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Mark E. Vickers

ENTITLED:

The effect of model gender on instrument choice preference of beginning band students

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ABSTRACT

The effect of model gender on instrument choice preference of beginning band students

Mark E. Vickers, Author

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The purpose of this study was to examine the effect of model gender on instrument preference of beginning band students during the selection process. The research questions were:

1. Do student instrument preferences prior to an instrument demonstration reflect typical trends in gender stereotypes of instrumental performers?
2. Does the gender of the person modeling the instruments during a demonstration and selection process affect the instrument choice preference of the student?

Participants ($N = 171$) from six schools with five instructors from the Northeast were grouped into four treatment groups. First, I designed a questionnaire containing a pretest and posttest. In the pretest, the participant responded with demographic information consisting of grade, sex, and whether or not a parent played an instrument, and if so, which instrument. Next, participants rated their preference for six band instruments on a scale of 1 to 5 with 1 representing no desire to play the instrument and 5 representing a strong desire to play the instrument. After observing the instrument demonstration, the participants rated their preferences for the instruments in the identical format as the pretest. Participants next answered an open-ended question about why they most preferred the instrument they did.

I conducted a pilot study with 23 participants and determined that the research instrument was suitable. Next, I administered the research instrument to four treatment groups. Treatment 1 ($n = 76$) observed all instruments demonstrated by a female modeler. Treatment 2 ($n = 30$) observed all instruments demonstrated by a male modeler. Treatment 3 ($n = 23$) observed all

instruments demonstrated by typically associated gender stereotypes. Treatment 4 (n = 42) observed all instruments demonstrated by atypically associated gender stereotypes.

I determined the internal reliability of the research instrument with Cronbach's Alpha (α = .68). After determining a mean gain score by subtracting the pretest preference score from posttest preference score, I performed a series of ANOVA tests. Students preferred instruments along typical gender stereotype lines initially with females preferring flute and males preferring trumpet most. I determined that there was no effect of model gender on instrument preference of beginning band students. While some changes in preference existed from pretest to posttest, especially for trumpet, none of the changes were significant. I determined in the posttest that while males continued to prefer trumpet most, females most preferred trumpet and clarinet equally with flute their next choice. Instruments played by parents followed typical gender stereotype assignments with most mothers playing flute followed by clarinet and most fathers playing percussion followed by trumpet. The majority of the participants who responded to the open-ended question (66%) stated that tone was the reason for their instrument preference.

UNIVERSITY OF HARTFORD – THE HARTT SCHOOL

The effect of model gender on instrument choice preference of beginning band students

A DISSERTATION

SUBMITTED TO THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

DOCTOR OF PHILOSOPHY

FIELD OF STUDY – MUSIC EDUCATION/PEDAGOGY

By

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WEST HARTFORD, CT

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Dedication

This dissertation is dedicated to the memory of my parents, Mary and Francis Vickers. While being non-musicians and strictly consumers of music, they supported me in every way possible throughout every facet of my music education, beginning with my youthful days on the accordion, and throughout my training and work as a music educator. They were so proud of me as I started my work in the degree program and unfortunately were not here on this earth to see its completion. Somehow, I know they know my work is complete and are standing proud of my accomplishment from above.

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Introduction

Overview

Acceptability of which gender performs on which instrument has changed throughout the centuries. Abeles and Porter (1978) conducted one of the first studies in music education to determine what gender stereotypes students and adults attached to music instruments. Abeles (2009) revisited instrument gender stereotyping and determined that little change had occurred since 1978. How students perceive gender stereotypes may affect their instrument selection (Conway, 2000; Delzell & Leppla, 1992; Fortney, Boyle, & DeCarbo, 1993; Tarnowski, 1993; Taylor, 2009).

In this introduction, I will report the definitions of stereotype and gender leading to gender stereotypes. Next, I will give an overview of women and men in music inclusive of how society formed gender stereotypes in Western classical music. I will conclude with a discussion of gender stereotypes' connection to music education. I will include a discussion of music instrument gender stereotypes and their effect on the selection of instruments for study.

Stereotype

The word "stereotype" comes from the conjunction of two Greek words: *stereos*, meaning "solid," and *typos*, meaning "the mark of a blow," or more generally "a model" (Schneider, 2004). Originally, stereotype referred to a solid model and to a metal plate used to print pages. The word's connotation later became a reference to rigidity and duplication or sameness. By the early 20th century, people applied the term to refer to rigid, repetitive, often rhythmic behavior patterns after journalist, Walter Lippmann used the term in his 1922 book, *Public Opinion.* Eventually, we used the term stereotype to refer to characteristics that we apply

to others based on their racial, national, ethnic, or gender group. Schneider (2004) defined stereotypes as qualities perceived to be associated with particular groups or categories of people.

Being able to bring things into a group forms a schema, a cognitive structure of what a grouping or situation is about. Our brains naturally want to organize things into groups for easier comprehension (Schneider, 2004). Humans form beliefs about these groupings and arrive at generalizations that can be inaccurate and negative based on faulty reasoning. People form stereotypes through personal experiences or from outside influences such as culture.

In addition, humans form conceptions of ingroups and outgroups. A person wants to feel that the group they are associated with is positive and may consider members of outside groups in a negative way, known as ethnocentrism. Prejudice can become part of the stereotyping process (Schneider, 2004; Stangor, 2000). Given the global nature of our society, people are encountering groups of different people and are forming opinions and concepts about them. People form stereotypes of these groups along with prejudices based on personal experience and external influences (Stangor, 2000). This can also lead to discrimination against prejudiced people because of how they are stereotyped. Certainly, society forms stereotypes of musicians and gender associations within music.

Gender

People sometimes use the words gender and sex interchangeably. However, these terms have distinct meanings. Lindsey (1990) stated that the term sex denotes male or female based on the biological aspects of a person, involving characteristics that differentiate females and males by chromosomal, anatomical, reproductive, hormonal, and other physiological characteristics. Gender refers to social, cultural, and psychological aspects linked to males and females through particular social contexts. Society links gender to masculinity and femininity, terms that

numerous cultures have defined differently and have changed over time, even in the American culture, demonstrating that humans learn them as opposed to them being innate (Basow, 1980). Therefore, what we term masculine and feminine does not refer to any biological sense of being a male or a female. Instead, society establishes and defines these terms. The definition of gender becomes a social construct (Kramer, 2011).

Redefining Gender

Researchers continue to redefine sex and gender types beyond the traditional binary conceptions of male and female as well as masculinity and femininity (Johnson & Repta, 2012). Previous conceptions of chromosomal arrangements of XX and XY are no longer the only existing arrangements. In addition, chromosomal combinations of XXX, XXY, XYY, and XO exist. As gender builds from sex, variations of genders beyond masculine and feminine also begin to form. Relying on the male-female/masculine-feminine binary may homogenize research participants and results, thereby overlooking the variation that is inherent in populations. Variations exist in how people define their sexual (or gender) identity in terms of one's feelings of being male, female, androgynous, or undifferentiated, their biological gender, or their sexual orientation (Kroger, 2007). During early adolescence, people form stronger sexual identities and perceptions of gender. As physiological changes occur, conceptions of masculinity and femininity along with general sex role expectations intensify as males and females experience increased socialization pressures to conform to traditional male and female sex roles.

Gender Stereotypes

Social scientists refer to the expected behavior associated with any given status as a "role" (Lindsey, 1990). People define and structure roles around the privileges and

responsibilities that people understand the status to possess. Certain roles become associated with a specific gender and become stereotypes. Most people associate masculinity with competency, instrumentality, and activity while associating femininity with warmth, expressiveness, and nurturance (Basow, 1992). Society further categorizes gender stereotypes by characteristics of race, ethnicity, and religion. For example, how someone defines a Jewish mother may be different from a non-Jewish mother. People think differently of the characteristics of a black woman versus a white woman or a Chinese man versus an Italian man. Therefore, the gender stereotype becomes the formulation of what characteristics constitutes being feminine or masculine as decided by society.

If the stereotypes function as part of the sex-role expectations, then they will influence people after they learn about them. While individuals may not conform completely to a sex stereotype, the stereotypes themselves have a power as standards to which to conform, against to which rebel, or with which to evaluate others (Basow, 1980). Gender stereotypes may set up a self-fulfilling prophecy in which a person elects to act in a gender stereotypical way (Basow, 1992). This could cause a female to feel less adequate in math and therefore not work as hard. Gender stereotypes affect people through impression management (Basow, 1992). People may want to impress people in a certain way that they feel is acceptable to another person. For example, a woman might present herself as very conventional when dating someone she believes is part of a conventional stereotype. In addition, people differ in the degree to which they possess traits stereotyped as gender appropriate, with most people not possessing only those traits that society considers gender-appropriate.

Men and Women in Music

Historically, men have dominated the musical world as performers, composers, and conductors. When one thinks of important names connected to these facets of music, one immediately thinks of men with an occasional mention of women. While most authors of music history books focus on the contributions of men, one can find writings about the involvement of women in music, although marginalized in history (Bowers & Tick, 1986). Neuls-Bates (1996) has investigated women performers, both vocal and instrumental, composers, and educators. Until the rise of conservatories in Europe and the United States in the late eighteenth and nineteenth centuries, female musicians typically came from a limited number of backgrounds inclusive of the convent, the aristocracy where education was more available to women, or families of musicians that nurtured their daughters' talents as well as their sons (Bowers & Tick, 1986; Neuls-Bates, 1996).

Women had difficulties participating in music once the church excluded them as singers in the fourth century (Bowers & Tick, 1986; Neuls-Bates, 1996). They were able to continue to make music in the convent, but not to the extent of men in the mainstream church. By the late sixteenth century, they began to establish themselves as professional singers in Italy, and in France by the mid-seventeenth century (Bowers & Tick, 1986), creating a demand for their high sound. However, as this happened, the advancement of the castrato occurred both in the church and in opera. It was not until the decline of the castrati in the late eighteenth century that women took their place in opera. At that time, society accepted women as solo vocal artists, and in the nineteenth century, women could generally participate in choruses and church choirs with the exception of the Catholic and some Anglican churches (Neuls-Bates, 1996).

During the rise of instrumental music during the Renaissance, women played instruments as well as men. However, gender stereotyping began immediately. Society expected women to perform on instruments it considered "feminine," which required no alteration in facial expression or physical demeanor (Macleod, 1993; Neuls-Bates, 1996). Keyboard instruments such as the harpsichord and the piano were highly desirable more so because they could be played at home. Other accepted instruments for women were the viol and the lute during the Renaissance and the Baroque eras, and the harp and the guitar in the Classic and Romantic periods. Meanwhile, society was accepting of men playing these previously mentioned instruments along with winds, brass, percussion, the larger strings, and the violin for the first two hundred years of its existence. Women did play some of these masculine instruments in Italian convents late in the Renaissance and in the Venetian conservatories and *ospedali* for women during the seventeenth and eighteenth centuries. It was not until the second half of the nineteenth century that choice of instrument widened greatly for women, although the effects of gender stereotyping are still in existence today (Campbell, 2003; Green, 1997; Macleod, 2001; Neuls-Bates, 1996).

