

## Examining the relationship between the attitudes towards harmony courses and piano playing habits

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### Abstract

The primary problem of this study is to determine whether there is a significant relationship between the attitudes towards harmony courses and the piano playing habits of the students. In this study, a correlational survey model was employed. The population of this study consisted of students who are studying at music departments in Turkey during the academic year of 2019–2020 and the sample included 248 students from nine different universities and four different departments related to music (Music Education, Performance, Musicology and Turkish Music). For data collection purposes, the scale of attitudes towards harmony courses developed, the scale of piano playing habits developed and a questionnaire to determine the variables affecting students' habits and attitudes developed by the researcher were used. There is no significant difference found between the students' departments and their piano playing habits. The study revealed that students' piano playing habits varied according to their personal instruments.

**Keywords:** Attitudes, harmony education, music education, music theory, piano education.

## 1. Introduction

Harmony means a consistent, orderly, or pleasing arrangement of parts; congruity. In the field of music, it is usually defined as the combination of simultaneously sounded musical notes to produce a pleasing effect or science of correspondence (Calisir, 2012, p. 29; Karoly, 2005, p. 66). It is the technical field of music science related to the structures and connections of the chords (Manav and Nemutlu, 2011, p. 231).

When the words harmony is used in music, the first that comes to mind is the term accompaniment. In fact, the chords in an accompaniment are not the only things that constitute the harmony. Harmony can even be felt in the counterpoint writing, basic diaphonic music and also monophonic writing (Manav and Nemutlu, 2011, p. 231). Actually, harmony and tune show strong parallelism with each other. While the tune is shaped according to the harmonic structure, it also guides the harmonic structure (Celebioglu, 2008, p. 86).

In music, harmonic structure is thought to be vertical. Melodic or counterpoint structure is regarded as the harmony of the sounds that are consecutive; however, harmonic structure gains meaning when the sound resonate vertically and simultaneously in partitur.

To illustrate, in a polyphonic choir writing, there exists four different parts or sound groups, such as as soprano, alto, tenor and bass. Soprano and tenor are the most melodic parts. The main tune is generally in soprano part. While alto is the least distinct part when compared to others, the bass part is strong and relatively independent and less melodic. These four parts are relatively independent from each other; however, they act together to constitute certain chords (Kostka and Payne, 1999, p. 11).

Several harmony books mention sound groups that are called chords, their movements, the rules that are to be followed while connecting these sounds, clef that are used for soprano, alto, tenor and bass and other parts (Korsakof, 1996, p. 1).

For an individual who wants to learn how to compose, it is of great importance to learn harmony and to be proficient in playing the piano because the piano is an instrument that enables and facilitates to learn playing and hearing polyphony. It is possible to reduce an orchestra's musical score to a piano. Therefore, the piano has an essential position in composition education.

In music education departments of education faculties, harmony education is delivered via a course called Harmony, Counterpoint and Accompaniment. The objective of Harmony, Counterpoint and Accompaniment courses is to teach a prospective music teacher how to accompany basic tunes and song within global harmony rules (Cengiz & Lehimler 2018, p. 855).

The piano makes a sound when a key on the piano is pressed and it causes a small hammer inside the piano to hit a string or strings. Before the piano was invented, the harpsichords were the widely used keyboard instruments. It is known that the early examples of the piano were seen at the beginning of the 18th century (Gultek, 2007; Muharremova, 2010).

The piano is a base instrument which has more than seven octaves and enables to gather the range of all the other instruments. It is a functional instrument that is used stand alone or in chamber concerts, choirs and orchestras (Feridunoglu, 2010, p. 199). The piano is even able to play any kind of music, including tampered music. With these features, the piano is regarded as a universal instrument. The piano helps to develop virtuosity and wins a sit in concert halls with all its features mentioned above (Muharremova, 2010, p. 143).

Piano education and instruction are one of the most important elements of music education. It is the most suitable instrument to start basic music education owing to the fact that the piano conveys the sounds to the students due to its wide keyboard system (Sarıkaya, 2018, p. 11). Beginning to learn to play the piano at early ages enables an individual to develop his musical abilities sense of rhythm. Piano education is regarded to be beneficial to learn the tunes and melodies, polyphony and to

develop musical memory (Sarikaya, 2018, p. 10). Piano education is a process that improves the musical ear, solfège skills and polyphonic sensations. In addition, piano education is regarded to boost both cognitive and behavioural development of a student, and therefore it seen as a basis for a good start in music education (Atalay, 2019, p. 14).

