The Observation of Gender Stereotyping in Music Instruments in 2020, and the Process of Musical Instrument Selections of Children

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Abstract
In 2020, a research team in the music and music education department at Teachers College at Columbia University conducted an explanatory sequential research consisting of both the quantitative and the qualitative methods to contemplate the current status of the gender association in music in the instrument selections and the correlation in regard to the influence of a parent. This report investigates an answer for the following research questions: (1) Has there been less or more sex-stereotyping of musical instruments and crossed-over students who chose atypical instruments with regard to their genders over ten years? (2) Are there any parental influences in the process of a child's musical instrument selection? (3) What similarities and differences are observed from the parents of those children? The result of this study answers the three research questions. This study describes that there has been lesser and lesser gender-stereotyping in musical instrument selection for ten years considering the number of cross-over students has increased through quantitative research. Furthermore, it demonstrates that the process of a child's selecting musical instrument is projected from their parent's perspectives. Besides the portraits of parents provided three themes.

Keywords: Music, Music Education, Gender Stereotype, Music Instrument

Introduction

Previous studies regarding gender-stereotyping in selecting the musical instruments demonstrated that gender stereotype had been still observed in children's musical instruments selections from in the past to modern society. Whilst this research subject has been researched for four decades by the researchers, additional cross-questions and concentrations have appeared with regard to the possible reasons for the gender association in musical instrument selections. Previous research discerned not only a noticeable increase in the proportion of the students who "cross-over" and play atypical for their sex (Abeles, 2009) but also the prospective influences from a society, parents, peers, and ethnicity (e.g., Conway, 2000; Sinsabaugh, 2005). The questions of which influence is the most ascendency and how this influence affects the musical instrument selections lead to scrutinize the possibility of a parental influence on choosing children's musical instruments.

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This report investigates an answer for the following research questions: (1) Has there been less or more sex-stereotyping of musical instruments and crossed-over students who chose atypical instruments with regard to their genders over ten years? (2) Are there any parental influences in the process of a child's musical instrument selection? (3) What similarities and differences are observed from the parents of those children?

Related Research

Abeles (2009) conducted the research to identify if changes in the sex stereotyping of music instruments had emerged during the last thirty years after Abeles and Porter (1978) had researched. In the previous study, the researchers collected data from groups of 20 college students of nine different colleges and universities, which locates in diverse areas in the United States. Each group included 10 music majors and 10 nonmusical majors. Those students completed the Musical Instruments Paired-Comparison Survey Form (MIPCSF) which consisted of 28 pairs of eight musical instruments often played as part of school music programs including flute, clarinet, saxophone, trumpet, trombone, drums, violin, and cello. With these given data, Normalized Scale Scores were produced. For the latter study, Abeles (2009) surveyed 2,001 middle school students in the United States to research the music instrument selections by genders. To compare the similarity and differences between this paper and Abeles and Porter (1978), the data were converted to Normalized Scale Scores using the NSS of Abeles and Porter (1987) and Abeles (2009). The researcher tabulated the data to compare the proportion of musical instrument selections by genders compared to the data from Fortney, P. M., Boyle, J. D., & DeCarbo, N. J. (1993). While the results showed little difference in the sex-by-instrument distribution in 1978, 1993, and 2007, there was an increase in the number of students who chose crossover instruments from Fortney et al. (1993) and Abeles (2009).

Wiedenfeld (2012) surveyed of students (n = 73) and parents (n = 73) at one intermediate school in North Texas to configure whether the opinion of students and parents had influenced the musical instrument selections on students of fifth grade in regard to sex-types. The parents and students were given a three-page packet that included closed-response questions for both parent and student with the option of 'other' for clarification. The parents were asked for the

parent's and family's formal music background (questions 30 through 34), and if they would have preparations towards any instruments and why. Whilst the results represented the 'sound of the instrument', 'student's ability' and 'family members play it' were the essential elements in these children's instrument decision-making process rather than 'parent's choose', the researcher insisted the importance of further study by mentioning that a larger scale study should be conducted with a larger sample of sex-role questions for the students or the students' parents to answer to measure the influences. Furthermore, the research stated that gender-neutral in musical instruments is expanding.