In addition to being active in convents, professional opportunities for women instrumentalists existed as minstrel musicians of the High and Late Middle Ages, and elsewhere in the Church. However, women found exclusion at courts and in theater orchestras in the Baroque era. As concert artists, women keyboard players and violinists found acceptance beginning in the eighteenth century, gaining recognition for their fine interpretive powers as instrumentalists. However, orchestras and other ensembles remained closed to females. As a result, during the late nineteenth and twentieth centuries, women formed all-female orchestras and chamber ensembles for female players and conductors, enabling them to advance their

experience and employment despite their exclusion from professional symphony orchestras (Campbell, 2003; Macleod, 1993; Neuls-Bates, 1996).

Males as performer-instrumentalists dominated music composition. Given the restraints of women as performers in society, women also did not have the freedom to compose other than in certain circumstances. Women composed in the convent during the Middle Ages and Renaissance. They performed as secular singers beginning in the second half of the sixteenth century and as keyboard players and violinists beginning in the seventeenth and eighteenth centuries respectively (Neuls-Bates, 1996). Women composed music tailored to their professional situations as well as some limited larger works. Realizing the male domination in music composition and the gender association of musical creativity and masculinity, some women were hesitant to advance their works and wrote about their humility in their dedications (Neuls-Bates, 1996). Eventually with the proliferation of music conservatories in the nineteenth century, female students advanced as composers and instrumentalists. This also coincided with the women's movement from 1880-1920. Women became famous vocal soloists, pianists, and violinists of international renown. Performers included singer, Jenny Lind, violinist, Maud Powell, and pianists, Julie Rivé-King, Fannie Bloomfield-Zeislerd, and Teresa Carreño (Campbell, 2003; Macleod, 1993). The cello became a socially acceptable solo instrument for women, although played sidesaddle. Society also eventually accepted female flute soloists since playing the flute did not contort the woman's face. Eventually, society accepted women into professional orchestras and as composers, as well as in other capacities of the music industry (Neuls-Bates, 1996).

However, society still does not readily accept females as conductors (Campbell, 2003). Some females were able to establish a career in conducting such as Ethel Leginska, Antonia

Brico, Joann Falletta, and Marin Alsop (Macleod, 2001). During the late eighteenth and early nineteenth centuries, society started to view involvement in music as effeminate, with men having to prove their masculinity. However, society considered conducting a masculine position of leadership. This gender stereotype of conductors being male persists today (Campbell, 2003).

Gradually, society accepted women into music education as the public considered them nurturers of children. However, the public accepted women as classroom teachers and not band directors or instrumental teachers (Campbell, 2003). School music programs became a microcosm of the existing classical music world in relation to gender roles and stereotypes.

Gender in Music Education

Gender stereotypes and associations have prevailed in music education. What gender is associated with each instrument has changed little over time. Many parents and students agree on which gender is associated with which instrument. Typically, upper woodwinds and upper strings are associated with females while lower brass and strings, and percussion are associated with males (Abeles & Porter, 1978; Delzell & Leppla, 1992; Griswold & Chroback, 1981; Harrison & O'Neill, 2000; Rife, Shnek, Lauby, & Lapidus, 2001). Instruments generally associated with females were clarinet, flute, and violin, while drum, trombone, and trumpet were associated with boys (Abeles, 1978). When placing instruments on a feminine-masculine continuum, the instruments were placed flute, violin, clarinet, cello, saxophone, trumpet, trombone, and drum representing most feminine to most masculine. In addition, as students increase in age, their perceptions of gender stereotyping of music instruments increase (Abeles & Porter, 1978; Macleod, 2009).

Following Abeles and Porter's (1978) seminal study, researchers determined that instrument gender stereotyping continued and found more detailed gender associations of

instruments among college students. Rated from most feminine were flute, piccolo, glockenspiel, cello, choral conductor, clarinet, piano, French horn, and oboe. Rated most masculine were guitar, cymbals, instrumental conductor, saxophone, bass drum, trumpet, string bass, and tuba (Griswold & Chroback, 1981). While there has been some lessening of gender associations in more recent years, these associations have remained present (Delzell & Leppla, 1992). Females continue to be the majority of flutists, oboists, and clarinetists, while males continue to be the majority of trumpeters, French hornists, trombonists, baritone hornists, and tubists (Fortney, Boyle, & DeCarbo, 1993; Zervoudakes & Tanur, 1994). Students in grades K – 2 continue to have the same perceptions of music instrument stereotypes (Tarnowski, 1993).

Photographs within textbooks can influence gender attachments to certain instruments and people in different music occupations. After viewing many textbooks, Koza (1992, 1993, 1994) determined that men prevail in the depictions of who would play what instrument, compose music, or conduct music. While students use music textbooks in the classroom, pictures within the textbooks may inform their gender stereotype perceptions. Authors of textbooks may work from their own music gender stereotypes when composing these illustrations and therefore perpetuate these perceptions with students.

Race along with gender can influence perceptions of performance level (Elliott, 1995/1996). While hearing the same audio recording dubbed into various presentations, judges scored whites higher than blacks as well as participants performing with the appropriate gender stereotyped instrument. When evaluating musical performance, evaluators must be careful to not let gender and race biases influence their judgement.

Music instrument preferences that align with gender stereotypes are not only in the United States, but also abroad. Girls preferred piano, flute, and violin while boys preferred

guitar, drums, and trumpet in England (O'Neill & Boulton, 1996). Girls consistently selected instruments that were from the upper woodwind family with a predominance of boys selecting brass and percussion instruments across 25 countries worldwide (Sheldon & Price, 2004). Within students involved in public education, there has been a consistency of what gender stereotypes are associated and accepted with which instrument (Abeles, 2009; Conway, 2000; Hallam, Rogers, & Creech, 2008; Marshall and Shibazaki, 2012).

The Effect of Gender during the Instrument Selection Process

Various factors may affect students' choices of musical instruments, including how instructors present instruments. When presented with emphasis on one instrument, directors may sway students' choices (Byo, 1991). Teachers should demonstrate instruments in such a way that students do not feel a gender attachment to instruments (Gould, 1992). Students guided by professionals in their instrument choice may be more likely to continue with their instrument and feel more secure selecting instruments that cross gender stereotype lines (Cannava, 1994). Modeling instruments with opposite gender-stereotype may affect student preferences for instruments and allow students to select opposite-gender stereotyped instruments (Harrison & O'Neill, 2000; Killian & Satrom, 2011; Pickering & Repacholi, 2001; Polinak, 2013).

Other factors influencing instrument choice are parents, other family, friends, sound of the instrument, cost of the instrument, instrument availability, television/commercial music, student's sex, physical properties of the instrument, ease/accessibility, perceived difficulty in playing the instrument, and music teachers (Graham, 2005; Katzenmoyer, 2003; Sinsabaugh, 2005). Music teachers are typically unbiased and usually do not take into account student gender and race when recommending instruments to students for study and promote gender-neutral stereotyping of instruments (Johnson & Stewart, 2004, 2005). Techniques used to address

gender stereotyping of instruments with students may include class discussions, videos, pictures, recordings, and live demonstrations, which should be part of pre-service music teacher training (Bayley, 2004).

Various factors contribute to students' decisions to play opposite gender-stereotyped instruments and perseverance in continuing those instruments. Physical characteristics, teacher input and interest, student sense of confidence, role models, a desire to be different and unique, and an ability to withstand ridicule from peers and others may contribute to student continuance with an opposite gender-stereotyped instrument (Sinsabaugh, 2005). Some male flutists are more competitive and as they become more successful, such as winning a position in an all-state ensemble, peer ridicule subsides (Taylor, 2009).

Personality traits may also contribute to instrumental participation, continuation, and choice, especially with woodwind players as well as academic achievement, family structure, and gender of student (Cutietta & McAllister, 1997; Kinney, 2010; Payne, 2009). Females may be more likely than males to continue instrument study (Kinney, 2010). Students who play instruments may be more extroverted and open, inclusive of those playing opposite-gender stereotyped instruments. Instrument timbre preference may be a more significant indicator of instrument selection than gender stereotype and it may be that gender stereotype is being confused with timbre preference in determining which gender is more likely to play a specific instrument (Payne, 2009). It is possible that females may simply be more attracted to upper voiced, more delicate sounding instruments while males are more attracted to more aggressive sounding instruments such as brasses and percussion. In addition, females and males may be more attracted to the sounds of instruments that align with the pitch frequencies of their own voices.

Other Effects of Gender

Students' attribution for success may vary between genders. While most students placed more importance on ability and effort as causal attributions for success or failure, females perceived ability and effort as being more important than males. Previously females attributed success or failure to task difficulty or luck (Legette, 1998).

When evaluating performances, performers' gender may affect judges' perceptions of the performer and their ability to perform. Different perceptions of dominance, leader strength, sensitivity, and caring occur depending on which gender is playing an instrument and the instrument's perceived masculinity or femininity. Gender schemas influence social judgements of musicians (Cramer, Million, & Perreault, 2002).

Gender stereotypes may affect instrument choice and as a result, limit performance options. Females are less likely to choose traditional instruments associated with jazz as many females choose flute and clarinet and not saxophone, brasses, or percussion. Therefore, females have less opportunity to perform jazz. Some females play secondary instruments that would be part of a traditional jazz ensemble, but are more likely to withdraw from jazz programs over time (McKeage, 2004).

Gender stereotypes appear in subject areas other than music. Paralleling the development of gender stereotyping of music instruments is the development of gender stereotypes in math. Students begin to develop this concept by the time they reach kindergarten, and as with music, the concept of gender stereotype grows stronger over time. Boys identified themselves with math stronger than did girls. They developed the concept that boys were good at math and girls were not before any differences in math achievement emerged (Cvencek, Meltzoff, & Geenwald, 2011). In addition, gender stereotypes may affect teachers' perceptions of students in math

(Tiedemann, 2002). Researchers should continue to explore how students develop their academic identity and how it contributes to educational choices, success, and future aspirations. Neutralizing gender stereotypes is not just a concern of music teachers, but teachers of other subjects as well.

