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The Effect of Cooperative Learning on Students' Anxiety and Achievement in Musical Ear Training Lessons*

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Abstract
Anxiety that can be experienced in musical ear training lessons is a significant psychological factor that can negatively affect the acquisition of aural skills, their effective application and evaluation process as well. This study looks into the influence of 'Cooperative Learning Method' on anxiety in musical ear training classes, on student achievement and exam anxiety/state anxiety. The study was designed, and conducted as an experiment with a pre-test and post-test control group, and the experimental procedures were completed in eight weeks. The study was carried out with thirty seven students [(n_e=19), (n_c=18)], who were taking Musical Ear Training-IV (MET-IV) lesson in the spring semester of 2010-2011 academic year in the Music Teacher Training Bachelor Program of a university in West Black Sea Region in Turkey. Experiment and control groups were equilibrated by taking into account the grade means in the MET courses that students had taken for the previous three semesters, and the gender aspect. The lessons in the experimental group have been taught mainly through 'Cooperative Learning Method', while mainly through 'Expository Teaching Approach' in the control group. Research data were collected by means of 'MET Lesson Anxiety Scale', 'Music Theory Test', and 'Musical Writing (Dictation) Test' tools, which have been developed by the researchers, and by means of 'State Anxiety Scale' tool developed by Spielberger et al. The collected data were analysed using dependent samples *t*-test and independent samples *t*-test. According to the results, Cooperative Learning has shown no significant effect on the achievement in music theory and in musical writing, and likewise on exam anxiety/state anxiety. However, the results show a significant positive effect of Cooperative Learning on lesson anxiety in musical ear training classes.

Key Words: Musical ear training lesson, cooperative learning method, achievement, lesson anxiety, exam anxiety/state anxiety

INTRODUCTION

Musical Ear Training (MET), which is one of the basic branches of music education, has a complicated structure. Musical ear training, the general aims of which can be defined as gaining student the skills of musical perception and musical memorization, musical imagination, musical sensitivity, transforming the perceived into musical notation/symbols, and musical reading (Brink, 1980; De Larminat, 2008; Harrison, 1990; Kalyoncu, 2005; Paney, 2007; Scheele, 1993; Sevgi, 1982; Shanefield, 2011), encompasses a range of theoretical and practical content. In the theoretical dimension of the lesson, the students are given the knowledge of musical elements to enable them to comprehend and analyse the language of music, and the knowledge that explains inter-elemental relations (notation, rhythm, meter, intervals, musical scale, chords, alteration, modulation etc.). The practical dimension, which is taught as woven from theoretical knowledge, includes the practices such as listening, perceiving/recognizing/identifying single and multiple tones, hearing and identifying metric, rhythmic, melodic, and harmonic structures separately or together, reading notation through

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solfege or other solmization methods, sight-reading, dictating the tones and musical structures heard, and to put forth the internally imagined. Through this multifaceted and comprehensive structure, MET lessons constitute the basic for many theory-focused and performance-focused lessons in the musical training process and underpin music-specific courses (Aydoğan, 1998; Dunlap, 1989; Ferrante, 2010; Gates, 2001; Karkın, 2007; Potts, 2009; Sevgi, 1982).

There are various factors that affect achievement in musical ear training lessons, like in any lesson, such as student ability, teacher competency, curriculum, readiness, pre-learning level, the teaching method or the attitude of students towards the relevant lesson. Notwithstanding, anxiety experienced in the lesson or related to the lesson is considered as a factor with an effect on student achievement, and it is reported that anxiety experienced particularly in situations like examination is a variable that negatively affect learning and academic achievement throughout student life (Bacanlı, 2011; Hasselberg, 2010; Morgan, 2000; Slavin, 2006; Wine, 1971; Woolfolk, 1993; Zanden and Pace, 1984). Such views that are underlining the impacts of anxiety on learning make us consider anxiety as a factor to be counted in for musical ear training lessons as well.

In a broad sense, anxiety, as an important study subject of educational psychology as it is a basic sense of the mankind, "is an emotion of fear, discontent, and worry that is unconscious in its basis […] but identified consciously by the individual" (Öner, 1972, p.152). Anxiety is also qualified as a mood "with no clear reason" (Hançerlioğlu, 1988, p.223) or "that lost its source or object" (Dağ, 1999, p.181). Anxiety, which is defined by Spielberger (1983) as an emotion of "subjective feeling of tension, apprehension, nervousness, and worry associated with an arousal of the autonomic nervous system" (as cited in Horwitz, 2001, p.113), can be accompanied by various physical reactions as well (Carlson and Buskist, 1997; Hasselberg, 2010; Plotnik, 2009).

Öner (1977) states that the anxiety process comprises a series of complex cognitive, emotional, physiologic and behavioural activities. For this reason, anxiety can lead to different changes in individuals. While the symptoms of anxiety is categorised under two as subjective (spiritual) and objective (physical) complaints (Köknel, 1983; as cited in Hançerlioğlu, 1988, p.225), the changes are recognised as cognitive, emotional, behavioural, and physiologic changes as well (Ceyhan and Namlu, 2000; Dürü, 1999; Hasselberg, 2010). The *cognitive aspect* of anxiety is the self-criticism of the individual and feeling concerned for his/her performance; the *emotional aspect* is feeling nervousness and unease; and the *behavioural aspect* includes reactions such as clumsiness, silence, reticence, withdrawal (Geen, 1985; as cited in Kapıkıran, 2006, p.2). As for the *physiological aspect* of anxiety, it reveals itself through the symptoms like palmar sweating, pulse and respiration increase, stomach complaints etc. (Carlson and Buskist, 1997; Doğan and Baş, 2003; Öner, 1972; Plotnik, 2009).