Conway (2000) interviewed 37 high school instrumental music students in two sites in the United States to research the perceptions related to gender and instrument choice. The protocol was used only as an interview guide, and the actual interviews included several unstructured questions and conversational responses depending on the students. After transcribing recorded interviews, he categorized the results with the commonalities related to the experiences of these particular students in choosing musical instruments. The results reflected that the students believed the relationship between gender issues in society exists because of society, parental influences, and the media. In addition, several of the students who participated in the interview suggested that the stereotype may derive from their parents and older generation. The research reported that some parents of students who selected atypical musical instruments in regard to gender were supportive of their musical selections. However, some parents were closely related to children's musical instrument selections. In addition, the researcher found the possible influences on students regarding instrument choice: characteristics of the instruments including size, sound, volume, and role in the band, elementary instrumental teachers, and friends.

Method

To identify the change in gender-stereotyping in musical instrument selections and of crossover students, each research team member conducts the replicated surveys of Study 1 and 2 from Abeles (2009). The Musical Instruments Paired-Comparison Survey form (MIPCSF) which consists of 28 pairs of musical instruments is used to generate Normalized Scale Scores. The participants are a mix of gender, ethnicity, race, and occupations (30 musicians and 30 non-musicians). The second survey is to research the musical instrument selections of middle school students (six through eight grades) in three middle schools in California and New York in the United States, and Jeju Province, South Korea. Following by the calculations of the Normalized Scale Score Means for students' instrument selections concerning generated Normalized Scale Scores from the first survey, the results are compared with Abeles (2009).

In the subsequent process, each research team member interviewed the parents (n = 3) whose child plays an instrument for at least five years online. The interview questions were to identify the detailed process of musical instrument selection of their child and the parental influence in the process. An interview protocol is created based on the questionnaire of Wiedenfeld (2012) and the research questions of Conway (2002). The key questions are: (1) Do you consider yourself to have a musical background? (2) Can you tell me about the process for your child in choosing his or her instrument? (3) Can you tell me about your influence in your child's choice? (4) When your child was choosing an instrument, did you ever think of encouraging or discouraging them because the instrument was a boy's or girl's instrument? (5) What are the instruments that you generally associate with girls or boys? The recorded interviews are transcribed and compared with other interviews. Followed by this phase, the portraits of interviewed parents are provided from each research member for cross-case analysis.