Rationale for Study

Humans create stereotypes of people or things as a means of organizing these items into perceivable groups in order to help make sense of the world (Schneider, 2004). These beliefs attached to these groups come from personal experiences or from outside influences in culture. Society creates a set of beliefs specific to gender. People in a specific culture collectively define the qualities of what they consider masculine and feminine (Basow, 1980, 1992). In music, society defines perceptions as to what is appropriate and acceptable for masculine and feminine involvement in music such as what instrument to play, thereby constructing music gender stereotypes. Historically, men have dominated the music profession as society has not always found women's involvement acceptable, delegating them to certain areas of performance and limiting their work as conductors and composers (Bowers & Tick, 1986; Neuls-Bates, 1996; Macleod, 1993).

Eventually, males and females became associated as performers of specific instruments. Researchers have determined that students and adults now conceive that females should play certain instruments while males should play others with typical patterns that have not changed much over time (Abeles 2009; Abeles & Porter, 1978; Delzell & Leppla, 1992; Griswold & Chroback, 1981; Harrison & O'Neill, 2000; Rife, Shnek, Lauby, & Lapidus, 2001). Gender stereotypes may affect instrument selection for study (Conway, 2000; Delzell & Leppla, 1992; Fortney, et al., 1993; Tarnowski, 1993; Taylor, 2009). Student instrument selection may later

limit their musical opportunities (McKeage, 2004). How teachers present instruments to students may alter their perceptions of what is appropriate for them to play (Byo, 1991; Cannava, 1994; Gould, 1992; Harrison & O'Neill, 2000; Killian & Satrom, 2011; Pickering & Repacholi, 2001; Polinak, 2013).

When working with instrument presentation effects, little research exists that is tied specifically to the age students begin instruments and more specifically to students who are being presented with instruments as they are about to choose an instrument for study. Harrison and O'Neill (2000) investigated the influence of exposure to counter gender-stereotype role models and its effect on instrument preference, but students were age seven and eight and were not selecting instruments for study. Pickering and Repacholi (2001) also investigated the effect of various gender-stereotype role models on instrument preferences, but with kindergarten and fourth-grade students who were not using the results to select instruments for study. Killian and Satrom (2010) investigated the effect of demonstrator gender on wind instrument preferences of kindergarten, third-grade, and fifth-grade students, but again the students were not selecting instruments for study.

Researchers have determined that students attach gender to instruments and that these gender associations affect student preferences and instrument selection. Researchers have also determined that the way in which adults present instruments to students affects their instrument preferences. I have not been able to find any research that specifically tied demonstrator gender to instrument preference for choice of instrument study. It is clear that directors believe students should be able to choose instruments without gender stereotype restrictions. I believe that a need for research exists to help in this process. If I am able to determine that demonstrator gender can help students select an instrument for study free from gender stereotype restrictions, teachers

may be able to cultivate students who feel free to cross gender stereotype lines, which could lead to the availability of more musical opportunities for them.

Purpose

The purpose of this study was to examine the effect of model gender on instrument preference of beginning band students during the selection process.

Research Questions:

1. Do student instrument preferences prior to an instrument demonstration reflect typical trends in gender stereotypes of instrumental performers?
2. Does the gender of the person modeling the instruments during a demonstration and selection process affect the instrument choice preference of the student?

Chapter Two

Literature Review

Each year, children of various ages select an instrument for study in public and private schools. Students select instruments based on a number of factors including instrument presentation, parent and teacher recommendations, availability, friends, perceived level of difficulty, gender stereotype association, and instrument tone (Conway, 2000; Delzell, Leppla, 1992; Fortney, Boyle, & DeCarbo, 1993; Tarnowski, 1993; Taylor, 2009). Students often list instrument tone as the main criterion for selecting the instrument (Conway, 2000; Delzell, Leppla, 1992; Fortney et al., 1993; O'Neill, Boulton, 1996; Sinsabaugh, 2005; Sinsel, Dixon, & Blades-Zeller, 1997; Tarnowski, 1993; Taylor, 2009). The importance of each factor varies with each student. Typical patterns based on gender stereotype association take place in student instrument selection. However, some students will make choices that are opposite of these norms. I will give an overview of the literature that includes researcher findings about the instrument selection process along with how students and adults perceive and assign gender stereotypes to musical instruments.

Gender Association

One major determinant in instrument selection is gender association. Researchers have studied gender associations that students and adults give to woodwind, brass, string, and percussion instruments. Abeles and Porter (1978) conducted a series of experiments to determine instrument gender associations. First, they determined that adults preferred in order, clarinet, flute, and violin for study by their daughters and drum, trombone, and trumpet for their sons, while considering cello and saxophone to be gender neutral. In the second part of their study, 32 music majors and 26 non-music majors placed eight instruments on a masculine-

feminine continuum. The participants placed flute, violin, clarinet, cello, saxophone, trumpet, trombone, and drum on the continuum moving from most feminine to most masculine. When investigating students' instrument gender perceptions in grades K – 5, the researchers determined that students became more gender oriented towards instruments as they increased in age.

Since this early study, researchers have continued to explore instrument gender stereotypes. Griswold and Chroback (1981) explored sex stereotyping as a function of gender and college major in relation to instruments and conductor with undergraduate music majors and non-music majors. The participants rated the harp as most feminine followed by flute, piccolo, glockenspiel, cello, choral conductor, clarinet, piano, French horn, and oboe. Participants rated guitar, cymbals, instrumental conductor, saxophone, bass drum, trumpet, string bass, and tubas as having masculine connotations, confirming the earlier work of Abeles and Porter (1978). However, Griswold and Chroback (1981) found music majors tended to stereotype more in the masculine direction with music majors rating clarinet and string bass significantly more masculine than non-music majors did.

Delzell and Leppla (1992) determined that instrument positions on the masculine-feminine continuum remained relatively stable at the undergraduate level. The researchers determined that the magnitude of gender associations had lessened since 1978; however, such associations were still noticeably present. They determined that fourth-grade girls' top four choices were flute, drums, saxophone, and clarinet while the boys choices were drums, saxophone, trumpet, and flute in order from most to least preferred.

Koza (1992) investigated sex equity in textbook illustrations by examining nearly 3,500 figures and concluded that exclusion, underrepresentation, and stereotyping persisted in the illustrations. The researcher determined that 68.9% of the music-related figures were male.

Pictures of children were more equitable with 56.4% being male, still a majority. Koza determined that 72.9% of professional musicians depicted were male with 76.1% of all people pictured being male. The influence of stereotypes was obvious in representations of instrumentalists, which aligned with previous research. Koza found no illustrations of females playing the tuba, timpani, bass drum, or organ. Other instruments rarely associated with females were saxophone, trombone, trumpet, bassoon, clarinet, and double bass. Females were usually depicted playing piccolo, dulcimer, and maracas. Flutes and mandolins were associated equally with males and females even though the flute is usually gender-stereotyped as a female instrument. The researcher stated that attire, pose, camera angle, and setting create an impact within the photo. Koza recommended that music educators be aware of text illustrations when selecting materials for students.

Koza (1993) also analyzed gender-related references appearing in the Music Supervisors' Journal from 1914 through 1924. The researcher determined that both coeducational and single-sex musical organizations abounded and that advocacy existed for vocal and instrumental instruction for boys and girls. However, females were much more involved in music programs than were males as music supervisors noted that males were missing from music programs. Yet when singling out one sex for consideration, the spotlight usually focused on males. Writers of the Music Supervisors' Journal discussed the role of music in the education of boys, career opportunities in music for males, the relationship of music to the nature and character development of boys, boys' musical likes and dislikes, the male singing voice, and music for the man at war. Meanwhile, they gave little attention exclusively to females, their interests, or their problems. While the Music Supervisors National Conference advocated for equality and inclusivity, when discussing gender-related issues, their focus remained almost exclusively on

males. The researcher suggested that many of the same gender issues from that time still prevailed in modern day.

In addition, Koza (1994) analyzed illustrations of females in 1988 middle school textbooks. The researcher examined 3,487 music-related figures in sixth-, seventh-, and eighth-grade teacher editions of three 1988 series by United States publishers. The researcher determined that only 31.1% of the figures were female. The illustrations as a group tended to reflect music-related sex stereotypes. Illustrations depicted men with instruments more than women, including some instruments typically gender-stereotyped as feminine. Sixth-grade books included the highest percentage of females (38%) and the seventh-grade the lowest (26.5%). Publishers named more men (19.7%) in illustrations than women (7.6%). The researcher suggested that publishers should equalize the depiction of males and females in music books and should consider race and social class in illustrations.

While investigating middle school band students' instrument choices, Fortney, Boyle, and DeCarbo (1993) found a continuation of previous gender stereotypes. The researchers developed a questionnaire to gather information concerning students' instrumental music experience, family participation in instrumental music, and reported reasons for choice and non-choice. Of 990 participants, the researchers found that 90% of the flutists were female, whereas nearly 90% of the trumpet/cornet players and percussionists were male. They determined that more than 70% of the clarinetists and oboists were female, and that a large majority of players of low brass instruments (horn (65%), trombone (90%), baritone (89%), and tuba (96%)) were male. Saxophone was the exception to the gender/instrument family association pattern; 72 % were male. Participants attributed tone as the major reason for instrument selection with other influences being teachers, parents, and friends.

Tarnowski (1993) investigated if gender association with music instruments continued to exist. Specifically, the researcher investigated attitudes of students in grades K – 2, what attitudes pre-service classroom teachers bring to their teaching and how they differ from those of the students, and what the effects were of a gender-neutral instrument presentation on gender-instrument associations and instrument preferences of young children. In the first part of the two-part study, 135 pre-service music teachers, 37 second-graders, 52 first graders, and 22 kindergarteners participated. Each participant viewed a form that consisted of line drawings of 15 instruments. The investigator held up each instrument in front of the participants as they listened to a recording of it. Next, the participants designated on the form whether a male or female should play the instrument, or if both could play it. Next, the researcher asked the participants to designate the instrument they would most like to play. Additionally, pre-service teachers indicated which instrument they might encourage their son or daughter to play. In the second part of the study, the researcher examined the effects of a gender-neutral presentation format on the gender-instrument associations of young children. Seventeen children in grades K – 2 enrolled in a university outreach program participated, which exposed the students to band, orchestra, and folk instruments while meeting once a week for 2 hours over an eight-week period. Participants completed the same pretest that was in the same format as the survey completed in the first part of the study. Four male and four female music education student assistants then demonstrated the instruments during the eight-week period using limited repertoire. The instructor also reminded the children of the gender-neutral nature of instruments. The participants then completed the same survey as a posttest.

