

The Effect of Demonstrator Gender on Wind Instrument Preferences of Kindergarten, Third-Grade, and Fifth-Grade Students

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Abstract

This study examined possible influences of demonstrator gender on children's instrument choices. Participants ($N = 104$) included boys ($n = 53$) and girls ($n = 51$) in fifth grade ($n = 27$), third grade ($n = 41$), and kindergarten ($n = 36$) in six intact music classes from a single elementary school. Pretest and posttest consisted of circling (Grades 3 and 5) or placing a sticker on (kindergarten) the instrument "you most want to play" from a picture containing flute, clarinet, alto saxophone, trumpet, trombone, and tuba. Treatment consisted of intact classes viewing a live demonstration of all six instruments performed by either all male or all female university music majors. Results indicated that boys who viewed male demonstrators chose more brass instruments, whereas girls who viewed female demonstrators chose more woodwind instruments, although these differences were not statistically significant. Both boys and girls who saw opposite-gender demonstrators picked brass and woodwind in nearly equal numbers.

Keywords

gender, musical instrument selection, elementary children, preference, wind instrument, stereotyping

For more than 30 years, researchers have attempted to determine what factors contribute to the gender stereotyping of musical instrument selection (Abeles & Porter, 1978; Bruce & Kemp, 1993; Delzell & Leppla, 1992; Fortney, Boyle, & DeCarbo, 1993; Griswold & Chrobak, 1981; Hallam, Rogers, & Creech, 2008; Harrison & O'Neill, 2000; Johnson & Stewart, 2004, 2005; Sinsel, Dixon, & Blades-Zeller, 1997; Zervoudakes & Tanur, 1994). Recently Eros (2008) published an extensive review of literature regarding gender stereotyping in instrument selections, further adding emphasis to the continuing interest in this topic.

On determining that there was a definite difference in the involvement of males and females in bands and orchestras (a larger percentage of males in bands and females in orchestra), Abeles and Porter (1978) sought to determine if gender stereotypes are present among adults and at what age the stereotypes develop. The adults indicated gender associations for several instruments. They associated the flute, violin, and clarinet with girls, and drums, trombone, and trumpet with boys. Abeles and Porter also found that gender associations were not as prevalent in young children but became more evident around the third grade.

Delzell and Leppla (1992) found that fourth-grade students showed similar associations to those identified by

Abeles and Porter. After viewing posters of the instruments with the photos of the performers covered, the male subjects preferred the drums the most, followed by the saxophone. Girls preferred the flute, saxophone, and clarinet. These results not only revealed that there are gender preferences for certain instruments, but there are also instruments that may have no specific gender association (saxophone). With the exception of the saxophone, Griswold and Chrobak (1981) concurred, finding that college students thought the harp, flute, and piccolo to be most feminine and the saxophone, drums, and trumpet to be most masculine. Recent research (Abeles, 2009a) has revealed that the stereotyping apparent in studies conducted in the 1970s (Abeles & Porter, 1978) and in the 1990s (Delzell & Leppla, 1992) remain virtually the same.

After determining that gender stereotypes do exist, we might ask why. Are they a result of instrument assignments by teachers? Do preferences relate to the timbre of

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the instruments? Are preferences influenced by the preferences of parents? Do the stereotypes arise from the gender of the performer or demonstrator? These are all questions that researchers have sought to answer in the past and continue to ask (Eros, 2008). Both Abeles (2009b) and Conway (2000) confirmed the role of parents in instrument selection. To examine the influence of band directors Johnson and Stewart (2004; 2005) surveyed groups of music educators to determine if gender or race played a role in the way directors assigned instruments to students. The results revealed that there was no significant relationship between gender and any particular instrument assignment.

Timbre has also been studied as a reason for choosing certain instruments. Surveying sixth- through ninth-grade band students, Fortney et al. (1993) found that the sound of the instrument was the most frequently chosen reason why subjects preferred their favorite instruments. On the other hand, they point out that these findings contradict the results of Rideout and Clinton (1987), who found no significant difference in timbre preferences according to gender.