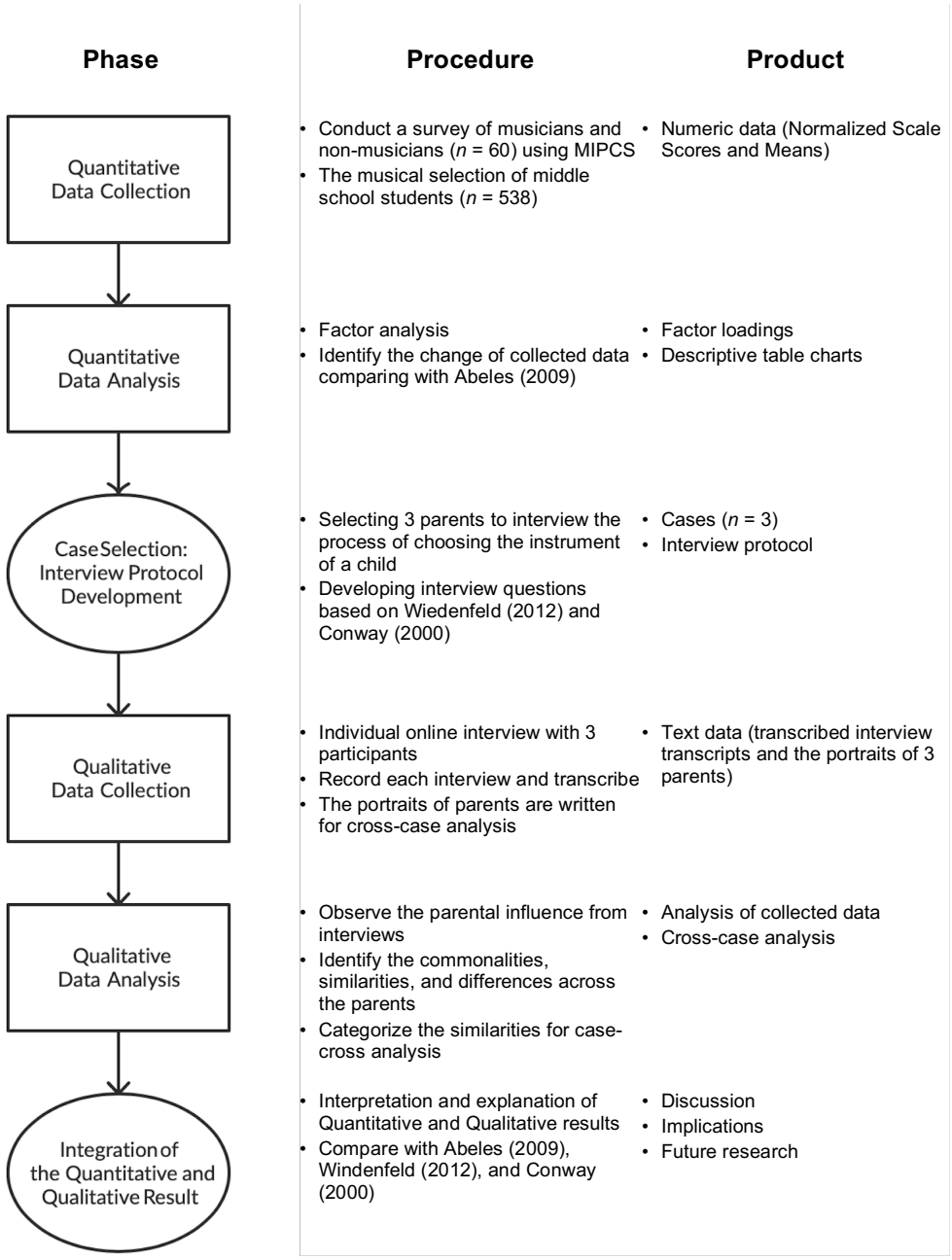

Figure 1: Research Process

Results

Quantitative Research Results

In the quantitative part, two surveys are conducted periodically. According to the results of the first survey, Musical Instruments Paired-Comparison Survey forms (MIPCSF), the Spearman-rank correlation coefficient technique is assessed to identify the relationship between musicians and non-musicians. Since the results produce a correlation of 0.98, the Normalized Scale Scores are tabulated from the Edwards Normalized Scale Scores Table to compare with Abeles (2009) and this study in Table 1 (Range = 2.027, $M = 0.914$, $SD = 0.722$). The results illustrate the flute, violin, and clarinet are appeared to be feminine musical instruments, while the drums, trombone, and trumpet are masculine musical instruments.

	Abeles (2009) $n = 222$	This Report $N = 60$
Flute	0.000	0.000
Violin	0.843	0.044
Clarinet	0.910	0.452
Cello	1.458	0.819
Saxophone	2.089	1.185
Trumpet	2.329	1.211
Trombone	2.568	1.567
Drums	2.962	2.027

Table 1: Normalized Scale Scores Comparisons in 2009 and this Report
Note. Higher score indicates more masculine.

The result of the second survey of middle school students ($n = 538$) at three sites generates the Normalized Scale Score Means in Table 2. The results describe the means of the student concerning two genders and three grades. Since a higher score means more masculine, the female students have lower scores than the male students in grades 6, 7, and 8. While the figures of female students in three grades are ranged from 0.31 to 0.46, those of male students are between 0.81 and 0.99. On the other hand, there is a similar pattern in both male and female students. Besides, there are steady rises from grade 6 to 8. The Normalized Scale Score Means of this report is used to compare with Abeles (2009). A chi-square test of independence is performed to examine the relationship between gender and instrument played in middle school. The relation between these variables is significant, $X2$ ($df = 7$, $N = 538$) = 20.9, $p = .0000$.

	Sixth Grade		Seventh Grade		Eight Grade	
	Girls	Boys	Girls	Boys	Girls	Boys
Abeles (2009)[a]	1.02	2.03	0.91	2.10	0.94	2.13
This study[b]	0.31	0.81	0.43	0.90	0.46	0.99

Table 2: Comparison of Normalized Scale Score Means for Students' Instrument Selections: Abeles (2009), and This Report
Note. Higher score indicates more masculine.

a. Converted with 2009's instrument normalized scale scores (NSS).
b. Converted with this report's instrument NSS.