From the first part of the study, the researcher determined that the participants considered flute, clarinet, and oboe to have feminine associations while they viewed tuba,

trombone, bass drum, and string bass as masculine. In over 50% of the responses, children and adults deemed the piano, violin, saxophone, and snare drum to be gender-neutral. Children significantly rated more instruments gender-neutral than adults. Instruments selected for study generally followed gender-stereotype norms. From the second part of the study, the researcher found that more than half the participants rated only the piano and French horn as gender-neutral while over 70% of the group rated all 15 instruments as gender-neutral on the posttest. The researcher determined that gender stereotyping existed with the participants with little change from previous findings and increases as students become older. The researcher also found that presentation of instruments might alter instrument gender-stereotyping attitudes.

In order to gather and report nationwide data on which genders play which instruments, Zervoudakes and Tanur (1994) reviewed concert programs solicited from elementary schools, high schools, and colleges and universities from all 50 states. The programs were from across three decades beginning with the 1960s. They determined that from 1987 – 1990, women were more likely to play such historically "male" instruments as the bassoon, French horn, and trumpet than in earlier periods but also more likely to play such historically "female" instruments as the clarinet, flute, and oboe. They also determined that for high school and college levels, when taking the increased proportion of female instrumentalists into account, the proportion of females playing "female" instruments increased over time while the proportion of females among those playing "male" instruments remained the same or decreased.

Gender stereotypes, along with race, are also factors in judgments of musical performance. Elliott (1995/1996) compared the scoring of male and female, black and white trumpeters and flutists by experienced music educators. The researcher selected the flute and trumpet because of their strong gender stereotype associations. Both an advanced high school

flutist and a graduate level trumpeter recorded the same etude. Next, eight performances were professionally video recorded consisting of a black male, black female, white male, and white female playing the flute and trumpet. The researcher dubbed the original audio recordings into each video recording so all flute and trumpet performances were identical. Eighty-eight music education majors at both graduate and undergraduate levels from seven universities judged the videotaped performances. Fifty-four males, 34 females, 47 whites, 34 blacks, and 6 Asians, with a combined average of 4.36 years of teaching experience participated. Each video began with a close-up of the performer's face, and then panned away so that the performer's embouchure and hand positions were not readily discernible. The judges used a Likert scale of 1 (low) – 9 (high) to rate the performers.

The researcher determined that gender, as a main effect was not significant; however, instrument was, with a significant interaction existing between instrument and gender. Flutists scored significantly higher than did trumpeters. No significant difference existed between the scores of male flutists and trumpeters. Female trumpeters scored significantly lower than female flutists did. Blacks scored significantly lower than whites. Among black performers, males tended to score the lowest whereas among whites, the females tended to score lowest. Among blacks, participants scored the trumpeters lower than the flutists while the opposite occurred with the whites. The researcher determined that stereotyping may influence evaluations of performers and that gender bias seemed to influence only those judgments made of performances by women with female trumpeters being scored significantly lower than female flutists, while males tended to score the same on both instruments. This supported that masculine/feminine associations for certain musical instruments are rather strong and that prior expectation can influence how even experienced musicians hear and judge musical performances.

Students' psychological sex type may also influence instrument selection and retention. Sinsel, Dixon, and Blades-Zeller (1997) investigated the most and least preferred instruments by fourth- and fifth-grade students based on self-assigned sex type. First, the participants completed the Children's Sex Role Inventory. Next, the participants witnessed a presentation of nine typical band instruments and then completed a survey assessing most- and least-preferred instruments. Masculine sex-typed students preferred masculine-stereotyped instruments while female sex-typed students preferred feminine-stereotyped instruments, and androgynous students preferred neutral instruments, such as the saxophone or cello. The researchers suggested that encouraging students to study instruments that match their sex type may lead to better retention in instrumental programs.

Gender preferences of instruments are not limited to the United States. In junior schools in England, after interviewing 153 students aged 9 – 11 years old, O'Neill and Boulton (1996) determined that differences in the types of instruments preferred by boys and girls existed and that gender-stereotyped associations of musical instruments appeared to be a critical factor in children's preferences. Girls preferred piano, flute, and violin whereas boys preferred guitar, drums, and trumpet. Based on common gender associations, both boys and girls had pronounced ideas about which members of each particular sex should avoid specific instruments with boys having a stronger view than girls.

After sampling 25 countries and 8,146 members of 170 ensembles, Sheldon and Price (2004) suggested that sex bias in instrument selection occurs in many countries other than the United States and England. They found a preponderance of females in the upper woodwinds with flute dominating, followed by oboe, clarinet, and bassoon with a prevalence of males in the remaining sections with tuba dominating, followed by euphonium, trombone, trumpet, and

percussion. Males only slightly outnumbered females playing saxophones and horn. Japan was an exception with 84% of all performers being female.

In a phenomenological study, Conway (2000) investigated gender and musical instrument choice perceptions of high school instrumental music students. The researcher interviewed 37 high school instrumental music students. Investigated student perceptions included recognition of gender stereotypes associated with musical instruments, where these stereotypes derived, what were self-stated personal characteristics that allowed them to break or adhere to gender stereotypes in instrument choice, parent reactions, and any other issues in instrument choice that transpired. Conway discovered that the students supported the conclusion that there continues to be associations of certain instruments with certain genders and that gender stereotypes exist because of society, parental influences, and the media. Students that broke gender stereotypes in their instrument choice attributed their decision to determined personal choice, supportive parents, and lack of concern for what others thought about their choice while students who did not break the gender stereotype in their choice did succumb to peer pressure and parent influences. Students listed instrument sound and characteristics, teachers, and peers as influencing their instrument choice decision. Students had the strongest reaction to males playing the flute, stating that it was feminine instrument meant for females. Conway suggested that music educators should continue to neutralize students' perceived gender stereotypes whenever possible.

Hallam, Rogers, and Creech (2008) investigated gender differences in musical instrument choice with participants aged 5 – 18 in various age groupings from England. The researchers took information from a larger survey study of 150 Local Authority Music Services functionality to determine which instruments boys and girls played. Some data provided the sex and

instrument played by pupils directly while in other cases, the researchers matched the pupils' names and instruments with data in the national Common Basic Data Set to establish gender. The researchers determined that the most gendered instruments were the harp (90% girls), flute (89% girls), electric guitar (81% boys), bass guitar (81% boys), voice (80% girls), fife/piccolo (79% girls), oboe (78% girls), tuba (77% boys), kit drums (75% boys), tabla (74% boys), clarinet (73% girls), and trombone (71% boys). The least gendered instruments were African drums, cornet, French horn, saxophone, and tenor horn. The gendered pattern of playing was relatively consistent across all ages with some exceptions.

While most Western cultures accept gender equality as appropriate and desirable, and girls outperform boys in most subjects and phases of education in England, the researchers found marked gender preferences. Hallam, Rogers, and Creech (2008) grouped possible causes into three categories: social, individual, and instrument factors. Social factors included cultural and religious factors, stereotypical expectations, role models (professional, teacher), parental influence, peer pressure, and sibling influence. Individual factors included age of start to learn, personal preferences for types of sounds, musical genres, type of physical interactions with instrument, development of identity in adolescence, value attached to stereotypical gender identity, and level of persistence. Instrument factors included access to tuition, cost, ease of transportation, appearance, quality of sound, pitch, size, physical requirements, and solo/group. The researchers suggested that gender stereotyping may be a strong determinant in instrument choice and that a need exists to provide cross-gendered role models, particularly at demonstration sessions.

Not only has gender stereotyping of instruments happened throughout the world, but also has continued with little change. Abeles (2009) examined if musical instrument gender

associations had changed since his earlier 1978 study. The researcher concluded that 90 music major college students and 90 non-music majors from 20 universities along with 2001 middle school students ranked musical instruments on a gender continuum in similar ways to previous studies and that there was little lessening of instrument gender associations during the three decades that had transpired since his original study.

Macleod (2009) compared aural and visual instrument preferences of 90 third and fifth-grade students. The researcher divided the participants into two groups and asked them to identify their favorite and least favorite instrument from a list of eight instruments. The researcher presented aural examples to one group and pictures of each instrument to the other group. The method of presentation produced no significant difference in selection. Overall, the students placed the instruments in the following order of preference: violin, flute, cello, saxophone, clarinet, trumpet, trombone, and French horn. While there was little difference between genders in instrument preference at the third-grade level, females preferred flute, violin, and cello more so than males at the fifth-grade level. The researcher determined that the most dramatic change in preference was in the rating between third- and fifth-grade boys. Third-grade boys rated flute as the highest preference while fifth-grade boys rated it as seventh and instead rated saxophone as the highest preference. The researcher suggested that accurate identification of student instrument preference may yield increases in recruitment as well as retention in instrumental programs and that teaching instrument names, sounds, and appearances prior to instrument selection is important.

Marshall and Shibazaki (2011) investigated the developing association between gender and musical instruments in young children and explored the interaction between gender, instrument, and musical style and its subsequent impact on the way in which young children

associated gender with a particular instrument. Thirty-three male and 32 female children aged 3 and 4 years old who attended three local nursery schools in southwest London, UK participated. The researchers recorded seven instrumentalists (piano, flute, drums, violin, trumpet, guitar, and clarinet) performing either a classical or a jazz/rock excerpt. Since it was difficult to define classical drums, the researchers recorded African drumming for the drum classical excerpt. Individually students heard all fourteen excerpts in random order while the researcher asked them to point to one of four pictures (two males and two females) to state whom they thought could be performing the excerpt. Male and female participants appeared to perceive instruments and styles in similar ways. Participants ranked drum, guitar, clarinet, trumpet, piano, flute, violin as most masculine to most feminine. The researchers determined that musical style appeared to carry some level of influence on the final choice with more female nominations occurring for the classical excerpts and more male nominations occurring with the popular/jazz excerpts. When considering the musical style, significant differences emerged. When hearing the guitar in a rock/jazz style, participants saw it as a male instrument while seeing it as a female instrument when hearing it in a classical style. Participants saw clarinet as gender-neutral until linked to the excerpt when participants associated it with females with the classical style and males with the jazz style. Participants assigned flute, violin as being female regardless of style. The researchers suggested that at least within younger age groups, some instruments might be gender specific due to some inherent qualities of the sound, texture, or pitch while some might become gender specific as a result of their being experienced within a specific musical style. Others might become gender associated because of the context in which they are experienced.

In order to determine if gender and musical instrument stereotypes had changed with middle school students, Wrape, Dittloff, and Callahan (2014) surveyed 99 middle school band

students. Students from grades six (n = 59), seven (n = 23), and eight (n = 17), involved with a suburban public middle school band program participated. Prior to instrument selection, the rising sixth-grade class attended a concert/workshop and observed instruments modeled by seventh- and eighth-grade band students. If available, atypical gender stereotype performers modeled instruments (e.g., a girl played the trumpet). Based on previous research, the researchers thought that using modelers that were close in age to the perspective band students might affect the students' decisions in the selection process. The researchers presented the participants a list of band instruments. The participants designated whether the instrument was a boy instrument or a girl instrument as opposed to rating the instrument on a continuum using a Likert scale from most masculine to most feminine as was typical in previous research. The researchers determined that the instrument gender assignments were largely commensurate with previous research regarding placing instruments on a gender continuum. The participants designated flute, clarinet as the most feminine, tuba, and percussion as the most masculine instruments. However, they designated others in contrary ways to previous research. Female participants were more likely to view trombone and French horn as girl instruments. A greater percentage of younger participants, those from grade six, designated the trumpet as a girl instrument compared to older participants from grades seven and eight. As students increased in age, their instrument gender assignments aligned more with traditional gender stereotype norms.