One avenue that has yet to be fully evaluated is the influence of the gender of the performer on instrument selection by young students. Only a few studies have explored this factor (Bruce & Kemp, 1993; Harrison & O'Neill, 2000) as possibly contributing to instrument selection. Bruce and Kemp (1993) explored the effect of demonstrator gender by presenting concerts at four different schools for 5- to 7-year-olds. Two of the schools were presented concerts by brass performers and two saw concerts by woodwind performers. The female students who saw the concert of brass instrument performed by females, showed a greater interest in those instruments (particularly trombone, a typically masculine instrument). Likewise, the male students who saw the concert of woodwind instruments performed by males were more likely to choose the flute.

Harrison and O'Neill (2000) designed a similar study modifying the procedures of Bruce and Kemp (1993). Those modifications included determining the participants' preferences before and after the presentation and presenting typically masculine and feminine instruments to all participants. Harrison and O'Neill (2000) found that children were more willing to choose opposite-gender instruments after viewing a concert by same-sex performers. Interestingly, they also found that preference for same-gender instruments diminished following a presentation by opposite-sex performers. In other words, girls who viewed a male playing the piano and boys who viewed a female playing the guitar indicated decreased preference for those instruments following the concerts.

Harrison and O'Neill (2000) found that the gender of the performer might have an impact on instrument

preferences, but they did not control for the music played on each instrument. We speculated that it might be possible that the musical selections by each performer could affect instrument choice. Thus the present study was designed to control for the musical selections played in an effort to further investigate the possible relationship between the gender of the demonstrator and the instrument choices of elementary school students.

Method

To examine possible relationships between demonstrator gender and student instrument preferences, we used an experimental pre-post test design in which children were asked their instrument preferences, viewed a live demonstration of instruments played exclusively by male or female performers, and then were asked again to indicate their instrument preferences. Participants ($N = 104$) included boys ($n = 53$) and girls ($n = 51$) in fifth grade ($n = 27$), third grade ($n = 41$), and kindergarten ($n = 36$) in six intact music classes from a single elementary school, chosen both for its availability, and the heterogeneous racial and economic characteristics of its student population. All testing and demonstrating was done in October, 2008, during regular music classes as part of an established music curriculum; researchers were present but the children's regular music teacher conducted all activities in the class. Thus, we attempted to keep the testing environment as typical of the normal classroom procedures as possible. The principal of the elementary school and the internal review board of the participating university both agreed that such procedures were protective of the children involved.

The music teacher gave each child two stapled identical sheets of paper on which color pictures of six instruments appeared: flute, clarinet, alto saxophone, trumpet, trombone, and tuba. All sheets were premarked with gender, grade level, and a participant number. The teacher handed boys the papers marked "boy" and girls the sheets marked "girl." As the pretest, third and fifth graders were asked to circle the instrument they would "most like to play" on the first sheet. They then turned in the completed sheet and, as per teacher instruction and following their established classroom procedures, sat on the second sheet so they would not lose it. The second sheet served as the posttest.

Because pilot testing with kindergarteners indicated that they tended to color all the pictures rather than circle just one, procedures were modified. While their teacher sang songs with their class, individual kindergarteners came to a space out of view of their peers where they saw larger versions of the same pictures the older children viewed and were invited by the researcher to place a sticker on the picture of the instrument they would "most