To scrutinize the change in the rate of students who chose atypical of their gender and the pattern of musical instrument selection by genders, the compiled data of the second survey, musical selections of middle school students (164 males and 164 females), are tabulated in proportions in Table 3. Since the list of instruments is limited to six to compare more effectively with Abeles (2009), it should be noted that Abeles (2009) chose these six musical instruments to compare with Fortney et al (1993). According to Table 3, it appears that 25.5% of male

students in this report play the flute and clarinet, which are generally associated with girls. On the other hand, 28.7% of female students play atypical instruments with regard to their gender (drums, trombone, trumpet, and saxophone). Overall, the percentage of crossed over students occupies significant proportions.

	Abeles (2009)				This Study			
Instrument	Girls		Boys		Girls		Boys	
Flute	269	39.4%	15	2.1%	72	43.9%	18	10.9%
Clarinet	240	35.2%	67	9.5%	44	26.8%	24	14.6%
Saxophone	56	8.2%	119	17.0%	15	9.1%	28	17.0%
Trumpet	61	8.9%	240	34.2%	16	9.7%	47	28.6%
Trombone	28	4.1%	142	20.2%	11	6.3%	26	15.8%
Drums	28	4.1%	119	17.0%	6	3.6%	21	12.8%
		100.0 %		100.0 %		100.0 %		100.0 %
Number	682		702		164		164	

Table 3: Comparison of Middle School Students' Instrument Selections: Abeles (2009) and This Study

Qualitative Research Results

For the qualitative part of this report, three of a parent who has a child playing the musical instrument participated in an online interview and the interviews are recorded and transcribed to examine the commonalities between the parents.

Jenny, a Female Parent

The interviewee is currently a kindergarten teacher and sings frequently since she played the piano in her childhood. She has two daughters. The elder daughter has played the flute and piano since her childhood, and her younger daughter plays percussion. Her answers point out her younger daughter chose the percussion because she wanted to be different from her older sister and she has seen her friend's brother plays the percussion. The participant didn't give any suggestions for choosing the instrument because she believed she already had given the influence on the elder daughter. She recognizes the percussion is associated with boys, and she supports her daughter's musical instrument selection. She mentions the flute and harp are associated with girls, while bass, percussion, and trumpet would be more associated with boys.

Mary, a Female Parent

The participant was born and raised by musically engaged parents. Her father played the piano, and her mother played the violin. She said she occasionally learned music from her parents, but she never trained professionally or taken any formal lessons. Following her given information, she has at least 3 children, but she talks about the eldest daughter who plays the flute for at least five years. Her daughter chose a musical instrument after she had exposed to a

variety of instruments in early music class. She mentioned she and her husband did not influence her in choosing a musical instrument. Overall, her spouse and she are glad that their daughter plays flutes because it does not make loud sound and flutes occupies a small space. She believes that that the flute and the violin are female-associated instruments because the majority of female play those two instruments. On the other hand, she mentions that the drums, trombone, and trumpet are male-associated instruments.

David, a Male Parent

He has a musical background. He took both piano and violin lessons in his elementary school years. He has one son who has played the piano for six years. He said his child did not have a choice in choosing a musical instrument, and he suggested the piano for him. He thinks that he influenced and played an important role in his son's musical instrumental selection. He answers that the violin, flute, and harp are female-associated instruments, while classifying that the piano, trumpet, and viola are male-associated instruments.

Overall, all participants have musical experiences either formal or informal and they are generally satisfied with their children's musical choices. However, according to the interview transcriptions related to a child's musical instrument choice, three interviews reveal different processes: (1) a child selects her instrument with a free choice without parental influence, (2) a child chooses her instrument to be different from her sister, (3) a parent suggests a certain instrument to his child. Furthermore, all participants have gender stereotypes in musical instruments. They commonly answer that the flute is the female-associated instrument, while the trumpet is a male-associated instrument. Furthermore, they are aware that their children's choices are whether typical or atypical instruments with a child's gender.