The anxiety phenomenon, which is identified with regard to a variety of lessons (Awan, Azher, Anwar and Naz, 2010; Batton, 2010; Daneshamooz and Alamolhodaei, 2012; Elkhafaifi, 2005; Suwantarathip and Wichadee, 2010), also exist in the context of MET lessons (Hannon, 2015; Karpinski, 2000b; Mishra, 1998; Rifkin and Urista, 2006). As a general trend in the existing sources, the content of lesson, approaches in teaching, class environment, the students' perception towards itself and towards teacher, teaching methods and exam applications are considered as significant factors with a potential to lead to anxiety in musical ear training. MET lessons are most times perceived as 'hard' due to their comprehensive content. The studies conducted by Wunsch (1973), Covington (1992), Karpinski (2000a), Sevgi (2000), Sisley (2008) and Hannon (2015) calls attention to this challenge. In this context, the nature of MET lesson has the characteristics that can cause anxiety come out or develop further in students. However, the comprehensiveness of contents is not the sole reason that cause anxiety. Özgür and Aydoğan (1999) remarks that learning, itself, is an intangible process and contends, along with this fact, that the abstract character of the sound phenomenon makes learning harder in the process of musical ear training. Most of the activities performed in MET lessons involve the concurrent utilization of the skills related to perception and comprehension, in other words, the intricate procedures of sensing, perception, coding, decoding, and recognition/identification. MET lessons include practices that have predominantly psychological dimension, since the coordination of perception, memory, attention, and the use of knowledge step forward during these procedures

(Spencer, 1947). Aural skills can be affected by lack of perception (Wunsch, 1973), psychological barriers, nervousness, and lack of attention (Hannon, 2015; Karpinski, 2000b). When viewed from this perspective, it is possible to consider anxiety as a secret agent that has the potential to block or undermine achievement, which can be reached in MET, through leading to the malfunctioning of the steps of the musical hearing process and some research results at hand support this opinion (Mishra, 1998; Öztürk and Kalyoncu, 2017).

Various pedagogical measures can be taken to reduce the negative effects of the factors that are expected to lead to anxiety in musical ear training. The discussions on the compatibility of the conventional teaching methods with the nature of ear training have brought forward the necessity of pursuing different approaches. For example, Gates (2001) indicates that the teaching strategies followed by the music theorists, who ignore the researches on learning strategies and base on self-experience, harm students, and points out that more clear decisions could be provided on what and how to teach through the synthesis of the researches and practical experiences. On the other hand, Scandrett (2005) states that most MET classes consist of 15-20 individuals and that students show divergence with regard to their backgrounds and abilities. He stresses that some students are able to perform a task easily while others have more difficulty; and for this reason, that it would be beneficial giving individual instruction to every student according to their needs, pre-learning level, and abilities. Likewise, Rifkin and Urista (2006) reports that dictation causes to the debilitating anxiety particularly in the students who have weak hearing skills, that polarization is observed in the classes in which strong and weak students co-exist in the same environment, and that successful students get bored while weak students experience anxiety and even umbrage. The authors advice the employment of methods that are based on interaction and cooperation, encourage active learning and enhance the feeling of confidence. Berry (2008) indicates that expository method is a conventional approach used to perform teaching in music theory lessons, and that instruction could be seen as the best choice since it ensures the conveyance of excessive knowledge and due to diversity in student pre-learning. Arguing that the compatibility of the method does not squarely mean that it is effective, Berry points out the deprivation of instruction from the effectiveness of active learning approach, and states, based on the researches, that there is a tendency of transition from the conventional methods to active methods. In another research, the lecturers linked student failure in MET lesson to the difficulty of the curriculum, while the students showed 'the deficiency of the teaching method' as the primary reason for failure (Aydoğan, 1998). According to the same study, the students, who found the lecturers running MET classes incompetent with regard to teaching methods, thought that they could not be inspired due to the monotonously instructed lessons. Parker (2007), however, reports that teachers continue teaching in the way they were educated, and that innovative ideas, social interaction, and teaching applications that ensure complete learning and that are directed to problem solving, are ignored during the implementation of music curricula. Having observed the destructive impacts of anxiety in MET lessons, Hannon (2015) emphasizes the role of the teacher and argues that teachers can help students to overcome anxiety through methods, which are creative, interaction-focused and multi-activity-oriented.

The developments in the 20th century has shown that learning is not only a stimulus-bound reactive process; on the contrary, it is a process of construction based on cognitive and social interaction (Ergün and Özsüer, 2006; Laney, 1999; Seifert and Sutton, 2009; Senemoğlu, 2005; Slavin, 2006). This fact, which is in congruence with the nature of musical ear training, has contributed to the development of various methods, which puts the active participation of students in the centre. As one of these, Cooperative Learning Method is accepted as an alternative approach that can meet the above-mentioned expectation. In this context, along with the conventional teaching methods in MET lessons, participative, interactive and cooperative classroom environments can be built instead of the competition-based classroom environment particularly to avoid time pressure, reduce anxiety, and achieve different results in practice (Hannon, 2015; Rifkin and Urista, 2006; Slavin, 2006; Woolfolk, 1993).

Cooperative Learning Method is a teaching strategy in which students assist each other in learning that is aimed at a common goal/learning objective by forming small mixed groups or teams, are rewarded

as a group (Johnson and Johnson, 1988, 1994; Kagan, 1994; Slavin, 1980, 1987), and "work together, sharing ideas, information, and resources, as they progress toward identified goals" (Kaplan and Stauffer, 1994, p.1). Cooperative learning* is a method that can be applied to different lessons and groups, that bases the working methods of small groups on specific theoretical foundations, and that incorporates various techniques such as 'Teams-Games-Tournament', 'Academic Controversy', 'Jigsaw 1-2', 'Co-op Co-op', 'Group Investigation', and 'Student Teams-Achievement Divisions'.

Academic achievement being in the first place, Cooperative Learning Method has important impacts on cognitive, social, and emotional learning outputs. Particularly by the activities based on the principle of social interaction, it contributes to students' psychic-emotional development by supporting self-confidence, attitude, and motivation, while gaining them the emotion of sharing and responsibility along with the skills of critical thinking and problem solving (Johnson, Johnson and Smith, 1991; Slavin, 1987, 1990). With these contributions, Cooperative Learning Method has an important effect on anxiety as well. It is supposed that anxiety, which is considered as one of the chief factors effecting productivity and the construction of positive relations, is rarely observed in cooperative classroom environments (Johnson et al. 1991; Kagan, 1994). Results of the researches conducted on various lessons showed the positive effect of Cooperative Learning Method on class anxiety (Batton, 2010; Courtney, Courtney and Nicholson, 1992; Edelbrock, 1990; Lavasani and Khandan, 2011; Mehdizadeh, Nojabaee and Asgari, 2013; Okebukola, 1986; Suwantarathip and Wichadee, 2010; Valentino, 1988).