According to music educators, piano education is to be supported with the knowledge of music history and harmony knowledge. During piano education, as well as students' desires and motivations, the educator has to adopt a methodology that also gives importance to knowing the students and their abilities (Coskuner, 2015, pp. 11–12).

For students to internalise what they learn during music education, their music theory knowledge and piano skills have to be at a certain level. It can be observed that due to harmony field, students can gain the ability to convert their musical theory knowledge into application in piano playing skills (Babacan, 2009).

Among all areas of music education and especially in music education departments, piano education holds a significant position. One of the dimensions in this field that requires most creativity is undoubtedly the education related to composition and accompaniment skills (Tunc and Albuz, 2010, p. 48). In order to be able to accompany a song with the same tune and to understand polyphony, piano accompaniment is by far the easiest method. Music teachers and musicians have to have a certain level of harmony knowledge in order to examine the pieces of music that are played with the piano (Bilgin and Saktanli, 2007). It can be said that a music teacher gains the knowledge that is necessary for piano accompaniment from the harmony field. The music teachers are known to use their harmony knowledge in accompaniment related issues during their profession (Altungul, 2019, p. 8).

In the literature, there exist several studies focusing on the relationship between piano, harmony and accompaniment courses in music education and teaching (Cevik, Taviloglu & Canbey, 2010; Odabas, 2018; Onder, 2019).

Attitude can be described as a positive or a negative level of thinking or feeling towards a psychological object. (Thurstone, 1967; Tavsancil, 2002). Attitudes cannot be observed directly; however, they can be understood from people's behaviours (Ozguven, 1999, p. 353).

In the field of education, students' gaining positive attitudes towards a certain issue is considered to be very important for their academic achievements, taking responsibility and being successful in school and classroom in their social interactions (Gulek, 1994).

The term 'attitude' which is one of the primary subjects of social psychology is generally referred as a tendency of an individual that includes the thoughts and feelings about a psychological object (Kagiticibasi and Cemalcilar, 2014, p. 130; Smith, 1968). When an individual's educational background is carefully examined, attitudes can be seen as one of the most important factors in education process and as an important phenomenon for social psychology.

Education is an important tool to change attitudes. Examining students' attitudes towards different issue during their education can be of great benefit for teachers to increase the efficiency of their instruction. Therefore, the studies focusing on students' attitudes towards certain courses of subjects have become more and more important in current scientific studies (Duatepe and Cilesiz, 1999).

In the field of teacher education, it can be observed that there is adequate data related to teachers' attitudes towards their proficiency to conduct meta-analysis (Atalmis and Kose, 2018). There are also studies present about teachers' attitudes towards environmental problems (Sama, 2003), towards democracy (Saracaloglu, Evin & Varol, 2004) and towards constructivist approach (Evrekli, Inel, Balim & Kesercioglu, 2009).

In the literature related to music teacher education, the term attitude is handled similarly to other fields of education. The attitudes of prospective music teachers towards their proficiency were studied and analysed in various studies (Bulut, 2011; Saglam, 2008). Especially, the importance of

performance education in music teacher training is one of the subjects that is studied densely in this area (Ekici, 2012; Ozmentes and Ozmentes, 2009; Tufan & Gudek, 2008; Seker, 2014). In the field of music teacher education, the attitudes and behaviours of the students are accordingly of great importance for the literature and they are prominent research topics.

### **1.1. Problem**

The piano and harmony courses are related to each other, and therefore the attitudes and habits towards these two courses can be considered to be related as well. The problem of this study is whether there is a significant relationship between the attitudes towards harmony courses and piano playing habits of the students.

### **1.2. Objectives**

Based on the problem, this study aims to seek answers for the following research questions:

- Is there a significant relationship between the attitudes towards harmony courses and the piano playing habits of the students attending music departments of universities?
- Is there a significant difference between the attitudes towards harmony courses and the piano playing habits and other variables such as sex, department, university, type of the faculty, grade, instrument, having a piano at home, having a family member playing and instrument, musical background and attending polyphonic choirs in the past?

### **1.3. Limitations**

This study and the sample of this study are limited to music education departments of education faculties, music departments (performance and musicology) of fine arts faculties and music departments (musicology and Turkish music) conservatories.

## **2. Methodology**

This section includes the research design, population and sample, data collection tools and data analysis subtitles. Under these titles, what is the research model, groups as the population and sample, what are the tools used to collect data and validity and reliability information about them, what are the statistical techniques used for analysing the collected data are explained.