Instrument Selection Process

Researchers have examined how the presentation of instruments effects the instrument selection process. Byo (1991) tested the effects of three conditions of musical instrument demonstration – a clarinet biased condition; an unbiased, full demonstration; and a photos-only condition – on preferences for those instruments by third-grade children. The researcher sought to determine if using purposeful bias in instrument demonstration could induce children to

respond more favorably toward a less preferred instrument. Participants were 76 children from three intact third-grade music classes with each group receiving a different treatment. First, all participants viewed large photographs of instruments and then completed a questionnaire to rate their preferences of instruments from their favorite to least favorite. Participants in the first group received a demonstration of the instruments with a heavy bias of clarinet promotion. Participants in the second group received a full demonstration with all instruments equally presented. The third group of participants, the control group, did not experience any formal presentation of instruments, and instead viewed photographs with accompanying verbal descriptions. The researcher determined that the participants' preferences for beginning band instruments before treatment were similar across groups. Saxophone was the first choice of 39% of the participants, followed by drum (31%), flute (21%), clarinet (4%), trumpet (2%), and trombone (2%). The researcher did not find a significant agreement of preferences after the demonstrations and found that the clarinet bias group ordered their instrument preferences dramatically differently on the posttest, specifically for drum, flute, trumpet, and trombone. There was little change in the full demonstration group and no significant change in the control group. There were no significant gender association differences among groups in the pretest. Similarities and differences existed compared to previous research. Females preferred flute, but drums as well. Males preferred saxophone and drums and not brass. While no significant change of preference for clarinet existed within the clarinet bias group, rankings of instruments did change. The researcher suggested that instrument presentation did affect student preferences and should be a careful consideration when recruiting students into an instrumental program.

In a discussion of gender-specific occupational role models and their implications for music educators, Gould (1992) stated that researchers have determined that occupational sex

segregation is an integral part of society and that the vast majority of band directors are men whereas most elementary music teachers are women. The author also discussed gender-difference theories inclusive of how children establish gender stereotypes by kindergarten age and how observing models helps to establish gender stereotyping conceptions. Gould (1992) suggests that music educators be aware of this and promote an atmosphere where students do not attach gender-specific roles to their involvement in music.

Cannava (1994) investigated the relationship between the implementation of professionally guided instrument selection and beginning band retention. The researcher considered gender, instrumentation, sex stereotyping of instruments, teacher differences, parental support, music background, instrument choice, school scheduling, academic achievement, and student perceptions. The researcher compared three groups of sixth-grade beginning band students in four middle schools within a metropolitan school district. The first group consisted of 230 non-tested students, the second consisted of 148 non-tested students who attended school the following year, and the third group consisted of 76 students from that same year as the second group that were tested to determine if they had the physical capabilities necessary to perform on the instruments offered. Participants completed a researcher-designed questionnaire to determine their instrumental backgrounds. The researcher found that an 11% increase in retention occurred because of the administration of the instrument selection test. The researcher determined that retention of the tested students was most likely due to students being better suited to their instruments, not switching to different instruments, having parental support, playing their first choices of instrument, and having a higher Iowa Test of Basic Skills composite score than dropout students had. The researcher also found decreased instrument sex stereotyping and improved instrument balance with the tested students. The researcher

determined that 10% more tested girls played trumpet and 17% more tested girls played percussion.

Some people believe that personality plays a role in instrumental participation, continuation, and choice. Cutietta and McAllister (1997) wanted to determine if certain personality types begin instrumental study in schools along with what types of personalities continue in instrumental music across grades. They also wanted to determine if a trend toward homogeneity of personality type existed among students who chose to continue in instrumental music across grade levels and if a relationship existed between personality type and continuation on a specific music instrument. The purpose of their study was to observe student personality and instrument choices to determine whether relationships existed between these variables. Participants, 668 students from grades 7 – 12 chosen from eight schools from rural, suburban, and urban settings, answered the Junior Eysenck Personality Questionnaire. The researchers determined that the personalities of middle and high school students studying instruments were not significantly different from the general population of middle and high school students. The researchers also determined that a trend toward homogeneity of personality type existed among students who chose to continue in instrumental music across grade levels and that no differences in personality type existed because of student grade or instrument played. The researchers determined that students who begin woodwind instruction represent a more diverse population than generally found in instrumental music, but that 80% of these students stopped participating between seventh and twelfth grade. Therefore, the researchers suggested that directors be sensitive to a diversity of personalities among students selecting woodwind instruments.

Harrison and O'Neill (2000) investigated the influence of exposure to counter gender-stereotypic role models on children's gender-typed preferences for six musical instruments

inclusive of piano, trumpet, violin, drums, guitar, and flute. Three hundred and fifty-seven children aged 7 and 8 years that attended junior schools in the southwest region of England from 12 schools that formed three clusters of four schools participated. First, researchers showed each student individually a picture while playing an audio example of each of the six instruments and then asked the student to put his or her instrument preference in order. Next, the students had to decide which gender should play each of the instruments. After all interviews, the participants completed a classroom-based measure about their instrument preferences. Next, participants in Cluster I were given demonstration concerts with gender-consistent role models while Cluster II received demonstration concerts with gender-inconsistent role models. Cluster III did not receive any concert demonstrations. Researchers then asked all participants to complete the classroom-based measure about their instrument preferences again. The researchers determined an immediate influence of exposure to counter-stereotypic role models playing certain gender-related instruments on instrument preference. Girls indicated less preference for the piano after observing a male pianist, whereas boys indicated less preference for guitar after they had seen a female musician playing the instrument. Students showed less preference for "same-sex" instruments when played by "other-sex" musicians. Overall, students held typical gender-stereotype preferences.

Pickering and Repacholi (2001) conducted two studies to determine whether presenting instruments played by gender-inappropriate musicians could modify gender-typed musical instrument preferences and whether child gender or age (kindergarten versus 4th grade) influences the efficacy of such interventions. Seventy-seven male and 79 female kindergarten students and 79 male and 79 female fourth-grade students from the Sydney metropolitan area participated. In the first study, the researchers employed eight musical instruments inclusive of

four instruments identified by Australian adults as feminine (flute, violin, clarinet, cello) and four masculine instruments (drum, saxophone, trumpet, trombone). The researchers videotaped eight male and eight female high school students and placed them into two videos. All musicians performed the same excerpt and dressed similarly. In the first, four male and four female musicians demonstrated the eight instruments with typical gender-stereotyped instruments. In the second, four male and four female musicians demonstrated the eight instruments with opposite gender-stereotyped instruments. The researchers employed a third video to function as a "control" which presented the eight instruments displayed against the same yellow background while the same piece of music was heard from each. Real instruments were present in the room while the participants individually viewed one of the three three-minute videotapes. The researchers determined that students in the control group selected typical gender-stereotype instruments. The researchers did not find age or gender main effects, but determined that about half of the fourth-grade girls selected gender-inconsistent instruments, whereas only 25% of the kindergarten children and fourth-grade boys displayed such preferences. Children in the counter-stereotyped condition were less likely to select a gender-typed instrument than those in the control and stereotyped conditions. When considering students who saw the opposite gender-stereotyped video, the researchers concluded that exposing students to musicians playing gender-inconsistent instruments appears to be sufficient to modify, at least in the short term, children's instrument preferences. The presentation influenced the boys less than the girls, as they tended to still play masculine instruments.

In the second study, participants were 304 students from public schools including 139 kindergarten students and 165 fourth-grade students split almost equally between males and females. The researchers presented the instruments as drawings in one of three ways – the

instruments alone, the instruments with the gender-stereotyped musician, or the instruments matched with the same sex as the viewer. The participants circled a picture of the instrument that they would choose on a sheet of paper with pictures of all instruments shown. The researchers found no overall preference for gender-typed instruments when musicians were absent from the drawings. They also determined that children in the counter-stereotyped condition were less gender-typed compared to children in the correct gender-stereotyped condition. As in the first study, these participants failed to display an overall preference for the gender-consistent instruments. The researchers acknowledged the significance of instrument presentation in the selection process and suggested that both genders demonstrate each instrument during a presentation.

Teacher and student perceptions of musical selection may differ. Katzenmoyer (2003) investigated the factors that influence student musical instrument selection, student motivation, self-concept, satisfaction in instrumental music, as well as recruitment, retention, and attrition in instrumental music, timbre and musical style preference, student personality traits and attitudes, sex-stereotyping and gender associations of music, musicians, and musical instruments, and parent and music teacher perceptions and influences on instrumental music students. After soliciting 1,073 music students in grades five through nine, and 600 instrumental music teachers, the researcher used data collected from surveys from 333 completed educator surveys and randomly sampled 751 completed student surveys. All participants were from the mid-Atlantic. The researcher determined that parents, other family, friends, music teachers, sound of the instrument, cost of the instrument, and television/commercial music were factors determined by both teachers and students to be statistically significant reasons for student involvement in music. In addition, the researcher determined that music teacher participants also believed that intrinsic

and extrinsic motivation, students' personality, parents/family, music teachers, administrators, musical aptitude, and satisfaction with music programs influenced success in instrumental music. The researcher found that students and teachers did not significantly consider gender stereotypes when selecting instruments, unlike previous research findings. The researcher suggested that perhaps gender stereotyping of instruments has subsided over time.

Director assignment can determine a student's instrument choice. Johnson and Stewart (2004) investigated the effect of sex identification on the assignment of instruments to beginning band students. Eighty-four band directors solicited at music conferences and music education students solicited from major universities across the United States participated. All participants completed an online survey asking them which instrument of six they would assign after viewing eight pairs of students' pictures of their face, all of European descent with the exception of one African American, inclusive of four female pairs and four male pairs. One picture of the pair showed the student smiling and the second showed the student opening his or her mouth so that most aspects of the teeth and lips were observable. Forty-six of the participants viewed the full pictures while 38 viewed a cropped version of the same pictures concealing the sex, and largely, race of the student. When the researchers compared the results of the two participant groups, they determined that a significant difference occurred with one student where the mouth only group often recommended the trombone, but the other participants recommended equally the other five instruments. The researchers determined that knowing the sex of the student did not have a significant impact on what instrument band directors recommended the students play. They concluded that band directors do not steer students toward or away from a particular instrument based solely on the sex of the student.