The use of Cooperative Learning Method was highlighted in some theoretical studies conducted in early 1990s in the field of music education as well (Baloche and DeLorenzo, 1994; Di Natale and Russel, 1995; Friedmann, 1989; Kaplan and Stauffer, 1994), and various application samples were presented. Several experimental studies presented its outlook in practice. Some of these researches highlight the positive impacts of Cooperative Learning Method both on the learning of musical content and on the student's psychic process. Its effects on listening skills (Hosterman, 1992), musical knowledge and singing skills (Bilen, 1995; Güven, 2011; Kocabaş, 1995; Parker, 2007; Söker, 1998; Uysal, 2004), attitude towards instrumental course and performance, confidence, and also motivation in technical applications and style works (Fisher, 2010; Sözen, 2012) are to name but a few. Moreover, it is also reported that student participation in musical activities improve and that they develop positive attitude, as well, in cooperative learning environments (Bilen, 1995; Djordjevic, 2007; Fisher, 2010; Goliger, 1995; Güven, 2011; Hwong, Caswell, Johnson and Johnson, 1993; Kocabaş, 1995).

There are other studies, along with the above ones, which emphasize the effect of cooperative learning on the gaining of aural skills. For example, Therrien (1997) found in his study in which he compared the effect of computer-aided individual teaching and cooperative learning strategy on the achievements of music theory and musical ear training that the both teaching methods were effective in the acquisition of musical knowledge and aural skills, and in the improvement of course success. Similarly, Nacakçı (2011) found that the Cooperative Learning Method was more effective compared to the conventional methods. Along with these studies, there are diverse studies showing that Cooperative Learning Method has effects on the gaining and/or improvement of the skills of reading tonal and rhythmic phrase (Inzenga, 1999); analysis of melody, meter, and timbre (Holloway, 2001); analysis of musical texture, genre, and style (Smialek and Boburka, 2006); attitude towards music theory lesson, perception of self-confidence and success attributions (Canakay, 2007); rhythmic counting and sight-reading (Parker, 2007); being informed on sight-reading, harmonising and playing the given tune (Fisher, 2010); polyphonic solfege reading and musical hearing-writing (Gürpınar, 2014).

* It is known that the views and suggestions on the use of cooperation in education dates late back in history and the approach of teaching-learning in small groups have existed for centuries (Fisher, 2010). It is also cited that social psychologists worked on subjects that compare cooperation and competition well before the cooperative learning programs developed for application in classrooms (Slavin, 1987). However, Cooperative Learning Method is a highly structured approach compared to many group learning techniques being used (Kaplan and Stauffer, 1994).

Despite these researches, the authors of this article have not yet come across with a study that looked into the effect of the Cooperative Learning Method on anxiety in MET lessons. Additionally, it is difficult to mean that there is a large number of researches concentrated on anxiety and musical ear training. One of a few researches that we spotted during the literature review in the context of our topic is Mishra's (1998) study, which is one of the pioneering studies about the anxiety in MET. Mishra addressed the anxiety and variables of ear training, and reports that the students experiencing high level of anxiety get lower scores from MET exams in comparison to the students experiencing low level of anxiety. Further, Mishra indicates that the students who do not feel confident with their aural skills get remarkably lower scores from MET exam compared to the students who feel confident with their abilities/skills. In their study with the students of music teacher training bachelor program, Öztürk and Kalyoncu (2017) found that the students experience anxiety in MET classes and exams, that -similar to Mishra's findings- there is a significant correlation in the negative direction between lesson achievement and anxiety towards lesson and exam. In the context of researches, a survey that was conducted to identify 141 music major students' preconceived ideas about music theory and aural skills can be referred here (Hannon, 2015). In the survey, 41,8% of the students answered questions with a negative response, while 28,4% had a general fear and expressed the difficulty of aural skills. The limited number of researches in the music education literature complicates stable arguments about the place and impacts of anxiety in MET lessons, and crystalizes the need for further studies that will look into the causes of anxiety experienced in MET classes, its relations with different variables, how its impact on success can be reduced or what preventions to be taken against anxiety during teaching. In this context, the purpose of this research is to examine whether or not the Cooperative Learning Method, which enables the student to learn in group by teacher and peer support in a social environment, have an effect on *a) lesson anxiety, b) exam anxiety/state anxiety, c) achievement* in MET lesson. However, the fact that anxiety, which is a popular study subject in educational research, has not yet been widely dealt with in the national and international literature in the context of musical ear training is considered as the challenging but stimulating aspect of our research.

METHOD

Research Model

Experimental model with pre-test and post-test control group is used in this research.

Table 1. Overview of the Research Process

Before Experiment	Group	Pre-test	Experimental Process	Time	Post-test
Assignment of the groups	Experimental group	- Personal information form - Music theory test - Musical writing test - State anxiety scale - MET lesson anxiety scale	Cooperative learning method (Student teams-achievement divisions - STAD technique)	8 weeks	- Music theory test - Musical writing test - State anxiety scale - MET lesson anxiety scale
	Control group		Expository methods (Instruction, Q&A, and Discussion techniques)		

Study Group

The study group was formed by 40 students who were taking Musical Ear Training-IV (MET-IV) lesson in the spring semester of 2010-2011 academic year in the Music Teacher Training Bachelor Program of a university in West Black Sea Region in Turkey. In experimental studies with pre-test and post-test control group, where the number of participants are fewer, it is preferred to match the participants rather than random selection (Açıkgöz, 1992). The students' success grades in the MET-I, II, III courses in the previous semesters were taken as the key criterion to equilibrate the experimental and control groups. A score of success was obtained for each student by taking the mean of the grades belonging to the previous three semesters of the students who were studying in the fourth semester.

The class was divided into two, the experimental and control groups were equalized according to these achievement scores and 20 students were assigned to each group (see Table 2). In addition, there were no students with absolute pitch ability in the study group, and all participants had relative pitch ability.

Table 2. Means of Success Grade in MET-I, II, III Courses

Groups	N	$\bar{X}$	SD	t	df
Experimental	20	69,93	9,94	,67	38
Control	20	67,38	13,80		

The groups were balanced in terms of gender in order to achieve heterogeneous group structure, which is one of the basic principles of the Cooperative Learning Method (see Table 3). In the process, 3 (three) students in total who were not regularly attending classes in both groups were excluded from measurements; hence, the number of students in the study group was set as 37.