On top of that, the portraits of three parents from each research team member are collected for cross-case analysis to configure the themes across the parents based on the similarities of interviewed parents.

Jenny, a Female Parent of a Female Child Who Plays the Percussion

Jenny is in her mid-40s. She is a mother of two girls, one of whom is 15 years old and plays percussion. She was a kindergarten teacher, so she has a strong musical background with singing and piano. Now, she is a housewife. She is originally from Shanghai, China. She lives in New Jersey with her younger daughter and husband. She started to learn to play the piano when she was 8. She has a lot of stages and instrumental experience.

Jenny does associate instrument choice with gender. In her opinion, percussion is associated with males since percussion brings people masculine feelings, and it requires more energy to play. Instruments like the flute, harp are associated with females.

During the interview, I found Jenny had a strong desire for both of her daughters to learn to play instruments. She helped her older daughter choose the instruments. However, she gave her younger daughter the freedom to choose what kind of instrument to play despite her thinking about percussion was associated with males. She told me interest was a key factor for a kid to learn.

Mary, a Female Parent of a Female Child Who Plays the Flute.

Mary is the mother of three children, one of whom is 12 years old and plays the flute. Mary is in her late thirties, and lives in a suburb of New York, with her husband and children. She grew up in a musical household, with two parents who were amateur musicians. Her father played the piano, and her mother played the violin. As a byproduct of her parents' musical hobbies, Mary became immersed in music and began to play the piano herself.

Mary admits that she holds certain gender stereotypes of musical instruments, but it did not come across as something she felt strongly about. She acknowledges it at the moment as if it were the first time she'd considered it, which might suggest that it was the product of pattern recognition, rather than an ideology. She described thinking of the flute as feminine, which did not come as a surprise considering that is a common association, but it did beg the question if this idea of hers was reinforced by her daughter playing the flute.

Despite acknowledging her gender stereotyping beliefs, her daughter came to the flute on her own due to exposure to the instrument in a school music class. Mary didn't need to encourage her daughter to pick up an instrument, but if she had, perhaps the encouragement would have perpetuated her ideas of the instruments that girls play.

David, a Male Parent of a Male Child Who Plays the Piano.

David is in his mid-30s. He majored in biophysics and recently earned a Ph.D. degree. He is currently working at a medical research laboratory in Minnesota. He is originally from Seoul, South Korea. He came to the United States alone when he was in high school as an international student. He graduated high school, undergrad school, and grad school in the United States. He is an only child, and his family is still in Seoul, South Korea. When he was in elementary school, he played the flute and piano and took lessons for several years. He recalled that his parents chose his musical instruments to learn. His father was an engineer, and his mother was a housewife.

David's answer was straightforward. He was never hesitated to answer the questions. During an interview, I found that he thinks that the piano is associated with a male because it requires a lot of physical power and energy, while many people who have Asian cultural backgrounds think the piano is associates with a female.

Most importantly, he is self-teaching himself to teach his son by using the Suzuki method, and other online resources that his son likes such as *A Whole New World* from *Aladdin*. It seems like he knows the importance of learning music. At the end of the interview, he asked me for age-appropriate suggestions of Korean dramas that he and his son can watch together to learn Korean culture and improve Korean language skills.

Cross-case Analysis

Overall, three major themes are discovered from the compiled portraits of three parents.

First of all, three parents have musical backgrounds in their childhood, while David took violin and piano lessons, Jenny learned piano. Besides, the parents of Mary were amateur musicians and played the piano in her childhood.

Second, they have a gender-association in the musical instrument. However, it is difficult to decide if this gender-stereotyping in musical instruments is depending on their children's choice, cultural background, or social perception. In particular, based on the portraits of both Jenny and David, they commonly mention physical capabilities when they describe the male-associated instruments.

Lastly, all the parents positively support their children's musical experiences either a child plays a typical or atypical instrument with their gender. For example, Jenny believes a child's interest is the most important, so she is pleased with her daughter playing the percussion. As well as that, David is directly engaged in his son's music learning by teaching his son's favorite music piece.