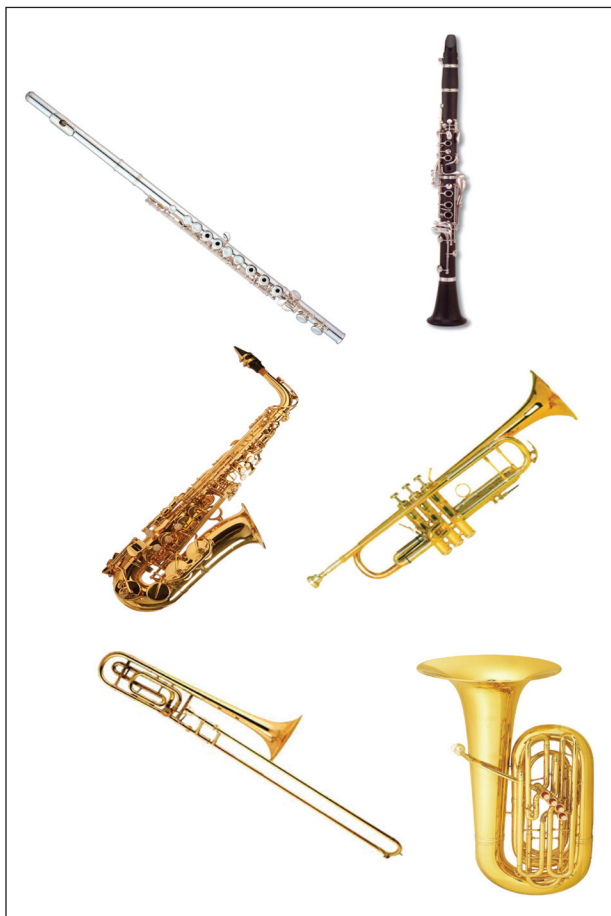


Figure 1. Instrument pictures as shown to participants

like to play.” Pictures were placed in the same order as seen on the older children’s response sheets (flute, clarinet, sax, trumpet, trombone, tuba), and the researcher was careful to stand the same distance from any single picture. Each kindergartener placed his or her sticker and then returned to the class activities. All kindergarteners appeared eager to place their stickers, as well as eager to return to the instructor-led singing game with their class. The instrument picture as seen by the children appears in Figure 1. Note that all the children viewed the pictures in color.

Each intact class then experienced a live demonstration of all six instruments performed by university music majors. Three classes (Grades K, 3, 5) saw only female demonstrators; three other classes (Grades K, 3, 5) saw only male demonstrators. Children viewing female demonstrators saw six different women playing flute, clarinet, alto saxophone, trumpet, trombone, and tuba. Children viewing male demonstrators saw five men playing the same six instruments; because of illness among demonstrators, the saxophone demonstrator doubled on flute (a well-rehearsed secondary instrument in his case). With

that single exception, demonstrators each performed on their primary instrument. Demonstrators were instructed to make no comments, make little eye contact, and to look pleasant but not to interact with the children in this part of the procedure. The teacher simply announced “This is a flute,” and the flutist stepped forward and played “Twinkle, Twinkle Little Star” in a comfortable key for that instrument. To control for a possible music selection affect, each instrumentalist played the same music in a medium range on his or her instrument. Thus, we made no effort to control for key; demonstrators selected the key best suited for their instrument.

Posttest consisted of repeating the identical “pick the instrument you would most like to play” activity as described above on a new sheet of instrument pictures coded to allow matching with the original pretest responses. As soon as all posttest responses were collected, the instrumentalists presented a more traditional demonstration in which they interacted with the children, answered all questions, allowed children to touch their instruments, and were highly positive about the value of playing/singing music. All participants (both children and demonstrators) were involved and animated in this part of the demonstration.

Results

Data consisted of frequency with which students selected instruments both before and after the instrument demonstration. Instruments were limited to flute, clarinet, alto saxophone, trumpet, trombone, and tuba. Additional data included student grade level, student gender, and gender of those who demonstrated the instruments. Given the frequency level of all data, subsequent analyses were limited to the nonparametric chi-square statistic.

Table 1 allows examination of the original instrument preferences students expressed prior to viewing an instrument demonstration. Overall, the flute, trumpet, tuba, and saxophone appeared as the most frequently preferred instruments. Boys more frequently preferred trumpet, followed by flute and tuba. Girls most frequently preferred flute, followed at a distant second by all other instruments.

Note that for ease of interpretation, throughout this report the children’s gender will be referred to as boy/girl, whereas the demonstrators’ gender will be referred to as male/female. All subsequent figures and tables reflect this practice.