Table 3. Distribution of Students according to Gender

Groups	Female		Male		Total	
	f	%	f	%	N	%
Experimental	13	35,13	6	16,22	19	51,4
Control	12	32,43	6	16,22	18	48,6
Total	25	67,56	12	32,44	37	100

Table 4 shows that 59,46% of the students who participated in the research exercised MET lesson for 1-4 hours per week on a regular basis; however, it is seen that 27,03% of the students worked only before the exam and 10,81% of the students did not work at all. The development of aural skills depends on regular and continuous work. However, a certain number of students state that they regularly study MET lesson, while the statements of more than one third of the research group show that they do not study regularly for MET lessons.

Table 4. Students' Weekly Exercise Hours for MET Lesson

Exercise type		Experimental	Control	Total
Never	f	3	1	4
	%	8,11	2,7	10,81
Working 1-4 hours per week regularly	f	9	13	22
	%	24,32	35,14	59,46
Studying on a daily basis	f	1	0	1
	%	2,7	0	2,7
Studying just before exams	f	6	4	10
	%	16,22	10,81	27,03
Total	f	19	18	37
	%	51,4	48,6	100

Experimental Process

Planning of experimental application

At the planning stage of the experiment, the course contents to be taught during the experimental period were selected primarily from the framework program of the MET-IV lesson in the current Music Teacher Training Bachelor Program (YÖK, 2006). These contents are structured to be the same in both experimental and control groups (see Table 5). Again, the exercises, dictation and solfege pieces, and home assignments were prepared the same for both groups without making tonal, maqamic or rhythmical alterations to the structure. For the under-mentioned contents, the process of learning-

teaching for each lesson was planned clearly and through cascading in the context of Expository Teaching Approach for the control group and Cooperative Learning Method for the experimental group by putting the 'Student Teams-Achievement Divisions' (STAD) in the centre. Lesson blocks were scheduled for two hours.

Table 5. MET-IV Lesson Content and Learning-Teaching Methods Used During the Study

Week	Lesson blocks	Lesson content	Learning-teaching methods	
			Experimental group	Control group
1	1. block	Application of pre-tests	---	---
	2. block	Seventh chords and the dominant seventh chord	Jigsaw I	Instruction/ Q&A/ Discussion
2	1. block	Seventh chords and the dominant seventh chord	STAD	
	2. block	Modulation	STAD	
3	1. block	Four-sharp major tonality	STAD	
	2. block	Four-sharp major tonality	STAD	
4	1. block	Hearing and writing in E major tonality	STAD	
	2. block	Four-sharp minor tonality	STAD	
5	1. block	Hearing and Writing in C# minor tonality	STAD	
	2. block	Hicaz and Zirgüleli Hicaz maqams	STAD	
6	1. block	Nikriz maqam	Instruction/Q&A	
	2. block	Hearing-reading-writing-application in maqamic structures	STAD	
7	1. block	Hearing-reading-writing-application in maqamic structures	Instruction/Q&A	
	2. block	Four-flat major tonality	STAD	
8	1. block	Four-flat minor tonality and Ornaments	Instruction/Q&A	
	2. block	Overall evaluation	Instruction/Q&A	

The conduct of the experimental application

All the scheduled lessons were taught in the experimental application process. The lessons of the experimental group were taught using the STAD technique due to its availability for the effective use of time. The STAD technique, which also allows for the use of conventional teaching methods at the stage of lecturing, is considered available for benefiting both from the impact of the conventional teaching methods such as instruction, and from smooth transition to cooperative works after starting with the expository teaching that the students are familiar with. These advantages were influential on the choice of the STAD technique. The implementation of the STAD technique consisted of five stages below:

1. '*Presentation'*, the delivery of the content of learning by the teacher through instruction and discussion as a first step in the classroom,
2. '*Teams'* of four formed heterogeneously in consideration of the students' characteristics such as academic achievement and gender,
3. '*Individual exams*' taken by the students in short intervals or at the end of each work in addition to group works in cooperative activities,
4. '*Individual progress scores*', to determine whether the student showed better success compared to the previous test scores,
5. '*Team reward*', awarded to the team members as per the pre-determined criteria in order to motivate the students in the team.

'Discussion' technique was used in two lessons, as well, along with the 'instruction' and 'Q&A' techniques in the context of expository teaching approach in the lessons done with the control group. Throughout the research period, no group work that required cooperation with the control group was performed, and the control group was provided with no information in order to prevent the creation of a competitive environment with the experimental group. The traditional seating order of the class, which was peculiar to common lessons, remained the same, and no change was made to the place

during the study period. The basic differences that separated the lessons done in the experimental and control groups are presented in Table 6.

Table 6. The Basic Differences of the Lessons Done with the Experimental and Control Groups

Control group	Experimental group
Students act individually	Students act with the group
Presentation of the subject through expository methods	Delivering hand papers in addition to instruction through exposition
No intervention in the student's individual learning	Teacher steers group works
Students study individually	Students work in interaction with the members of the group which they belong
Examination only between and at the end of the semesters	Small quizzes or other measurement applications upon the completion of each topic
No shared distribution of tasks, and individual responsibility of students from the works as a whole	The tasks of the members are clearly defined in group works and task sharing is performed
Individual reward	Individual or group awarding according to the contribution of the students to the group

Data Collection Tools

Research data is collected by means of 'Music Theory Test', 'Musical Writing (Dictation) Test', 'MET Lesson Anxiety Scale', and 'State-Trait Anxiety Inventory'. The characteristics of the study group were identified by using 'Personal Information Form'. Data gathering tools are explained below:

Personal Information Form: Data on the gender of the students, the type of school they graduated and their exercise habits on MET lesson were collected by this form developed by the researchers.

Music Theory Test: Developed by the researchers, this test consists of 48 items covering the subjects of interval, chord, rhythm, meter, tonality, and maqam in the program of MET-IV course. For the content validity of the test, the opinions of four academics* working in the musical ear training field of the music education departments of different universities were taken. Upon corrections in some questions in the light of expert opinions, the test was applied to a total of 185 students who were attending the 2nd, 3rd and 4th classes of the Music Teacher Training Undergraduate Programs of four universities for reliability procedures. The data obtained from 163 students who completed the test were analysed. Iteman 3.50 program was used in the analysis of the data. As a result of the reliability procedures of the test, KR-20 reliability coefficient value was found to be 0.89, mean difficulty index was found to be 0.47, and mean distinctiveness value was found to be 0.52. Since the reliability of the tests prepared for use in group comparisons is expected to be 0.60-0.80 (Tavşancıl, 2006), it can be said that the Music Theory Test developed is reliable.