Discussion

Through those studies replicating Abeles (2009), the results of those surveys demonstrates that there is a decline in sex-stereotyping of musical instruments for late ten years in Table 1. Besides, there is an increase in the number of crossed-over students who choose atypical instruments over ten years in Table 2.

According to Table 1, the rank orders of NSS, which are derived from the result of Musical Instruments Paired-Comparison Survey both in Abeles (2009) and in this report, are identical. Meanwhile, it indicates that both musicians and non-musicians less consider the gender stereotyping in music instruments than they did ten years ago, although it still exists undoubtedly. The figures of range, means, and standard deviation in each study noticeably decreased (2009 range = 2.962, M = 1.645, SD = 1.013; current study range = 2.027, M = 0.914, SD = 0.722). Besides it is seen that the numbers of middle school students in each category of gender by grades noticeably reduce comparing with Abeles (2009) as appearing in Table 2, whilst the figures for males are bigger than those of females both in Abeles (2009) and in this report.

Table 3 describes the data regarding the percentage of students who choose either typical or atypical instruments. In 2009, 11.6% of male students played an instrument generally associated with girls (flute and clarinet), whereas 25.5% of male students in this report chose an atypical instrument against their gender. In 2009, 17.1% of female students played male-associated instruments (trumpet, trombone, and drums). However, 19.6% of female students chose these instruments. Overall, the proportions of students who chose "cross-over" instruments significantly increased over 10 years.

The transcribed interviews from three parents indicated that both direct and indirect parental influences were observed in the process of choosing a child's musical instruments. As well as that, there were commonalities and differences across the interviews. Furthermore, these characteristics were compared with the relevant studies (Wiedenfeld 2012; Conway 2000).

First of all, all participants have a musical background in a common either formal or informal way as Wiedenfeld (2012) revealed that the reason for choosing an instrument (Table 5). Besides, since Conway (2000) discussed "the stereotypes exist because of society, parental influences, and the media." (p. 9), three parents have the gender-stereotyping in the musical instruments. They acknowledged whether a child's musical instrument is associated with a certain gender either typical or atypical.

Meanwhile, the differences across the three interviews are detected in the process of selecting a child's musical instrument. For instance, Jenny's child is a girl who chose percussion to be different from her sister who plays the flute. In a matter of fact, Conway (2000) found "Many of the students who broke gender stereotypes discussed their desire to be different from the crowd" in the common traits of children who broke the gender stereotypes (p. 11-12). Furthermore, Mary's female child selected the flute because she had a great interest in flute from early music class experiences, whist David directly recommended a piano for his male child. The similar cases of these aspects are found in the self-stated personal characteristic of who did not break gender stereotypes in instrument choice (Conway 2000, p. 11).

However, there were certain differences across the parents who were not able to compare with data from Conway (2000) and Wiedenfeld (2012). While David and Jenny are Asian immigrants, Mary did not provide her cultural background. Although David and Jenny have Asian backgrounds, David suggested an instrument to his kid. However, Jenny gave her child the freedom in choosing an instrument. To sum up, the interviews and the portraits in this report have limited resource to unravel the reason and correlation between those findings.

Conclusion

The result of this study answers the three research questions. This study describes that there has been lesser and lesser gender-stereotyping in musical instrument selection for ten years considering the number of cross-over students has increased through quantitative research. Furthermore, it demonstrates that the process of a child's selecting musical instrument is projected from their parent's perspectives. Besides the portraits of parents provided three themes.

Nonetheless, it is difficult to depict if the parental influence is a major influence on children's decisions and why a child chooses cross-over instruments because the process of choosing musical instruments requires complex procedures including the cultural background, social perceptions, or ethnicity. For this reason, I strongly believe that a larger number of samples are required to identify the considerations and the influences in musical instrumental selections from various perspectives.

Furthermore, in the qualitative part of this study, David believes that the piano is associated with males and that was the reason why he suggested the piano to his son because it requires the physical strength and energy to play the music. As it is strikingly against the Asian music-cultural perspective, none of Abeles (2009), Wiedenfeld (2012), and Conway (2000) includes the data concerning the piano. Therefore, further research including the piano is going to be another rich research area. Besides, since the cross-case analysis offered three themes, the new question of if the three themes correlate with each other is suggested for future research.

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