### **2.1. Research design**

In this study, the relationship between two variables (the attitudes towards harmony courses and piano playing habits) is examined. Thus, it can be said that this study is suitable for correlational survey model. Studies employing correlational survey model are the studies where the correlation between two variables is examined without applying any changes to the variables (Buyukozturk, Kilic Cakmak, Akgun, Karadeniz & Demirel, 2017; Karasar, 2017).

### **2.2. Population and sample**

The population of this study consisted of students who are studying at music departments in Turkey during the academic year of 2019–2020 and the sample included 248 students from nine different universities and four different departments related to music (Music Education, Performance, Musicology and Turkish Music).

**Table 1. The percentage and frequency of the students in the sample according to their sexes and universities**

University	Female		Male		Total	
	<i>F</i>	%	<i>f</i>	%	<i>f</i>	%
Kocaeli University	19	7.69	18	7.29	37	14.98
Marmara University	7	2.83	0	0.00	7	2.83
Van Yuzuncu Yil University	28	11.34	33	13.36	61	24.70
Balikesir University	7	2.83	7	2.83	14	5.67
Bolu Abant Izzet Baysal University	14	5.67	7	2.83	21	8.50
Sakarya University	16	6.48	25	10.12	41	16.60
Trabzon University	7	2.83	2	0.81	9	3.64
Inonu University	27	10.93	7	2.83	34	13.77
Ataturk University	12	4.86	11	4.45	23	9.31
<i>Total</i>	137	55.47	110	44.53	247	100.00

The sample consisted of students from Kocaeli University (14.98%) , Marmara University (2.83%), Van Yuzuncu Yil University (24.70%), Balikesir University (5.67%), Bolu Abant Izzet Baysal University (8.50%), Sakarya University (16.60%), Trabzon University (3.64%), Inonu University (13.77%) and Ataturk University (9.31%). 55.47% students in the sample are females while the rest 44.53% are male students.

### 2.3. Data collection instruments

In order to collect data for this study, the scale of attitudes towards harmony courses developed by Bagci (2020), the scale of piano playing habits developed by Bagci and Toy (2020) and a questionnaire to determine the variables affecting students habits and attitudes developed by the researcher were used.

The scale of attitudes towards harmony courses is five-point Likert type scale and consists of a single factor. The Cronbach's alpha reliability coefficient of the scale was found to be 0.966. The scale consisted of 34 questions in total, 25 of which are positive and 9 of which are negative. The scores in the scale are between 1 and 5. The single factor structure of the scale can account for the 47.708% of the total variance.

The scale for piano playing habits consists of 32 questions in total and it's five-point Likert scale. The scoring is between 1 and 5. The Cronbach's alpha reliability coefficient of the scale was found to be 0.940. The scale for piano playing habits has seven subscales. The seven subscales of the piano playing habits scale account for the 64.765% of the total variance. The Cronbach's alpha reliability coefficients of the sub-scales range between 0.662 and 0.883.

### 2.4. Data analysis

To analyse the data, the researchers utilised the Pearson product-moment correlation coefficient to determine the relationship between the attitudes towards harmony courses and the piano playing habits. In order to determine whether there is a significant difference between the attitudes towards harmony courses, piano playing habits and other variables, various discrepancy tests were used such as Mann-Whitney U test, One-way variance (ANOVA) analysis of variance and Kruskal-Wallis Test.

### 3. Findings

**Table 2. The percentage and frequency of the students in the sample according to their sexes and universities**

Scale	<i>n</i>	Min.	Max.	Ave.	S.S.
Attitudes Towards Harmony Courses	247	38.00	169.00	129.00	28.59
Piano Playing Habits	247	32.00	160.00	115.51	26.00
Piano Subscale 1: Instrument Technique	247	7.00	35.00	24.11	6.79
Piano Subscale 2: Preparation and Warm-up	247	7.00	35.00	23.45	6.66
Piano Subscale 3: Posture and Technique	247	5.00	25.00	19.38	4.51
Piano Subscale 4: Interpretation and Phrasing	247	4.00	20.00	15.66	3.53
Piano Subscale 5: Rhythmical Studies and Fingering	247	3.00	15.00	11.56	2.84
Piano Subscale 6: Post-performance Activity	247	3.00	15.00	10.33	3.18
Piano Subscale 7: Deciphering Technique	247	3.00	15.00	11.03	3.08

The two scales ‘Scale for Attitudes Towards Harmony Courses’ and ‘Scale for Piano Playing Habits’ were administered to 247 students in total. The average score from the Scale for Attitudes Towards Harmony Courses is 129. The highest score from Scale for Attitudes Towards Harmony Courses is 169 while the lowest score is 38. The average score from the Scale for Piano Playing Habits is found to be 115.51. The highest score taken from this scale is 160 and the lowest is 32.