Johnson and Stewart (2005) completed a second study similar to the previous study to investigate the effect of sex and race identification on the assignment of instruments to beginning band students by music educators. Two hundred and one music educators solicited by university professors across the United States participated. Using an online questionnaire, the researchers asked the participants to view 14 pairs of student pictures and then to assign one of six instruments (flute, clarinet, saxophone, trumpet, horn, or trombone) to each student based solely on the pictures presented. Half of the students shown were female and the other half male. Eight students were white with two whom had braces. Four students were African American, one girl was Native American, and one boy was of Latino descent. One picture of the pair showed the student's full face with a smile, the other with his or her mouth opened. One hundred three of the participants viewed the full face while 98 viewed the cropped picture showing the dental area only. The researchers found no significant difference between instrument assignments of both groups of participants. They determined that knowing the sex and race of the student did not have a significant impact on what instrument music educators recommended that he or she play. They suggested that gender and racial bias does not exist with music teachers when assigning instruments.

After soliciting responses from 322 music teachers, Bayley (2004) received 248 completed questionnaires concerning the procedures by which teachers prepare students to choose a musical instrument. When asked in what ways teachers counterbalance stereotypical gender associations, 61.9% indicated they took steps to address gender-stereotyping (bias) during the instrument selection procedure. They stated that by initiating class discussions, as well as using videos, pictures, recordings, and live demonstrations, they felt they were able to convey more effectively to their students that it is acceptable to play any instrument regardless of gender.

The researcher determined that the efforts had produced no fundamental change. Teacher's perceptions of students' choices were consistent with findings in previous research. The researcher suggested that it is essential that gender-stereotyping issues be addressed more effectively during pre-service teacher education and that in-service teachers receive workshops offering pedagogical strategies in order to address issues relating to gender and instrument selection.

Some students select instruments that cross over gender stereotypes. Sinsabaugh (2005) conducted a qualitative study focused on the factors that influenced students' decisions to play an instrument. The investigator also examined the students' background for factors and influences, including family, peers, and school environment. The researcher interviewed twelve students (6 boys, 6 girls) from diverse ethnic and social-economic backgrounds in the New York metropolitan area and observed along with the students' parents, and a school official. Of the twelve participants, two boys played flute, two boys played violin, two girls played trombone, one girl played drums, one girl played trumpet, one girl played violin, one girl played flute, one boy played drums, and one boy played trumpet. The researcher confirmed previous research findings that gender stereotyping in the selection of music instruments persists and that different customary reasons contributed to students selecting instruments. Reasons included instrument demonstration, whether a family member plays an instrument, if an instrument is currently at home, the sound of the instrument, and if the student views the instrument as difficult or easy to play. Factors contributing to instrument continuance were parental support, teacher and peer support at school, and cultural expectations. Helping students to cross gender stereotype lines were physical characteristics, teacher input and interest, sense of confidence, role models, a desire to be different and unique, and an ability to handle harassment.

Graham (2005) investigated reasons for initial instrument choice as a function of participant sex, perceived gender associations of musical instruments, and instrument transfer/non-transfer. Two hundred and thirty-five collegiate instrumental musicians who responded to a two-part survey concerning instrument choice and gender associations of 16 musical instruments participated. The researcher determined that the sound of the instrument was the strongest reason for instrument choice followed by physical properties of the instrument, influence of the teacher, ease/accessibility, influence of father, influence of male relative or friend, influence of female relative, challenge, and influence of mother. Participants determined that flute was the most feminine instrument while tuba was determined to be the most masculine. A male relative (other than the father) or male friend influenced those subjects who transferred from the initial instrument most. Both male and female participants were more likely to transfer to instruments considered more masculine. Initially, male participants were significantly more likely to choose brass instruments than woodwinds, and female subjects were significantly more likely to choose woodwinds over brass. Participants confirmed previous research in their gender stereotyping of instruments. The researcher suggested that music educators should consider presenting music instruments in such a way that both genders feel they can choose any instrument for study.

Different variables determine a student's choice and continuation of study of an instrument. Taylor (2009) completed a qualitative study to investigate support structures contributing to instrument choice and achievement among successful high school flutists. Participants included 18 males who earned a flute or piccolo position in a Texas All-State Band or Orchestra between 2003 and 2007. The researcher interviewed the flutists and coded their answers to determine common experiences among the participants. The researcher determined

that reasons frequently cited for choosing the flute included instrument timbre, physical appearance of the instrument, and social influences of friends who played the flute. Seventeen studied flute privately, most began instruction within 2 years of playing. While most interviewees' parents were not actively engaged in music making, the majority of flutists cited them as their strongest means of support. Almost every participant reported initial teasing from classmates, which dissipated when they began winning competitions. While most flutists reported knowing few other male flutists, nearly all cited professional male flutists as their favorite recording artists. Almost all participants described the All-State experience as their greatest musical achievement in high school, which helped inform their future career choices. Half of the interviewees were planning careers in music. The researcher suggested that strong parent and teacher support might be important to help male students overcome the gender stereotype of the flute being a female instrument and help them to feel free to play the flute.

Payne (2009) investigated the relationships between timbre preference, personality traits, gender, and music instrument selection of public school instrumental music ensembles. The researcher also investigated how students match to their timbre preferences, and gender stereotyping with specific instruments and timbres. Six hundred and twenty-four band students in four school districts in a southwestern state participated. The researcher collected data by employing three testing instruments: a demographics questionnaire, the Adolescent Personal Style Inventory which provided results on five personality traits (agreeableness, conscientiousness, emotional stability, extraversion, and openness), and Gordon's Instrument Timbre Preference Test. The researcher determined that a significant relationship existed between the participants' personality trait levels of extraversion and openness and flute, clarinet, saxophone, horn, trumpet, trombone, baritone, and tuba. Gender stereotyping was observable

regarding both music instrument selection and timbre preference with gender being a significant determinant to instrument selection of flute, clarinet, trombone, baritone, horn, and tuba. A majority of beginning students (73.7%) were not performing on instruments congruent with their timbre preferences while the majority (53%) of secondary students was. The researcher determined that a significant relationship existed between gender and timbre preference and that timbre preference may be the true reason why certain genders study certain instruments as opposed to gender stereotypes, and that modeling opposite gender stereotypes may be detrimental to instrument selection.

Kinney (2010) investigated selected non-music predictors of urban students' decisions to enroll and persist in middle school band programs. The independent variables in the study included academic achievement, socioeconomic status, family structure, mobility, ethnicity, and gender. Data for 69 sixth-grade and 50 eighth-grade band students from two middle schools in the same district, both instructed by the same director, was provided by the school district. The researcher determined that academic achievement and family structure were the only significant predictors of initial enrollment decisions. The researcher found that high academically achieving students and those from two-parent or two-guardian homes also were more likely to persist in band, as were students from higher socioeconomic status. Gender also played a role with females being twice as likely as males to stay in the band in both sixth and seventh grade.

Killian and Satrom (2011) examined the effect of demonstrator gender on wind instrument preferences of kindergarten, third-grade, and fifth-grade students. Fifty-three boys and 51 girls with 27 in fifth grade, 41 in third grade, and 36 in kindergarten from six intact music classes from a single elementary school participated. All participants completed a pretest to determine what their instrument choice would be. Next, half of the students, one intact group of

kindergarten, third-, and fifth-grade students witnessed a demonstration with male demonstrators while the other half witnessed a demonstration with all female demonstrators. The researchers determined 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 different. Both boys and girls who saw opposite-gender demonstrators picked brass and woodwind in nearly equal numbers. While 74% of the students changed their preferences after the demonstrations, there was not a significant difference between the groups based on the gender of the demonstrator. The researcher suggested presenters should consider presenting instruments in various ways to avoid bias.

Polinak (2013) interviewed two music educators to determine their views on instrument selection. One interviewee suggested that the decision should rest ultimately with the students and that students should be able to hear and play the instruments, exploring in a non-threatening way. The interviewee also stated that other determinants are parent influence, tonal preference, and cost concerns. The other interviewee felt that students based much of their decision of what instrument to play on gender stereotyping of instruments and that students should see both female and male players demonstrating the instrument.

Effects of Gender

Legette (1998) applied principles of Attribution Theory to examine the causes that elementary and secondary public school students attribute most to succeeding or failing in music. Four attributions commonly associated with this theory are ability, effort, task difficulty, and luck and are usually considered internally or externally caused, stable or unstable. One thousand one hundred and fourteen elementary, middle, and high school students from Georgia completed Asmus's Music Attribution Orientation Scale during their weekly music lessons. The MAOS is comprised of 35 items divided into five subscales (effort, background, classroom environment,

musical ability, and affect for music). Each subscale has seven questions for each corresponding subscale in which students indicate how important they thought each item was on a scale of 1 – 5 with 5 being "extremely important" and 1 being "not important at all." The researcher found significant differences between males and females in their responses to each subscale ($p < .002$) with all female means being higher than those of males. Legette (1998) determined that students tend to place more importance on ability and effort as causal attributions for success or failure in music. The researcher also determined that females perceived ability and effort as being more important than males, contradicting previous researchers who found that females had a tendency to be more external and often attributed success or failure to task difficulty or luck.

Rife, Shnek, Lauby, and Lapidus (2001) investigated factors related to satisfaction with private lessons from a child's perspective and sought to develop reliable, valid, and practical measure of music lesson satisfaction to help improve private music instruction. The researchers examined the effects of age, gender, and musical instruments on satisfaction. After piloting the questionnaire with 31 children, ages 9 – 12, and nine teachers, the researchers administered it to 568 children, ages 9 – 12 through private music studios, public and private schools, youth orchestras, and a music festival. The researchers determined that enjoyment and practicing seemed to be important to children's music lesson satisfaction, with children indicating that they were generally satisfied with their private music lessons overall. No significant gender differences existed. Nine-year-olds reported significantly greater levels of satisfaction than did 12-year-olds with more girls taking private lessons. The researchers also determined that a large majority of boys played brass instruments and the saxophone, whereas a majority of girls played the flute. More girls played piano than boys. The researchers supported the findings of Abeles and Porter (1978) regarding preferences for gender-stereotyped masculine and female music

instruments by students. The researchers suggested that when a private teacher knows and promotes what satisfies the student, the student may be more likely to continue his or her study of an instrument.