Musical Writing (Dictation) Test: The test is developed by the researchers, and its content validity is ensured by receiving the opinions of four academics employed in different universities. There are 61 items in the test. The test consists of three basic dimensions that aim to measure the skills of perceiving, converting into musical notation, and analysing harmonic, melodic, and rhythmic structures. There are questions that aim at measuring: recognising/analysing and writing intervals and chords in *the first dimension*; writing rhythmical phrases in simple, compound, and irregular meters in *the second dimension*; and in *the third dimension*, they are aimed at recognising maqamic and tonal scales, and identifying, writing, and creating maqamic and tonal tunes in different meters. Each question is based on the items of the 'Music Theory Test'. The mean scores obtained by the application of the test to the students were compared with their mean success scores in MET-I, II, III lessons. The capacity of the prepared test to measure students' achievement in the MET lesson was

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determined by this way. The concurrent validity coefficient between the mean score of MET-I, II, III lessons and the mean scores of the developed test was found to be r=,71.

MET Lesson Anxiety Scale: The draft of this scale, which is developed by the researchers, was applied to 272 students attending the 2nd, 3rd and 4th classes of music teacher training bachelor programs of five universities. A four-dimension scale of 28 items was obtained by the analysis of the gathered data. There are 5 positive expressions in the scale along with the negative expressions. The respondent student is asked to choose the most suitable option for themselves from five-item choices. The highest anxiety score that can be obtained from the scale is 140, and the lowest score is 28. A high score indicates that the anxiety is high towards the MET lesson, while a low score means anxiety is also low. The construct validity of the scale was tested by factor analysis. The adequacy of data set for factor analysis was assessed by the Kaiser–Meyer–Olkin (KMO) Measure of Sample Adequacy, and Bartlett's Test of Sphericity. The Kaiser-Meyer-Olkin (KMO) compliance measurement value was found to be 0,92. Bartlett's Test of Sphericity value was significant at the level of 0,001 (X^2_{378}=3415,93). According to the results of the factor analysis performed by using basic components analysis and orthogonal rotation, there are 4 factors with eigenvalues greater than 1 on the scale. These four factors account for 56,19% of the total variance. The total variance explained by each factor is 19,14; 13,58; 12,48 and 11,00. According to the initial eigenvalues, the fact that the eigenvalue (9,98) of the first factor is too high from the eigenvalue (2,50) of the second factor indicates that the scale has a general factor as a whole. According to the item analysis results based on item scale correlation, the correlation values ranged from r=,37 to r=,75 and found to be significant at the level of p<,01. The correlation values showed that the characteristic to be measured by the overall scale were the same with the characteristic to be measured with each item, showing that all the items had the quality to be included in the scale. The whole *t* value, which was obtained as a result of the analysis made by the comparison of the responses to each item by the participants who were in the bottom-top 27% (n=65) slice, was found to be significant at the level of p<,01. This result shows that all items have the quality to determine whether they have, or not, the quality to measure the characteristic intended by that item. The Cronbach Alpha internal consistency coefficients for each dimension of the scale and for the test as a whole were: α=0,90 for the 1st factor; α=0,85 for the 2nd factor; α=0,85 for the 3rd factor; α=0,73 for the 4th factor, and α=0,93 for the overall scale.

State-Trait Anxiety Inventory: The Inventory 'State Anxiety Subscale' was developed by Spielberger et al. in 1970, and Turkish adaptation and standardization were done by Öner and Le Compte (1985). In adaptation studies, the coefficient of invariance calculated by the Pearson product-moment correlation coefficient was found to vary between .26 and .68 according to the test-retest test. The KR-20 reliability coefficient was between .94 and .96. The scale, which has Likert type 20 items, requires the individual to describe how he or she feels at a certain time, under certain conditions, and about a particular situation, to respond by taking into account their feelings about the situation they are in. The emotions or behaviours expressed in the scale items are responded according to the severity of the above-mentioned experiences by marking one of the options of never, some, very, and completely. The total score obtained from the scale varies between 20 and 80. The higher the score, the higher the level of anxiety (Öner and Le Compte, 1985). The scale was used by the researchers upon prior permission from N. Öner.

Data Analysis

The data were analysed using the SPSS software. Shapiro-Wilk (S-W, N<30) test values and skewness-kurtosis values of each data group were calculated to determine the normal distribution characteristics of the data. As a result of the S-W test, it was determined that all score types except the Musical Writing (Dictation) pre-test scores of the experimental group showed normal distribution and the skewness-kurtosis coefficients were within ±1,5. It is observed in the literature that acceptable skewness-kurtosis values for normality can be between ±1 and ±3. In this study, the ±1,5 approach to normality distribution (Tabachnick and Fidell, 2007) is taken as a basis. 'Independent samples *t*-test' and 'dependent samples *t*-test' from parametric tests were used to compare pre-test and post-test scores of experimental and control groups. The level of significance was set to p<,05. The effect size

was examined in cases where the difference between the groups appeared significant. The widely preferred Cohen's *d* formula is used in the calculation of the effect size. Cohen's *d* value was interpreted as .20=small, .50=medium, and .80=large (Cohen, 1988).

RESULTS

The Effect of Cooperative Learning Method on Lesson Anxiety

Both the inter-group and intra-group lesson anxiety scores were compared in order to determine the effect of Cooperative Learning Method on general anxiety towards the MET lesson.

Table 7. The Results of the Dependent Samples t-test Belonging to the Pre-test and Post-test Scores of 'MET Lesson Anxiety Scale'

Groups	Application	N	$\bar{X}$	SD	t	df
Experimental	Pre-test	19	83,42	21,28	6,05*	18
	Post-test	19	56,95	17,42		
Control	Pre-test	18	90,33	20,66	4,62*	17
	Post-test	18	70,06	14,11		

*p<,05

As seen from Table 7, there is a significant difference ($t_{(18)}$=6,05, p<,05) between the pre-test ($\bar{X}$=83,42) and post-test ($\bar{X}$=56,95) mean scores of the experimental group's 'MET Lesson Anxiety Scale'. Similarly, there was a significant difference ($t_{(17)}$=4,62, p<,05) between the pre-test ($\bar{X}$=90,33) and post-test ($\bar{X}$=70,06) mean scores of the control group. It can be argued according to these findings that the two applied teaching-learning approaches are effective in moderating students' anxiety towards the MET lesson.