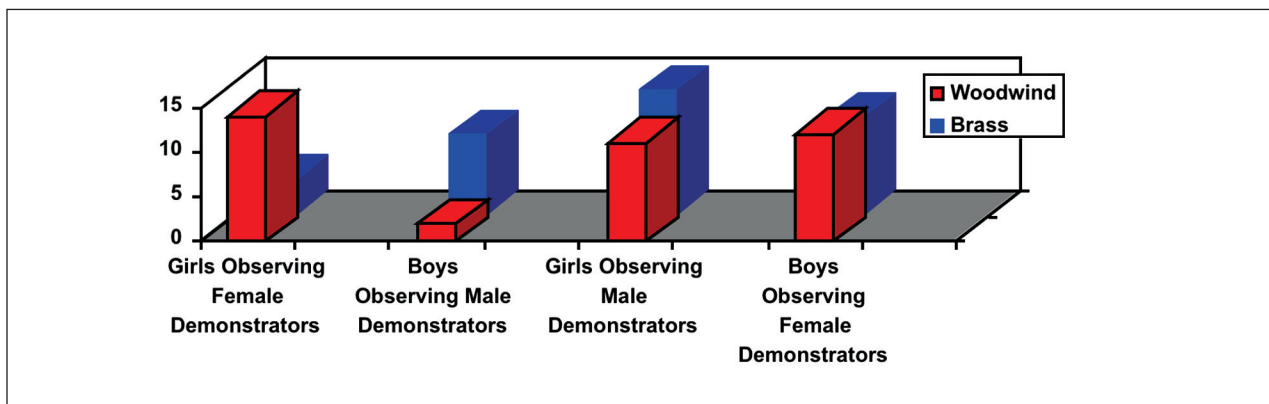
Immediately following the instrument demonstration, students indicated their preference for the instrument they would “most like to play.” A statistically significant number (77 of 104) changed their preference, $\chi^2(1, N = 181) = 23.08$, $p < .0001$. Examination of those 27 who did *not* change their preferences revealed that this group maintained the

Table 1. Pretest Preference for Instruments \times Grade Level \times Student Gender

Grade	Flute		Clarinet		Sax		Trumpet		Trombone		Tuba	
	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl
K	6	4	4	3	0	2	3	2	1	2	5	4
3	5	10	3	2	2	4	9	1	0	3	2	0
5	0	4	0	0	5	1	4	4	1	2	3	3
Total	11	18	7	5	7	7	16	7	2	7	10	7

Table 2. Unchanged Pretest–Posttest Preferences \times Grade Level \times Student Gender

Grade	Flute		Clarinet		Sax		Trumpet		Trombone		Tuba	
	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl
K	2	1	0	1	0	0	1	0	0	0	3	1
3	1	5	2	0	0	1	2	0	0	0	2	0
5	0	0	0	0	1	0	2	0	1	0	1	0
Total = 27	3	6	2	1	1	1	5	0	1	0	6	1

**Figure 2.** Changes in instrument choices after demonstration \times student gender \times demonstrator gender

same popular instruments overall with flute, tuba, and trumpet rating most frequent. More boys (18) than girls (9) retained their original preferences, although the differences were not statistically significant, $\chi^2(1, N = 27) = 2.13, p = .1444$. The boys who retained their preference (18 of 53 or 33.96%) noted that their favorite instruments were tuba and trumpet. A lower percentage of girls remained fixed in their preference (9 of 51 or 17.65%) and of those nine girls, six favored flute. It should be noted that 14 of 27 or 51.85% of these nonchangers experienced a demonstration by females, whereas the remaining 13 (48.15%) viewed an instrument demonstration performed by males. Thus, we concluded that the gender of the demonstrator was not influential in these 27 children's instrument preferences. Table 2 allows further examination of those who did *not* change their preferences

and who retained their original choice after viewing a demonstration.

Figure 2 allows graphic comparisons between changes in instrument choices following instrument demonstrations.

The preferences of the 77 students who made a change in preference after experiencing an instrument demonstration are displayed in Table 3.

Analysis of the direction that students modified their preferences after viewing the instrument demonstration appears in Table 4. This table shows how many possible changes were made within the six instruments across the 77 participants.