**Table 3. The results of Pearson product-moment correlation coefficient test conducted for the scores from the scale of attitudes towards harmony courses and the scale of piano playing habits**

Scales	<i>n</i>	<i>r</i>	<i>p</i>
Attitudes Towards Harmony Courses - Piano Playing Habits	247	0.403	<0.001
Attitudes Towards Harmony Courses - Piano Subscale 1: Instrument Technique	247	0.345	<0.001
Attitudes Towards Harmony Courses - Piano Subscale 2: Preparation and Warm-up	247	0.321	<0.001
Attitudes Towards Harmony Courses - Piano Subscale 3: Posture and Technique	247	0.377	<0.001
Attitudes Towards Harmony Courses - Piano Subscale 4: Interpretation and Phrasing	247	0.452	<0.001
Attitudes Towards Harmony Courses - Piano Subscale 5: Rhythmical Studies and Fingering	247	0.385	<0.001
Attitudes Towards Harmony Courses - Piano Subscale 6: Post-performance Activity	247	0.216	<0.001
Attitudes Towards Harmony Courses - Piano Subscale 7: Deciphering Technique	247	0.302	<0.001

As a result of Pearson Product-Moment Correlation analysis of the score that the students got from the the Scale of Attitudes Towards Harmony Courses and the Scale of Piano Playing Habits, there is a significant relationship found between students’ attitudes towards harmony courses and their piano playing habits ( $r = 0.403$ ,  $p < 0.001$ ). There are positive relationships among all the subscales at a significance level of 0.001. For the correlation coefficient, it can be said that if it is less than 0.30, the relationship is weak; if it is between 0.30 and 0.70, the relationship is medium-level, and finally if it is more than 0.70, the relationship between the variables is strong (Buyukozturk Cokluk & Koklu, 2017, p. 87). When the relationship between the students’ attitudes towards harmony courses and the subscales of piano playing habits scale, the weakest correlation coefficient is found to be  $r = 0.216$  for the subscale Post-performance Activity and the strongest correlation was found to be  $r = 0.452$  for the subscale Interpretation and Phrasing.

**Table 4. The results of the independent group t-test for the attitudes towards harmony courses and the sexes of the students**

Scale	Sex	<i>n</i>	Ave.	S.S.	d.f.	<i>t</i>	<i>p</i>
Attitudes Towards Harmony Courses	Female	137	126.74	28.34	245	1.389	0.166
	Male	110	131.82	28.77			
Piano Playing Habits	Female	137	116.38	25.50	245	0.583	0.560
	Male	110	114.44	26.69			

There is no significant difference found in the independent group *T*-test analysis between the scores from the scale for attitudes towards harmony courses ( $t = 1.389, p > 0.05$ ) and the scale for piano playing habits ( $t = 0.583, p > 0.05$ ).

**Table 5. The results of Kruskal–Wallis test for the scores from the scales for attitudes towards harmony courses and piano playing habits and the departments of the students in the sample group**

Scale	Department	N	Rankings Average	d.f.	Chi Square	p	Post-hoc
Attitudes Towards Harmony Courses	Music Teaching (a)	144	122.47	3	9.373	0.025	<i>a &gt; d *</i> <i>b &gt; d **</i> <i>c &gt; d **</i>
	Musicology (b)	61	133.27				
	Performance (c)	36	128.28				
	Turkish Music (d)	6	40.75				
Piano Playing Habits	Music Teaching (a)	144	121.73	3	0.847	0.838	--
	Musicology (b)	61	131.10				
	Performance (c)	36	122.44				
	Turkish Music (d)	6	115.67				

\* $p < 0.05$ , \*\* $p < 0.01$ .

There is a significant difference found as a result of the Kruskal–Wallis test between the students' departments and their attitudes towards harmony courses. ( $\chi^2 = 9.373, p < 0.05$ ). The *post-hoc* analysis that was done for the students of music teaching and Turkish music departments revealed a result of ( $p < 0.05$ ) in favour of the students, ( $p < 0.01$ ) for the students from musicology department and ( $p < 0.01$ ) for the students from performance department.