Table 8. The Results of the Independent Samples t-test Belonging to the Pre-test and Post-test Scores of 'MET Lesson Anxiety Scale'

Application	Groups	N	$\bar{X}$	SD	t	df	Cohen's d
Pre-test	Experimental	19	83,42	21,28	-1,00	35	---
	Control	18	90,33	20,66			
Post-test	Experimental	19	56,95	17,42	-2,51*	35	-.83
	Control	18	70,06	14,11			

*p<,05

As seen from Table 8, there is no statistically significant difference ($t_{(35)}$=-1,00, p>,05) between the experimental group ($\bar{X}$=83,42) and the control group ($\bar{X}$=90,33) in terms of 'MET Lesson Anxiety Scale' pre-test mean scores. In the post-test, a significant difference ($t_{(35)}$=-2,51, p<,05) was found between the mean scores of the experimental group ($\bar{X}$=56,95) and control group ($\bar{X}$=70,06), and the effect size was also found to be large (d=-.83>.80). Although the mean of anxiety scores for both groups declined, the difference is in favour of the experimental group in which the Cooperative Learning Method is centered and the fall in anxiety scores is greater.

The Effect of Cooperative Learning Method on Exam Anxiety/State Anxiety

Both the inter-group and intra-group state anxiety scores were compared in order to determine the effect of Cooperative Learning Method on state anxiety towards the MET exam.

Table 9. Dependent Samples t-test Results Belonging to the Pre-test and Post-test Scores of 'Music Theory Exam State Anxiety Scale'

Groups	Application	N	$\bar{X}$	SD	t	df
Experimental	Pre-test	19	37,11	9,03	0,22	18
	Post-test	19	36,63	10,72		
Control	Pre-test	18	48,33	11,10	2,61*	17
	Post-test	18	42,67	10,78		

*p<,05

According to Table 9, there is no significant difference ($t_{(18)}$=0,22, p>,05) between the mean scores of the experimental group's 'Music Theory Exam State Anxiety Scale' pre-test ($\bar{X}$=37,11) and post-test ($\bar{X}$=36,63). On the contrary, a significant difference ($t_{(17)}$=2,61, p<,05) was found between the control group's pre-test ($\bar{X}$=48,33) and post-test ($\bar{X}$=42,67) mean scores. The finding at hand shows that the Music Theory exam state anxiety scores of the students in the control group, for whom the expository teaching approach was centered, declined significantly to make a difference.

Table 10. Dependent Samples t-test Results Belonging to the Pre-test and Post-test Scores of 'Musical Writing (Dictation) Exam State Anxiety Scale'

Groups	Application	N	$\bar{X}$	SD	t	df
Experimental	Pre-test	19	43,52	14,97	0,00	18
	Post-test	19	43,52	14,29		
Control	Pre-test	18	50,44	12,43	-0,69	17
	Post-test	18	51,72	15,18		

As seen from Table 10, the mean scores of the experimental group's 'Musical Writing (Dictation) Exam State Anxiety Scale' pre-test ($\bar{X}$=43,52) and post-test ($\bar{X}$=43,52) did not change and there is no difference ($t_{(18)}$=0,00, p>,05) between the means of two measurements. There is no significant difference ($t_{(17)}$=-0,69, p>,05) between the pre-test ($\bar{X}$=50,44) and post-test ($\bar{X}$=51,72) mean scores of the control group and there is also a small increase in their post-test mean. These findings show, at the end of the study that there is no decline in the state anxiety of the students in both groups towards Musical Writing (Dictation) exam.

Table 11. Independent Samples t-test Results Belonging to the Pre-test and Post-test Scores of Both Exams related State Anxiety

Statae anxiety	Application	Groups	N	$\bar{X}$	SD	T	df	Cohen's d
Music theory exam anxiety	Pre-test	Experimental	19	37,10	9,03	-3,36*	35	-1.11
		Control	18	48,33	11,10			
	Post-test	Experimental	19	36,63	10,71	-1,70	35	---
		Control	18	42,66	10,78			
Musical writing (Dictation) exam anxiety	Pre-test	Experimental	19	43,52	14,97	1,52	35	---
		Control	18	50,44	12,43			
	Post-test	Experimental	19	43,52	14,29	1,69	35	---
		Control	18	51,72	15,18			

*p<,05

In Table 11, it is seen that there is a significant difference ($t_{(35)}$=-3,36, p<,05) in terms of state anxiety towards Music Theory pre-test mean scores between the experimental group ($\bar{X}$=37,10) and the control group ($\bar{X}$=48,33), and that the effect size is large (d=-1.11>.80). This result indicates that the control group had a higher level of exam anxiety than the experimental group before the study started. No significant difference ($t_{(35)}$=-1,70, p>,05) was found between the experimental group ($\bar{X}$=36,63) and control group ($\bar{X}$=42,66) in terms of state anxiety post-test mean scores for the same exam; the

significant difference between the two groups was eliminated as a result of the decrease in the control group scores. Based on the findings at hand, it can be said that teaching through expository methods is more effective in reducing state anxiety towards the Music Theory exam.

According to the same table, there is no significant difference ($t_{(35)}$=1,52, p>,05) in the state anxiety pre-test scores for the Musical Writing (Dictation) exam between the experimental group ($\bar{X}$=43,52) and the control group ($\bar{X}$=50,44). No significant difference ($t_{(35)}$=1,69, p>,05) was found in the post-test mean scores for the same exam between the experimental group ($\bar{X}$=43,52) and control group ($\bar{X}$=51,72). Neither of the two methods applied in the classes were effective in reducing state anxiety towards Musical Writing (Dictation) exam.

The Effect of Cooperative Learning Method on Achievement

Both inter-group and intra-group achievement scores were compared in order to determine the effect of the Cooperative Learning Method on achievement in MET lesson.