Cramer, Million, and Perreault (2002) investigated the relationship of gender stereotype perceptions of musicians and social role theory by reviewing college students' evaluations of fictitious male or female musicians playing either a masculine (drum and tuba) or feminine (flute or harp) instrument. The researchers determined which instruments were most masculine or feminine by having nine male and 12 female judges provide their perceptions of 22 musical instruments. The judges rated drum and tuba the most masculine and harp the most feminine. The researchers than asked 48 male and 48 female undergraduates enrolled at a Canadian university for their perceptions of the four instruments in combination with either a female or male using descriptors grouped in three categories, either masculine, feminine, or gender neutral. The researchers found that musicians who played feminine instruments were judged as more caring, sensitive, warm and better adjusted than musicians who played masculine instruments and that female musicians were judged to be more dominant, active, and stronger leaders than male musicians. Judgments of male and female musicians depended on the instrument played. For masculine instruments, no significant differences existed between perceptions of male and female musicians. For feminine instruments, participants judged males significantly harsher than females. Participants perceived males playing feminine instruments as less dominant and active and having fewer leadership skills than females playing identical instruments. The researchers suggested that gender schemas influence social judgments of musicians. Therefore, music educators should be aware of these judgments so they may address them as students select instruments.

Gender stereotypes may effect instrument choice by students, thereby limiting their performance options. McKeage (2004) investigated gender and participation in high school and college instrumental jazz ensembles. Using a researcher-designed Instrumental Jazz Participation Survey (IJPS), the researcher surveyed 628 undergraduate college band students from 15 programs. The researcher determined that a relationship existed between gender and jazz ensemble at both levels. Fifty-two percent of women and 80% of men reported playing jazz in high school and 14% of women and 50% of men reported playing jazz in college. The researcher found that both gender and jazz experience influenced attitudes toward participation. Primary instrument selection, institutional obstacles that narrow participation options, feeling more comfortable in traditional ensembles, and an inability to connect jazz participation to career aspirations affected women's decisions to discontinue. The researcher determined that due to common gender-stereotyped instrument selection, females tended to pick instruments not found in jazz ensembles, such as flute and clarinet, causing their exclusion from jazz ensembles. However, gender stereotyping may affect a student's secondary instrument choice less. While 28% of the women and 72% of the men reported a primary instrument commonly found in jazz ensembles, 55% of women and 43% of men indicated they also played a secondary instrument commonly used in jazz ensembles. The researcher found a significant relationship between gender and participation and that men participated longer than did women. Only 26% of women who played jazz in high school continued in college. Both men and women discontinued performing jazz because of time constraints. Women indicated they may not be as comfortable playing in a jazz ensemble and more comfortable in traditional ensembles than the men. Women may not be able to connect participation in jazz ensemble with career possibilities, as there are few role models. The researcher suggested that initial instrument selection due to gender

stereotypes may be the primary reason why women are not as involved in jazz ensembles as are men.

Historical Gender Implications

Which genders perform as instrumentalists has fluctuated over time. Macleod (1993) investigated gender and instrumental musicians in America from 1853 – 1990. The researcher reported that the public did not support women performing instrumental music during the mid to late 19th century. While a few soloists existed, such as violinist, Maud Powell, and pianists Julie Rivé-King, and Fannie Bloomfield-Zeisler, they did not receive the recognition of their male counterparts such as pianists, Anton Rubinstein and Ignace Paderewski. During the early 20th century, the public did not accept female instrumentalists into the mainstream of orchestral playing. Instead, women's orchestras flourished during the 1920s and 1930s. Macleod (1993) reported that few female conductors existed and that women's involvement in the classical music world remained relatively unchanged from the 1880s through the 1980s. Women performing keyboard instruments, the guitar, and the harp was considered socially acceptable whereas performing on other instruments such as brass or instruments that were large, massive, that distorted the woman's face, or forcing a woman to sit in what people considered an un-lady-like position were not. Instead, society accepted women as vocalists or as instrumentalists that played instruments that they considered graceful and delicate. The researcher found that another gender-based theme that emerged from contemporary reviews was that certain composers, such as Beethoven or Grieg, impressed critics as being particularly masculine, and therefore more difficult for a woman to interpret. Gradually accepted, the violin was one of the first instruments thought to be performable by a woman, although still questioned in the last quarter of the 19th century. Acceptance of the violin led to women playing other stringed instruments, particularly

the cello, if played sidesaddle. The public accepted women playing the flute, as it did not contort a woman's face. The public felt women should not play other woodwind instruments and brass since they contorted a woman's face in performance. Macleod (1993) suggested that women did not have the physical prowess to endure the heavy touring schedule of a soloist. Society thought that mixing women into a men's orchestra would lead to distraction for the men causing an inferior performance. Booking rooms for a mixed gender orchestra would be difficult. Gradually accepted were women teaching music as the public considered them nurturers of children. However, the public did not accept women as instrumental teachers or conductors. Music directors recruited more males into band programs than females. Manufacturers developed instruments, such as the bugle-lyra, for females to play in marching band. Since the public looked down on females in marching band, girls performed with batons or flags instead. Promoters incorporated sex appeal in their campaigns. The researcher determined that little has changed in people's perceptions of what instruments are appropriate for women.

Campbell (2003) investigated classical music and the politics of gender in America from 1900 to 1925. The researcher found during this time, women struggled between personal ambition and wifely duty. Women began joining the workforce and women moved from performing in the parlor onto the stage, rebuffed traditional expectations, and demonstrated the possibility of balancing traditional feminine duties with a professional career. Women belonged to women's clubs that supported music in the community giving them a public voice. Men became concerned over the feminization of society. A stigma developed that men in music were effeminate. A struggle between what was acceptable as masculine and feminine involvement developed as women pushed to be professional musicians. Female virtuosi began professional music careers during the mid-nineteenth century, such as Jenny Lind, Teresa Carreño, and Maud

Powell. The public accepted women violinists because of its feminine stereotype. By the 1920s, the formation of women's orchestras occurred. The researcher also found that society accepted women as music teachers, however, not as composers. Members of the public drew a distinction between what music was manly. Society thought brass bands were manlier than orchestras. Male orchestra members struggled with proving their work was manly. Society considered conducting an acceptable manly position of leadership. During the first two decades of the 20th century, society began to think of music as having a feminine quality. As feminism grew and women moved into the workforce, gender stereotyping in music began to change with women becoming increasingly more acceptable in musical roles.

Gender Stereotypes in Math

Gender stereotypes occur in subject areas other than music as well. Cvencek, Meltzoff, and Greenwald (2011) studied math-gender stereotypes in elementary school children. The researchers sought to design new measures of children's math-gender stereotypes and math self-concepts based on previous adult measurement tools, assess children's math-gender stereotypes and math self-concepts during elementary years, and use both implicit and explicit measures within the same study. One hundred and twenty-six female and 121 male students from grades 1 – 5 who tested individually using an adaptation of the Implicit Association Test participated. Participants completed the survey with the use of a computer isolated from their classroom. The researchers found that boys associated me with boy more strongly than girls did on both the implicit measure and self-report. On the implicit measure, boys associated math with their own gender significantly more than the girls. Boys and girls indicated stronger association of math with boys than with girls, evidence for math-gender stereotype. Association of math being for males rather than females was present with the first-grade participants and increased with age.

The researchers concluded that math-gender stereotypes existed with elementary students in alignment with previous research with adults. They determined that elementary school girls showed a weaker identification with math than boys on both implicit and self-report measures suggesting that the math-gender stereotype develops early and differentially influences boys' versus girls' self-identification with math prior to ages at which differences in math achievement emerge. The researchers determined that young girls showed a weaker identification with math than did their male peers and that such gender differences in children's math self-concepts may arise from the early combination of societal influences, cultural stereotypes about gender roles, and intrapersonal cognitive factors (balanced cognitive organization). They suggested that researchers should explore the development of how academic identity contributes to children's educational choices, success, and future aspirations.

Teachers may base their perceptions of students' math capabilities on gender stereotypes. Tiedemann (2002) analyzed the hypothesized biasing effect of teachers' gender stereotypes on their impressions of the students' competence and effort in mathematics. Forty-eight teachers from Germany who responded to questionnaires concerning perceptions of approximately 300 of their third- and fourth-grade students participated. Teacher perceptions of boys having more developmental resources in mathematics were consistent with stereotypes of gender differences and linked to the teacher's own category-based, gender role stereotypic beliefs regarding the mathematical capabilities of males and females. While teachers applied their gender-stereotyped expectations to average and low achieving students, they did not hold the same expectations for high achieving students.

Summary and Rationale

Researchers have determined that adults and students associate instruments with male, female, or androgynous genders which in turn becomes an influence when selecting band

instruments for study (Abeles, 2009; Abeles & Porter, 1978; Conway, 2000; Delzell & Leppla, 1981; Fortney, Boyle, & DeCarbo, 1993; Griswold & Chroback, 1981; Koza, 1992, 1993, 1994; Macleod, 2009; Marshall & Shibazaki, 2011; Sheldon & Price, 2005; Tarnowski, 1993; Zervoudakes & Tanur, 1994). Females are usually associated with higher instruments, more specifically, upper woodwinds, while males are associated with lower instruments, particularly brass, and percussion. The flute is typically associated most frequently with females while the tuba is most frequently associated with males. Saxophone and trumpet tend to be more androgynous.

Various factors contribute to a student's instrument selection, such as physical properties of the instrument, tone, peer, parental, and teacher influences, availability of the instrument, physical characteristics of the student, perceived difficulty of the instrument, media portrayal, and gender stereotype (Conway, 2000, Delzell & Leppla, 1992; Fortney et al., 1993; Graham, 2005; Katzenmoyer, 2003; Kinney, 2010; Tarnowski, 1993; Taylor, 2009). Students often list instrument tone as the main criterion for instrument selection (Conway, 2000; Delzell & Leppla, 1992; Fortney et al., 1993; O'Neill & Boulton, 1996; Sinsabaugh, 2005; Sinsel, Dixon, & Blades-Zeller, 1997; Tarnowski, 1993; Taylor, 2009). Views of acceptability by society have also influenced instrument selection. During the last half of the 19th century and first half of the 20th century, it became more acceptable for women to play a wider variety of instruments in public (Campbell, 2003; Macleod, 1993).

Researchers have determined instrument presentation effects students' gender association and selection of instruments (Bayley, 2004; Byo, 1991; Cannava, 1994; Gould, 1992; Harrison & O'Neill, 2000; Pickering & Repacholi, 2001). Music teachers tend to show little bias when recommending instruments to students (Johnson and Stewart, 2004, 2005). Little research exists

concerning the effect of demonstrator's gender during the instrument selection process of beginning band students. Therefore, the purpose of this study was to examine the effect of model gender on instrument preference of beginning band students during the selection process. The research questions were:

1. Do student instrument preferences prior to an instrument demonstration reflect typical trends in gender stereotypes of instrumental performers?
2. Does the gender of the person modeling the instruments during a demonstration and selection process affect the instrument choice preference of the student?