There is no significant difference found for the sample group students in the Kruskal–Wallis Test that analysed the relationship between students' departments and their piano playing habits ( $\chi^2 = 0.847, p > 0.05$ ).

**Table 6. The results of the Kruskal–Wallis test for the attitudes towards harmony courses & piano playing habits and the universities of the students**

Scale	University	n	Rankings Average	d.f.	Chi Square	p
Attitudes Towards Harmony Courses	Kocaeli University	37	129.58	8	14.532	0.069
	Marmara University	7	112.50			
	Van Yuzuncu Yil University	61	129.32			
	Balikesir University	14	94.68			
	Bolu Abant Izzet Baysal University	21	144.69			
	Sakarya University	41	123.05			
	Trabzon University	9	99.00			
	Inonu University	34	97.75			
	Ataturk University	23	153.65			
	Kocaeli University	37	124.39			
Piano Playing Habits	Marmara University	7	158.57	8	8.156	0.418
	Van Yuzuncu Yil University	61	119.66			
	Balikesir University	14	110.68			
	Bolu Abant Izzet Baysal University	21	148.57			
	Sakarya University	41	133.62			
	Trabzon University	9	129.78			
	Inonu University	34	105.09			
	Ataturk University	23	118.57			

There is no significant difference found as a result of the Kruskal–Wallis Test for the relationship between the scores of the attitudes towards harmony courses and the students' universities ( $\chi^2 =$

14.532,  $p > 0.05$ ). Additionally, there is no significant difference found as a result of the Kruskal–Wallis Test for the relationship between the scores of the scale for piano playing habits and the students’ universities as well ( $\chi^2 = 8.156, p > 0.05$ ).

**Table 7. The results of the Kruskal–Wallis test for the attitudes towards harmony courses & piano playing habits and the grade levels of the students**

Scale	Grade	<i>n</i>	Rankings Average	d.f.	Chi Square	<i>p</i>
Attitudes Towards Harmony Courses	1st Grade	66	140.22	4	6.126	0.190
	2nd Grade	64	111.20			
	3rd Grade	56	116.70			
	4th Grade	54	126.79			
	5th Grade +	7	125.00			
Piano Playing Habits	1st Grade	66	140.22	4	5.491	0.241
	2nd Grade	64	111.20			
	3rd Grade	56	116.70			
	4th Grade	54	126.79			
	5th Grade +	7	125.00			

There is no significant difference found as a result of the Kruskal–Wallis Test for the relationship between the scores of the scale for attitudes towards harmony courses and the students’ grade levels ( $\chi^2 = 6.126, p > 0.05$ ). There is no significant difference found as a result of the Kruskal–Wallis Test for the relationship between the scores of the scale for piano playing habits and the students’ grade levels ( $\chi^2 = 5.491, p > 0.05$ ).

**Table 8. The results of ANOVA analysis for the attitudes towards harmony courses & piano playing habits and the faculties of the students**

Scale	Score	Totals of Squares	d.f.	Average Square	<i>F</i>	<i>p</i>
Attitudes Towards Harmony Courses	Intergroups	1,006.437	2	503.219	0.614	0.542
	Intragroup	200,014.559	244	819.732		
	Total	201,020.996	246			
Piano Playing Habits	Intergroups	515.992	2	257.996	0.380	0.684
	Intragroup	165,769.708	244	679.384		
	Total	166,285.700	246			

There is no significant difference found as a result of ANOVA analysis for the relationship between the scores of the scale for attitudes towards harmony courses and the students’ faculties ( $F = 0.614, p > 0.05$ ).

There is no significant difference found as a result of ANOVA analysis for the relationship between the scores of the scale for piano playing habits and the students’ faculties ( $F = 0.380, p > 0.05$ ).

**Table 9. The results of the independent group t-test for the attitudes towards harmony courses & piano playing habits and having a piano at home**

Scale	Having a Piano at Home	<i>n</i>	Ave.	S.S.	d.f.	<i>t</i>	<i>p</i>
Attitudes Towards Harmony Courses	Yes	102	129.13	28.52	245	0.057	0.955
	No	145	128.92	28.73			
Piano Playing Habits	Yes	102	118.29	26.01	245	1.412	0.159
	No	145	113.56	25.90			

It is seen in the figure above that the number of students having a piano at home is more than the ones that don’t have a piano. There is no significant difference found as a result of the independent group *T*-test between the scores from the scales of Attitudes Towards Harmony Courses ( $t = 0.057, p > 0.05$ ) & Piano Playing Habits ( $t = 1.412, p > 0.05$ ) and having a piano at home.