Table 4 also reveals how varied the responses were and shows the small cell sizes, which were subsequently collapsed for statistical testing. Data regarding specific alterations in preference were combined in terms of changes

Table 3. Changed Posttest Preferences \times Gender of Demonstrators \times Grade Level \times Student Gender

Demonstrator Gender	Flute		Clarinet		Sax		Trumpet		Trombone		Tuba	
	F	M	F	M	F	M	F	M	F	M	F	M
Boy K	2	1	1	1	1	0	1	2	0	0	2	2
Girl K	3	0	2	2	0	2	0	4	0	0	1	0
Boy third grade	2	0	1	0	0	0	2	0	1	0	5	3
Girl third grade	1	1	1	3	2	0	0	0	1	0	1	4
Boy fifth grade	1	0	1	0	2	0	2	1	0	0	0	1
Girl fifth grade	3	0	1	0	0	3	2	2	0	1	0	2
Total	12	2	7	6	5	5	7	9	2	1	9	12

Table 4. Frequency of Instrument to Instrument Changes in Preferences

Pre-Post Choices	Frequency
Flute-Clarinet	8
Flute-Sax	3
Flute-Trumpet	4
Flute-Tuba	5
Clarinet-Flute	2
Clarinet-Sax	1
Clarinet-Trumpet	2
Clarinet-Trombone	1
Clarinet-Tuba	3
Sax-Flute	4
Sax-Clarinet	1
Sax-Trumpet	3
Sax-Tuba	3
Trumpet-Flute	5
Trumpet-Clarinet	3
Trumpet-Sax	5
Trumpet-Tuba	7
Trombone-Flute	2
Trombone-Sax	1
Trombone-Trumpet	1
Trombone-Tuba	3
Tuba-Flute	1
Tuba-Clarinet	1
Tuba-Sax	2
Tuba-Trombone	1
Tuba-Trumpet	5
Total	77 Changes

from brass to woodwinds (BW = 20 people who changed from brass to woodwinds), from brass to brass (BB = 17 changes), from woodwinds to brass (WB = 21), and from woodwinds to woodwinds (WW = 19). Results of the collapsed data appear in Table 5.

Statistical comparisons of the four collapsed cells (BB = 17, BW = 20, WB = 21, WW = 19) indicated no statistically significant differences between them,

$\chi^2(3, N = 77) = 0.45, p = .93$; however, closer examination revealed some directional tendencies. Although the chi-square statistic was used throughout this study, when cell sizes fell below 5, the more conservative Fisher's exact probability test (Siegel & Castellan, 1988) was used. The girls who saw female demonstrators ($n = 18$) made more woodwind choices ($n = 14$) compared with brass choices ($n = 4$), although differences were not great enough to be statistically significant, Fisher (1, $N = 18$), $p = .0821$. Boys who saw male demonstrators made more brass choices ($n = 9$) than woodwind choices ($n = 2$). Although the trend among boys was definite, the differences were not great enough to reach statistical significance, Fisher (1, $N = 11$), $p = .0913$.

A different trend emerged when we analyzed girls who viewed male demonstrators and boys who viewed female presenters; no significant differences were approached. Girls who saw male demonstrators chose brass ($n = 14$) and woodwinds ($n = 11$) in relatively equal numbers, $\chi^2(1, N = 25) = 0.36, p = .6892$. Likewise, boys who saw female demonstrators responded by making a relatively equal number of brass ($n = 11$) and woodwind choices ($n = 12$); $\chi^2(1, N = 23) = 0.04, p = .9961$.