Table 12. Dependent Samples t-test Results Belonging to the Pre-test and Post-test Scores of 'Music Theory Test'

Groups	Application	N	$\bar{X}$	SD	t	df
Experimental	Pre-test	19	33,11	5,88	-8,72*	18
	Post-test	19	39,95	5,20		
Control	Pre-test	18	30,94	5,64	-6,51*	17
	Post-test	18	38,17	7,10		

*p<,05

As it is seen from Table 12, there is a significant difference ($t_{(18)}$=-8,72, p<,05) between the 'Music Theory Test' pre-test ($\bar{X}$=33,11) and post-test ($\bar{X}$=39,95) mean scores of the experimental group. Similarly, there is a significant difference ($t_{(17)}$=-6,51, p<,05) between the pre-test ($\bar{X}$=30,94) and post-test ($\bar{X}$=38,17) mean scores of the control group. According to these findings, it can be argued that the two learning-teaching approaches are effective in improving students' Music Theory achievement.

Table 13. Dependent Samples t-test Results Belonging to the Pre-test and Post-test Scores of 'Musical Writing (Dictation) Test'

Groups	Application	N	$\bar{X}$	SD	t	df
Experimental	Pre-test	19	27,00	10,89	-4,50*	18
	Post-test	19	33,57	8,87		
Control	Pre-test	18	26,05	11,52	-1,80	17
	Post-test	18	28,61	12,07		

*p<,05

According to Table 13, there seems to be a significant difference ($t_{(18)}$=-4,50, p<,05) between the mean scores of the experimental group's 'Musical Writing (Dictation) Test' pre-test ($\bar{X}$=27,00) and post-test ($\bar{X}$=33,57). However, there is no significant difference between the pre-test ($\bar{X}$=26,05) and post-test ($\bar{X}$=28,61) mean scores of the control group ($t_{(17)}$=-1,80, p>,05). Findings suggest that Musical Writing (Dictation) scores of the students in both groups are improved as a result of the study; however, it shows that the scores of the experimental group increased in a statistically significant manner. In addition, Musical Writing (Dictation) exam mean scores of both groups are lower than the means of the Music Theory exam as well.

Table 14. Independent Samples t-test Results Belonging to the Pre-test and Post-test Scores of Both Tests

MET Test	Application	Groups	N	$\bar{X}$	SD	t	df
Music theory	Pre-test	Experimental	19	33,11	5,88	1,14	35
		Control	18	30,94	5,64		
	Post-test	Experimental	19	39,95	5,20	0,87	35
		Control	18	38,17	7,11		
Musical writing (Dictation)	Pre-test	Experimental	19	27,00	10,89	0,25	35
		Control	18	26,05	11,52		
	Post-test	Experimental	19	33,57	8,87	1,43	35
		Control	18	28,61	12,07		

According to Table 14, there is no significant difference ($t_{(35)}$=1,14, p>,05) between the experimental group ($\bar{X}$=33,11) and the control group ($\bar{X}$=30,94) in terms of Music Theory pre-test achievement mean scores, and knowledge levels have been close to each other prior to the beginning of the study. There is also no significant difference ($t_{(35)}$=0,87, p>,05) between the post-test achievement mean scores in the experimental group ($\bar{X}$=39,95) and control group ($\bar{X}$=38,17). Although there was an increase in the achievement scores of Music Theory in both groups, the difference is not statistically significant.

As it is seen from the same table, there was no significant difference ($t_{(35)}$=0,25, p>,05) between the experimental group ($\bar{X}$=27,00) and the control group ($\bar{X}$=26,05) with regard to the Musical Writing (Dictation) pre-test achievement mean scores, and dictating skills have been close to each other before the beginning of the study. There is also no significant difference ($t_{(35)}$=1,43, p>,05) between the post-test achievement means for the experiment ($\bar{X}$=33,57) and control group ($\bar{X}$=28,61). Despite the improvement in Musical Writing (Dictation) achievement scores in both groups, the improvement is not statistically significant.

CONCLUSION and DISCUSSION

Based on the results related to *MET lesson anxiety*, it can be argued that Cooperative Learning Method have proved to be more effective in moderating general anxiety towards the lesson compared to the expository methods. The main reason for the effectiveness of the method is considered to be the 'classroom environment' provided for the student. Cooperative classroom allow for more opportunities for the student to improve his/her relationships with the environment and to develop social behaviours, and thus, increase attendance to lesson (Cornacchio, 2008; Kassner, 2002). Activities are mostly student-centered in these classes, as the learning process is more important than the learning outcomes (Lavasani and Khandan, 2011). This environment, on the one hand, supports the student to actively take responsibility, while on the other hand, it is encouraging even those with weak social relationships to communicate with other learners and to aim at a common goal together in "positive interdependence" (Johnson et al. 1991, p.17-18). We argue that the 'interdependency' in the classroom provided by the Cooperative Learning Method is effective in reducing the lesson anxiety of students'.

Another reason may be the contribution that cooperative learning makes to the improvement of 'self-esteem' and 'self-confidence' feelings. Self-esteem and self-confidence are important factors effecting learners' classroom experiences, motivation for lessons, and course achievement. According to the literature, it is argued that students with low self-confidence are more anxious or anxiety generates lack of self-confidence (Alkan, 2011; Başoğlu, 2007; Lawal, Idemudia and Adewale, 2017). Some students who participated in ear training lesson may also experience lack of self-esteem: Pratt and Henson (1987), for example, indicate that most learners do not care about musical ear training because of lack of confidence in their competence to conduct studies on ear training, and as a consequence, they feel like they are being threatened by such studies. Vygotsky (1978) and Bandura (1986) emphasize that the emotional and cognitive support to the learners by more knowledgeable people around them is influential in increasing their self-esteem and moderating their anxiety (as cited in

Alkan, 2011, p.95-96). Moreover, Rifkin and Urista indicate that students work at their own pace in MET classes in which game-like interaction based methods are pursued, that they learn "from each other's ideas and mistakes in a stimulating, cooperative atmosphere that builds confidence" (2006, p.76). It is considered that the cooperative learning activities in the experimental group might have provided the student with the above-mentioned support and solidarity, and enabled the student to demonstrate what they can do in the direction of their capacity, and this might have consequently been effective in moderating lesson anxiety by making a positive contribution to self-esteem and self-confidence in the research process.