**Table 10. The results of the independent group *t*-test for the attitudes towards harmony courses & piano playing habits and having a family member playing an instrument**

Scale	Having a Family Member Playing and Instrument		<i>N</i>	Ave.	S.S.	d.f.	<i>t</i>	<i>p</i>
Attitudes Towards Harmony Courses	Yes		90	124.41	29.00	245	1.922	0.056
	No		157	131.64	28.10			
Piano Playing Habits	Yes		90	111.26	26.03	245	1.960	0.051
	No		157	117.96	25.75			

It is seen in the figure above that the number of students having a family member playing an instrument is more than the ones that do not have. There is no significant difference found as a result of the independent group *T*-test between the scores from the scales of Attitudes Towards Harmony Courses ( $t = 1.922, p > 0.05$ ) & Piano Playing Habits ( $t = 1.960, p = 0.05$ ) and having a family member playing a piano.

**Table 11. The results of the Kruskal–Wallis test for the attitudes towards harmony courses & piano playing habits and the duration of musical background**

Scale	Musical Background	<i>n</i>	Rankings Average	SD	Chi Square	<i>p</i>
Attitudes Towards Harmony Courses	1–5 years	92	119.95	3	1.611	0.657
	5–10 years	106	129.25			
	11–15 years	31	114.19			
	16 years +	18	130.67			
Piano Playing habits	1–5 years	92	119.41	3	1.328	0.723
	5–10 years	106	126.52			
	11–15 years	31	120.58			
	16 years +	18	138.53			

There is no significant difference found as a result of the Kruskal–Wallis Test for the relationship between the scores of the scale for attitudes towards harmony courses and the duration of musical background of the students ( $\chi^2 = 1.611, p > 0.05$ ).

There is no significant difference found as a result of the Kruskal–Wallis Test for the relationship between the scores of the scale for piano playing habits and the duration of musical background of the students ( $\chi^2 = 1.328, p > 0.05$ ).

**Table 12. The results of the independent group *t*-test for the attitudes towards harmony courses & piano playing habits and experience in a polyphonic choir**

Scale	Experience in a Polyphonic Choir		<i>n</i>	Ave.	S.S.	SD	<i>t</i>	<i>p</i>
Attitudes Towards Harmony Courses	Yes		126	128.21	28.04	245	0.447	0.655
	No		121	129.83	29.23			
Piano Playing Habits	Yes		126	118.00	26.17	245	1.538	0.125
	No		121	112.93	25.67			

There is no significant difference found as a result of the independent group *T*-test between the scores from the scales of Attitudes Towards Harmony Courses ( $t = 0.447, p > 0.05$ ) & Piano Playing Habits ( $t = 1.538, p > 0.05$ ) and having past experiences in a polyphonic choir.

**Table 13. The results of the Kruskal–Wallis test for the attitudes towards harmony courses & piano playing habits and the personal instruments of the students**

Scale	Instrument	n	Rankings Average	SD	Chi Square	p
Attitudes Towards Harmony Courses	Piano	34	134.00	7	16.199	0.023
	String Instruments	96	128.99			
	Wind Instruments	28	111.41			
	Guitar	28	150.46			
	Singing	9	64.61			
	Percussion Instrument	6	69.42			
	Electronic Instruments	3	130.17			
	Turkish Music Instruments	43	115.53			

There is a significant difference found as a result of the Kruskal–Wallis Test for the relationship between the scores of the scale for attitudes towards harmony courses and the students’ main instruments ( $\chi^2 = 16.199, p < 0.05$ ). However, there is no significance difference found in the *post-hoc* analysis.

**Table 13. The results of the Kruskal–Wallis test for the scores from the attitudes towards harmony courses scale and the scores from the subscales of piano playing habits scale**