Discussion

It would appear that, overall, demonstrator gender tended to perhaps influence instrument choices of the students viewing the demonstrations, at least for the 77 students (74%) who changed their preferences after viewing an instrument demonstration. Note that these trends were not statistically significant. Although generalizations should be made with caution because of the small sample size and the fact that the data were collected at a single school, rather interesting trends emerged. To the extent that one can say that woodwinds are stereotypically feminine and brass instruments are stereotypically masculine (Abeles, 2009a; Abeles & Porter, 1978), then girls appeared to prefer predominantly feminine instruments when females demonstrated them. Conversely, boys appeared

Table 5. Direction of Posttest Preference Change \times Demonstrator Gender \times Grade \times Student Gender

Direction of Change Demonstrator	Brass \rightarrow Brass (BB), <i>n</i> = 17				Brass \rightarrow WW (BW), <i>n</i> = 20				WW \rightarrow Brass (WB), <i>n</i> = 21				WW \rightarrow WW (WW), <i>n</i> = 19			
	Female		Male		Female		Male		Female		Male		Female		Male	
	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl
Grade K	1	0	2	1	1	3	1	3	2	1	2	3	3	2	1	1
Grade 3	3	1	1	2	4	1	0	0	3	0	2	3	0	4	0	4
Grade 5	1	1	1	3	2	2	0	3	1	1	1	2	2	2	0	0
Total	5	2	4	6	7	6	1	6	6	2	5	8	5	8	1	5

more likely to prefer predominantly masculine instruments when males demonstrated them. Tendencies were not large enough to be statistically significant in either gender. Each gender preferred instruments matching their own gender when same-gender demonstrators were present. It is important to note that these tendencies did *not* occur when opposite-gender demonstrators were present. Unlike the Harrison and O'Neill's (2000) study, our students heard the same musical selection played on each instrument, perhaps explaining potential differences. Unlike our study, Harrison and O'Neill found greater preference for opposite-gender instruments among children who had attended a concert by same-sex performers. These differences might be explained by differences in procedures (we surveyed preference in intimate in-class demonstrations, whereas Harrison and O'Neill surveyed preference after formal concerts; we controlled for music selection, whereas their children heard instrument-specific selections; they surveyed 357 children, whereas we tested only 104). Perhaps a most important difference is the fact that we looked at preferences for wind instruments commonly present in school bands (flute, clarinet, saxophone, trumpet, trombone, and tuba), whereas Harrison and O'Neill examined piano, trumpet, violin, drums, guitar, and flute. The specific instrument choices or combination of choices conceivably could be highly influential in explaining the differences in our findings.

Again, our data set is too small to consider these findings as anything more than intriguing possibilities; but the data differences are large enough for us to conclude that this study and others on the effect of demonstrator gender on instrument choice should be continued.

Further research might include showing children demonstrations by males *and* females on each of the instruments, or testing preference a few months later to examine the stability of preference. What is the relationship between vocal versus instrumental preference? Students have been asked whether they prefer to listen to vocal or instrumental selections (LeBlanc & Cote, 1983), but few

data are available on student preference for performing vocally or instrumentally. As is often true during research, one of the most intriguing results occurred when we were not taking data. Both the music teacher and the researchers present remarked that when the children were given the opportunity to ask questions of the demonstrators, they seemed to ask the male demonstrators different types of questions (How does the horn work? What do you do to play it?) than they asked the female demonstrators (How much do you like your horn? How hard is it to play?). Keep in mind that different groups saw the male demonstrators than saw the female demonstrators, but their responses may indicate another fruitful research area. Additionally, one might speculate about the effects of the live demonstrations. Would viewing a video of the demonstrators yield the same results? We videoed each demonstration in our study so that we can continue this line of questioning.

The major question remains regarding how parents, teachers, and directors might encourage children to play instruments, yet avoid biasing their instrument choices. Our hope is that music educators will consider the possible factors that could impact the way a student chooses his or her instrument. Presenting the instruments in various ways to avoid bias may be something to consider. If we are conscious of the possible gender bias, we can make strides to eliminate the students' exposure to such stereotypes. For example, rather than displaying only pictures of females playing the flute, educators might display pictures of male flute players as well. We hope that this study will lead educators, parents, and researchers to ask more questions that will help counteract the stereotyping that seems to exist in instrument selection.

The most salient question seems to involve the number of children in our present study. Will results we found in this study occur if we expand the numbers of students and numbers of different school settings we examine? Would larger numbers allow us to examine in more detail potential differences between younger and older children? Clearly, further research is needed to investigate the

effect of demonstrator gender, or perhaps some yet unidentified variable, on the complex issue of instrument selection.

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