Based on the results related to *MET exam anxiety/state anxiety*, it is concluded that Cooperative Learning Method is not effective in reducing state anxiety. Many reasons may underlie this fact. That there was no fall in the state anxiety of the experiment group, which worked through Cooperative Learning Method, despite the decline in their general lesson anxiety can be attributed to their act with the group in the lesson and obligation to exert individual performance in the exam. The withdrawal of the social support and solidarity from the environment in exam, which was provided during the lesson, might have made the students feel anxious. The decline in the Music Theory test anxiety of the students in the control group, whose assessment and evaluation procedures were based on individual performance, may underpin this conclusion: The control group students, who had to cope with exam stress individually during and at the end of the process, might have developed their own individual coping methods against anxiety. However, there was not a significant decline Musical Writing (Dictation) test to make a difference in the control group; in contrast, there was even a minor increase -though statistically insignificant- in the mean scores. The dictation exam anxiety scores of the experimental group also did not decrease, and the means remained the same. That there was no decline in Musical Writing (Dictation) exam anxiety for both groups can be attributed to the considerable difference in the procedures demanded by the two exams: While the students answer the questions in the Music Theory test in an order and time they wish, each question in Musical Writing (Dictation) exam is responded in a certain time and through reactions consisting of complex procedures (perception, memorisation, use of knowledge, identification, analyse, transformation and writing) to be given instantly. There is scarcely any chance of retrospective compensation by the end of the time given for response. The procedural difference in the Musical Writing (Dictation) exam that required mental flexibility and time dependence might have caused high anxiety towards the exam, since time pressure in examinations is one of the important factors that generates exam anxiety (Bekdemir, 2007; Birenbaum and Pinku, 1997).

Another reason may be the students' lack of study. Regular study contributes to the consolidation of knowledge and skills and the development of cognitive competences. Hence, the development of aural skills can be achieved not only by the activities performed in the lesson, but also by regular practices out of the classroom. However, more than one third of the students in our research group do not have regular working habits: For the MET-IV lesson, they either 'never study' (%10,81) or 'study just before the exam' (%27,03) (see Table 4). Some of the research on the sources of exam anxiety emphasizes 'the absence of study skills' (Bozanoğlu, 2004; Culler and Holahan, 1980). In this context, being not sure about what they learned as a result of the absence of regular study habit and the inadequacy of knowledge and skills level may have increased exam anxiety.

Depending on the results related to *MET lesson achievement*, it is concluded that the Cooperative Learning Method does not have a significant effect on course achievement or it has an effect similar to that of expository methods. There were improvements in the achievement scores of the both groups, which was an expected result. But there is no statistically significant difference between the experiment and control groups. Findings related to state anxiety showed that the Cooperative Learning Method was ineffective in moderating either Music Theory or Musical Writing (Dictation) exam anxiety, and that expository method was ineffective in moderating Musical Writing (Dictation) exam anxiety. We know that exam anxiety is an obstacle before achievement in ear training (Karpinski, 2000b; Mishra, 1998; Wunsch, 1973). Musical Writing (Dictation) is a complicated activity and it involves more ability, attention, effort, and skills compared to the obtaining and use of Music Theory knowledge. In exams, while the Music Theory dimension is closely related to the use of long-term

memory, the Musical Writing (Dictation) dimension involves the use of complex procedural steps in coordination, such as attention, perception, memorisation, analysis, comprehension, and transformation. This opinion is supported by the fact that the mean scores of the students in Musical Writing (Dictation) exam are lower than the mean of Music Theory. Considering that the bio-physiological changes caused by high anxiety during examination inhibit the formation of protein chains necessary for learning in the brain and disturb mental activities such as reasoning and thinking (Kaya and Varol, 2004; Özer, 2005), it is thought that the anxiety that arise during exam negatively effects the vital procedural steps of the musical hearing process. In this research, we are dwelling on the possibility that the likely difference in achievement, which could arise from cooperative learning at the end of the experiment, might not have realised due to exam anxiety.

The study was conducted by separating a class into two. Despite the fact that both groups are informed about the principles of study and learning content, the control group was not given any information about the details of the study with the experimental group and about the different teaching method. However, the activities conducted with the experimental group may have evoked curiosity in the control group. The members of the both groups may have exchanged views about the research in other common classes, which may have let the control group enter into competition with the experimental group. This likely sharing is explained as 'Hawthorne Effect*' in social psychology and can be faced in experimental studies in the field of education. The selection of the study group from the same institution to ensure the equivalence of the control and experimental groups should be taken into account as a reason that might have led to the appearance of the mentioned effect during the research period.

In conclusion, it can be argued with regard to exam anxiety/state anxiety and course achievement that the Cooperative Learning Method applied in the MET lessons has a similar effect with the Expository Teaching Approach; and in contrast, it is effective in moderating general anxiety developed by the students against the lesson. The following suggestions are presented relying on these results:

1. We suggest more inclusion of Cooperative Learning Method in lessons, since the cooperative classroom environment in the MET lessons can moderate lesson anxiety.
2. We know that measure of emotional (affective) characteristics and processes are more difficult than the measure of the cognitive and psycho-motor characteristics (Kalyoncu, 2002; Nartgün, 2008; Turgut, 1984). We suggest the determination of the anxiety experienced in the MET lessons and its underlying reasons through scales.
3. We suggest that the students keep a MET diary in which they note the states and experiences that make them feel anxious prior to and after each lesson throughout the semester. Facing the tangible states in these diaries and seeking solutions by sharing these states with friends or teachers is considered to help them in coping with anxiety.
4. We suggest the preference of other methods that are available for paired assessment and/or group assessment by, from time to time, getting out of the objective methods that are used for assessment in MET lessons.
5. To overcome the anxiety in MET lessons and exams, it is proposed to distance oneself from clichés in teaching and to develop creative approaches -as demonstrated by Hannon's (2015) numerous examples-, which provide diverse support to students both inside and outside the classroom and help to realize their full potential.

* Hawthorne effect "is also encountered in the situations in which there is no difference between the control and experimental groups. This attracts attention rather particularly when the researcher gives pre-test to the experimental and control groups prior to the experimental study. This test may serve as a hint for the students to sense the aim of the research. The students in the control group my initiate some improving activities to score better in the second test. For example, the students may learn from their friends in the experimental group about the studies they are performing, do the same things, and learn them. It can be observed at the end of the experience that there is no difference between the achievement of the control and experimental groups, although the experiment has been effective in reality" (Kaptan, 1998, p.157).

6. Stage anxiety is frequently addressed in musicology literature; however, there is not a considerable tendency toward researching the anxiety experienced in musical ear training or in other performance-focused courses. For this reason, we suggest the conduct of musical ear training and anxiety-related in-depth research by considering different variables.

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