Scale	Instrument	n	Rankings Average	d.f	Chi Square	p	Post-hoc
Piano Playing Habits	Piano (a)	34	163.35	7	18.826	0.009	
	String Instruments (b)	96	124.55				
	Wind Instruments (c)	28	128.27				
	Guitar (d)	28	108.41				
	Singing (e)	9	69.33				
	Percussion Instruments (f)	6	93.25				
	Electronic Instruments (g)	3	119.67				
	Turkish Music Instruments (h)	43	115.06				
Instrument Technique	Piano (a)	34	161.04	7	17.208	0.016	a > h *
	String Instruments (b)	96	125.04				
	Wind Instruments (c)	28	125.98				
	Guitar (d)	28	112.54				
	Singing (e)	9	71.50				
	Percussion Instruments (f)	6	98.42				
	Electronic Instrumnets (g)	3	147.00				
	Turkish Music Instruments (h)	43	111.52				
Preparation and Warm Up	Piano (a)	34	150.57	7	15.151	0.034	
	String Instruments (b)	96	131.36				
	Wind Instruments (c)	28	116.63				
	Guitar (d)	28	104.93				
	Singing (e)	9	62.67				
	Percussion Instruments (f)	6	114.25				
	Electronic Instrumnets (g)	3	128.33				
	Turkish Music Instruments (h)	43	117.67				
Posture and Technique	Piano (a)	34	148.12	7	12.098	0.097	--
	String Instruments (b)	96	126.52				
	Wind Instruments (c)	28	135.86				
	Guitar (d)	28	113.36				
	Singing (e)	9	75.61				
	Percussion Instruments (f)	6	91.42				
	Electronic Instrumnets (g)	3	92.83				

Interpretation and Phrasing	Turkish Music Instruments (h)	43	115.37				
	Piano (a)	34	167.16				
	String Instruments (b)	96	123.72				
	Wind Instruments (c)	28	121.45				
	Guitar (d)	28	119.32	7	22.103	0.002	a > h *
	Singing (e)	9	63.94				
	Percussion Instruments (f)	6	99.92				
	Electronic Instrumnets (g)	3	147.50				
Rhythmic Studies and Fingering	Turkish Music Instruments (h)	43	109.50				
	Piano (a)	34	154.31				
	String Instruments (b)	96	115.11				
	Wind Instruments (c)	28	140.75				
	Guitar (d)	28	128.13	7	13.283	0.066	--
	Singing (e)	9	81.50				
	Percussion Instruments (f)	6	113.83				
	Electronic Instrumnets (g)	3	109.00				
Post-Performance Activity	Turkish Music Instruments (h)	43	117.65				
	Piano (a)	34	158.62				
	String Instruments (b)	96	117.77				
	Wind Instruments (c)	28	149.00				
	Guitar (d)	28	105.48	7	21.219	0.003	
	Singing (e)	9	86.39				
	Percussion Instruments (f)	6	86.50				
	Electronic Instrumnets (g)	3	54.83				
Deciphering Technique	Turkish Music Instruments (h)	43	124.26				
	Piano (a)	34	160.76				
	String Instruments (b)	96	120.90				
	Wind Instruments (c)	28	119.68				
	Guitar (d)	28	108.80	7	14.547	0.042	
	Singing (e)	9	91.72				
	Percussion Instruments (f)	6	88.67				
	Electronic Instrumnets (g)	3	152.00				
	Turkish Music Instruments (h)	43	124.29				

\* $p < 0.05$ .

In terms of the instrument techniques on the piano, the students who has the piano as a main instrument have a more significant level of studying habits ( $p < 0.05$ ) when compared to the students having a Turkish Music Instrument as the main instrument. The students who has an electronic instrument as a main instrument have a more significant level of studying habits ( $p < 0.05$ ) when compared to the students who has a Turkish Music Instrument as a main instrument.

In terms of the interpretation and phrasing on the piano, the students who has the piano as a main instrument have a more significant level of studying habits ( $p < 0.05$ ) when compared to the students having a Turkish Music Instrument as the main instrument.

#### 4. Results, discussion and suggestion

##### 4.1. Results and discussion

- There is a positive relationship between the scores of the scales for Attitudes Towards Harmony Courses and Piano Playing Habits at a significance level of 0.001. There are positive relationships among all the subscales (instrument technique, preparation and warm up, posture and technique,

interpretation and phrasing, rhythmic studies and fingering, post-performance activity, deciphering technique) at a significance level of 0.001.

In a study conducted by Cevik et al. (2010), it was found that there is a relationship between the achievement scores of harmony and piano courses and this relationship is statistically very high. There exists a direct relationship between these two courses. Another study by Odabas (2018) points out a positive relationship between the achievement score from the harmony and piano courses. In his study, Onder states that there is a positive relationship between the attitudes towards piano courses and the attitudes towards harmony courses. In a study by Cevik et al. (2010), there is no significant difference between the students' success in harmony and piano courses and their sexes statistically. According to Kalkandelen as well, (2019) there is no significant difference between the students' success in harmony and piano courses and their sexes. Kalkandelen (2019) also observed that there is a significant difference between the attitudes towards of harmony courses and the interest level of the students in terms of the piano and their main instruments. When the research regarding attitudes towards harmony courses and the success in harmony courses is reviewed, it can be said that the literature supports the findings this current study.

