them					
25	I learn the rhythmic patterns of instrumental music by grouping them according to their similarities/differences					
26	I can guess how difficult it would be for me to play a new instrumental music when I see it for the first time					
27	I think about the gains instrumental music will bring to my technical development					
28	I think about the gains instrumental music will bring to my musical development					

Appendix 1. Cont'd

29	I ask questions about how I can play instrumental music better
30	I determine different practice methods appropriate to instrumental music
31	I search for new methods when the methods I use for the practice of instrumental music do not succeed
32	I learn how I should practice for a new instrumental music and I practice accordingly
33	I realize the mistakes I make while practicing instrumental music
34	If I cannot play instrumental music right, it is because I did not practice enough
35	I determine the difficulties I face with instrumental music. (For ex. Using wrong finger numbers, technical and rhythmic difficulties, etc.)
36	I try to answer questions like what can I do to overcome the difficulties in instrumental music, how can I play better and how can I correct the places where I make mistakes)
37	I try to overcome technical difficulties of instrumental music by practicing technical difficulties
38	I make my friend and my teacher listen to my instrumental music performance or I listen to myself by recording it
39	I question why I could not learn if I realize I did not learn what I needed to learn as a result of my instrumental music practice

*Attention Strategies: 1-7; **Rehearsal Strategies: 8-12; ***Elaboration Strategies: 13-18; ****Articulation-Organization: 19-25; *****Comprehension Monitoring Strategies: 26-39.