- There is a significant difference between the scores from Attitudes Towards Harmony Courses Scale and the departments of the students. The level of the attitudes of Turkish Music department students is relatively low when compared to the other departments and there is no significant difference among the scores of other departments.

One of the reasons of this is that the course schedules are not tight in Turkish Music departments and there aren't any intensive harmony courses. As a result, the students from these departments are not familiar with harmony knowledge which is not naturally included courses related to Turkish Music. Therefore, it can be said that this result is to be expected for the students studying at Turkish Music departments.

- There is a significant difference found between the scores from Attitudes Towards Harmony Courses Scale and the students' main instruments. However, there is no significance difference found in the analysis conducted for the instrument groups.

There is a significant difference found between the scores from Piano Playing Habits Scale and the students' main instruments. In terms of the five subscales ('Instrument Technique', 'Preparation and Warm Up', 'Rhythmic Studies and Fingering', 'Post-performance Activity' and 'Deciphering Technique'), there is a significance difference found for students with different main instruments. In terms of instrument techniques on the piano, the students with electronic instruments have better studying habits when compared to the students with Turkish Music instruments. The students who have electronic instruments also have better studying habits than the students with string instruments.

In a study by Cengiz and Lehimler (2018), it was revealed that there is no significant difference between the attitudes towards harmony-counterpoint- accompaniment course and the main instruments of the students. The findings of this current study are different from the study by Cengiz and Lehimler. In this study, it was observed that the students with Turkish Music instruments have a relatively low level of attitudes towards harmony courses when compared to the students with other types of instruments. However, this is an expected result as Turkish Music is relatively different from Western Music and doesn't focus on harmony knowledge.

- There is no significance difference found between the scores from the scales of Attitudes Towards Harmony Courses & Piano Playing Habits and the sexes of the students.

Cengiz and Lehimler stated in a 2018 study that there is no significant difference between the students' attitudes towards harmony-counterpoint- accompaniment courses and their sexes. The findings of this current study also support the findings from Cengiz and Lehimler's research in 2018.

- There is no significance difference found between the scores from the scales of Attitudes Towards Harmony Courses and the departments of the students.
- There is no significance difference found between the scores from the scales of Attitudes Towards Harmony Courses & Piano Playing Habits and the universities of the students.

In a study by Cengiz and Lehimler (2018), it was stated that there is a significant difference between the attitudes of the students and the high schools where the students graduated from. It can be asserted that different educational environments and backgrounds affect the studying habits and attitudes. However, the findings of this current study don't support the idea in the study mentioned above.

- There is no significant difference found between the scores from the Attitudes Towards Harmony Courses scale and the grade levels of the students.

Onder (2019), Cengiz and Lehimler (2018) concluded in their studies that there is a significance difference between students grade levels / ages and their attitudes & studying habits. However, Kalkandelen (2019) found out that there is no significance difference between those two variables. The study by Kalkandelen (2019) supports the findings of this current study.

- There is no significant difference found between the scores from Attitudes Towards Harmony Courses scale and the type of the faculties of the students.
- There is no significant difference found between the scores from Attitudes Towards Harmony Courses scale and having a piano at home.

A study by Cevik et al. (2010) supports the findings of this current study by stating that there is no significant difference between students habits & attitudes and having a piano at home. Having a piano cannot be considered to be influential in terms of studying habits alone. There must be some other variables contributing to this situation.

- There is no significant difference found between the scores from Attitudes Towards Harmony Courses & Piano Playing Habits scales and having a family member who plays an instrument.
- There is no significant difference found between the scores from Attitudes Towards Harmony Courses & Piano Playing Habits scales and the duration of musical background of the students.
- There is no significant difference found between the scores from Attitudes Towards Harmony Courses & Piano Playing Habits scales and having a past experience in polyphonic choir.

#### **4.2. Recommendations**

Harmony and piano courses are overlapping in terms of the subjects they cover and these two courses clearly support each other. When the features of harmony and piano courses affecting each other are taken into consideration, the teachers are advised to motivate the students in both courses positively.

The applications related to piano should be included in harmony courses as well as having harmony application in piano courses.

The piano is an instrument that enables to compose, arrange or improve musical ear thanks to its polyphonic structure. With this feature, the piano should be encouraged to be used in all departments related to music and for all the students who are either professional or amateur students.

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