Chapter 3

Methodology

Research Design

The purpose of this study was to examine the effect of model gender on instrument preference of beginning band students during the selection process. I used a nonequivalent four-group pretest-posttest quasi-experimental design (Creswell, 2009). I gathered information from four intact student groups who were present at an instrument demonstration/recruitment event at their respective schools conducted either during the evening or during the school day within a classroom setting. I collected data using a researcher-designed questionnaire. All participants completed a pretest in which they provided their age, grade, and sex, acknowledged if their parents played musical instruments, if so, what instrument, and rated their pre-conceived instrument preferences for study. Participants observed an instrument presentation with one of four gender model scenarios. After the presentation, I asked all participants to complete the posttest in which they rated their instrument preferences for study again and to answer why they were interested in a particular instrument.

In the first treatment group, students observed a female demonstrating all instruments while students in the second treatment group observed a male demonstrating all instruments. Those participants in the third treatment group observed instruments demonstrated by typical gender stereotyped models. Finally, those in the fourth treatment group observed instruments demonstrated by atypical gender stereotyped models. See Figure 1 for a depiction of the research design.

Figure 1

Research Design

Group 1 O _____ X_1 _____ O

Group 2 O _____ X_2 _____ O

Group 3 O _____ X_3 _____ O

Group 4 O _____ X_4 _____ O

Participants

I sought participants by asking a representative from a local music store to provide me with a list of schools where his company provided a petting zoo of instruments (i.e., an opportunity for students to play instruments) for presentation purposes along with contact information for the music teachers who were providing an instrument recruitment night for their beginning students. From the list, I solicited four music teachers who provided music instrument presentations to prospective band students, and who projected providing enough student participants for three of the four model gender scenarios. Students who attended the presentation of instruments during an evening recruitment event who agreed to take part in the study participated.

Next, I contacted several colleagues who were instrumental teachers to determine if they would be offering a demonstration and recruitment evening. One of my colleagues was demonstrating instruments and recruiting instrumentalists for the band program she oversees during the students' general music class time. She agreed to take part in the study. Students from her program were the students who attended the classroom setting demonstrations participated.

Once I solicited the music teachers and they agreed to participate, (see Appendix A for recruitment solicitation), I sent emails to the respective school administrators, (see Appendix B). Once the administration approved participation in the study and I received institutional human subjects approval (see Appendix C), I proceeded with gathering data at the respective schools of the participating directors.

Setting

Participants were from five school districts in the Northeast. Three districts were in rural communities, with similar community size and make-up servicing students in grades Pre K - 6. I used two of these three districts for one treatment group given their similarities. Both of the other two schools were within suburban communities close to a major metropolitan area. One school was a public intermediate school for grades 3 – 5, while the other was a private independent day school for grades Pre K – 9 comprised of students from various surrounding communities.

Research Instrument

I developed a questionnaire to determine student instrument preferences. I wrote the questionnaire in two parts, the first part was a pretest and the second part was a posttest. In the first part, I asked the participants to provide their name, grade, age, and sex. While researchers assign more variations in sexuality, given that males and females form stronger sexual and gender identities beyond the age of the anticipated participants, I limited their choice to identifying as a boy or girl. I then asked if their parents played an instrument and if so, what instrument. Next, based on my previous experience as a band director, I determined the instruments most commonly offered for beginning band instruction, which were flute, clarinet, saxophone, trumpet, trombone, and percussion. I created a seventh category titled "other,"

which gave the participants the opportunity to write in any additional instrument offered. For each instrument, the students rated their preference for that instrument on a scale of one to five with one representing no interest and five representing the greatest interest. I used wording that was appropriate for the students' grade level. For example, a 1 represented "I do NOT want to play this instrument, no way, no how!" while a 5 represented "Now this is the instrument I really want to play!" See Appendix D for the complete research instrument.

In the second part of the questionnaire, students indicated their preferences for each instrument in a manner identical to the pretest. I inserted an open-ended question that asked participants to answer why they preferred the instrument they did most. I included pictures of the six instruments to remind the students about which instrument they were discussing. Each part of the questionnaire took one side of a double-sided piece of paper for ease of completion. I checked for age writing level appropriateness by using the readability tool in Microsoft Word and determined that the questionnaire had a Flesch-Kincaid grade level of 4.5.

Pilot Study

In order to examine the validity, reliability, time to complete, readability, and psychometric accuracy of the questionnaire, I conducted a pilot study with the first class of students ($N = 23$) who received an instrument demonstration in their general music class. The instructor (not the researcher) asked the students to complete the first page of the questionnaire with their demographic information, parental instrumental involvement, and pre-conceived instrument preferences. The students then placed their questionnaires under their chairs. She then demonstrated all instruments offered by playing the same short elementary song, Hot Cross Buns. The teacher allowed the students to ask questions about each instrument. At the conclusion of the demonstration, all students completed the second page of the questionnaire,

answering what their instrument preferences were after the demonstration, and then commented on why they preferred the instruments they did. At the conclusion of filling out the questionnaire, I asked all students if there were any difficulties in completing the questionnaire. The overall reaction from the students was that it was easy to fill out and no students said they had any difficulties completing it. I then reviewed the questionnaires and found that the students had completed them accurately and completely. Therefore, I made no further alterations to the instrument and used it to complete the study.

Procedure

In the first treatment group, following the pilot study, the female teacher who was recruiting students demonstrated all instruments to students in the fifth grade during their general music class in two elementary schools within the same district from a rural setting in the Northeast where she oversees the band program. For this treatment, the teacher sent parent permission forms (Appendix E) home prior to the class meetings to verify parent permission to take part in the research. All students completed their assent forms (Appendix F) and questionnaires during the class instrument presentation. As in the pilot study, after hearing a scripted introduction about the study (see Appendix G), the students completed the first part of the questionnaire, placed the questionnaire under their chairs, heard all instruments demonstrated, were given time to ask questions about the instruments, and then completed the second part of the questionnaire. The teacher performed Hot Cross Buns at an equal level of competence on all instruments. The teacher collected all questionnaires as the students exited the classroom. The process of filling out the questionnaire was the same as the other three treatment groups, taking the participants approximately five minutes to complete the pretest and posttest each. The teacher later held an evening event for students and parents where she gave

the students the opportunity to try out the instruments offered, assessed their physical attributes and potential to succeed on an instrument, and discussed with their parents the students' instrument of choice.

The procedure for collecting data was identical for the other three treatment groups, which held evening recruitment/demonstrations for parents and students. At the beginning of the demonstration evening, I explained that I was conducting research on instrument preferences of beginning bands students, reading the same script read in the first treatment group, and asked the students if they would be willing to fill out a brief questionnaire. I then gave a parent permission form to each parent who agreed to allow their child to take part in the research. Once they had given permission for their child to participate, I gave the students who agreed to participate an assent form to complete. Once the student returned the assent form to me, I gave the student the questionnaire to complete. All students completed the first page of the single-page, double-sided questionnaire and then placed it under their chairs. Next, all students witnessed the demonstration of all instruments offered at their school for study. At the completion of the demonstration, the students completed the second page of the questionnaire. I collected all questionnaires as the students and parents exited the demonstration.

In the second treatment, a male band director demonstrated all instruments. I used two schools for this treatment that were similar in size and rural setting from the Northeast to provide an adequate sample of students. Each director chose his own selection to perform from a beginning band book. The directors performed the same selection on each instrument during their individual presentations. Both selections used were of comparable difficulty. Both directors played with the same level of expertise and played all instruments with the same level of competence.

In the third treatment, typical gender stereotype modelers performed on each instrument. The teacher in charge of the demonstration employed private instructors to demonstrate the instruments. A different performer, who picked his or her own selection to perform, demonstrated each instrument. All selections performed were of comparable level of difficulty and performed with equal expertise. A female performed on flute, clarinet, and saxophone while a male demonstrated the trumpet, trombone, and percussion. Participants from this setting were from a private independent day school for students age 3 through grade 9 located in a suburban setting in the Northeast.

In the fourth treatment, atypical stereotype models demonstrated each instrument. The male teacher who sponsored the evening event demonstrated the flute, clarinet, and saxophone while a female demonstrated the trumpet, trombone, and percussion. Both teachers played the same selection taken from a beginning method book on all instruments and were of comparable expertise. The female demonstrator was the same who previously conducted the pilot study and demonstrated in the first treatment. Participants for this setting were from an intermediate school for grades 3 – 5 in a suburban setting in the Northeast.

Analysis

To begin the analysis, I performed descriptive analyses to explore the teachers' backgrounds and school groupings, and to describe the age, grade, and sex of the participants as well as how many parents played instruments previously and which instruments were played. Using Cronbach's Alpha, I determined the internal consistency of the questionnaire as answered within the four treatment groups. Next, I determined the preferences of instruments of boys and girls both overall and within treatment groups for both the pretest and posttest. I used cross

tabulations in order to list student preference scoring for both the pretest and posttest either by overall group or by treatment group.

Next, I performed a univariate analysis of variance. I determined the mean gain score of changes in instrument preferences by subtracting pretest preference scores from posttest preference scores. The independent variable was the treatment group the participants were part of with four levels dependent on the instrument demonstration format. The dependent variable was any change of interest in instrument preference. I conducted a Levene Test of Homogeneity of Variances and determined a Bonferroni adjustment to lower the alpha to compensate for multiple comparisons and mitigate Type I error. I then determined if any significant changes of instrument preferences existed within each treatment group.

Lastly, I examined the open-ended question, which asked the participants why they were interested in their favorite instrument. I began by compiling all comments into a Microsoft Word document. Next, I determined commonalities within comments. I then determined which themes emerged and grouped them by theme. I then reported on the frequency of those responses.

Chapter Four

Results

The purpose of this study was to examine the effect of model gender on instrument preferences of beginning band students during the selection process. As stated previously, the research questions that guided this research were:

1. Do student instrument preferences prior to an instrument demonstration reflect typical trends in gender stereotypes of instrumental performers?

2. Does the gender of the person modeling the instruments during a demonstration and selection process affect the instrument choice preference of the student?

Teacher Demographics

Students enrolled in six schools in the northeastern United States participated. At these schools, four teachers hold a master's degree while one hold a bachelor's degree. Their average years of experience was 8.80 (*SD* = 9.94). As their primary instruments, one female (A) and one male teacher (C) played trumpet, one male (B) played euphonium, one male (D) played trombone, and one male (E) played guitar. See Table 1 for teacher descriptives.

Table 1

Teacher Descriptives

Teacher	Highest Degree Held	Years of Experience	Major Instrument	School	Treatment
A	Bachelors	2	trumpet	1, 2	1
B	Masters	2	euphonium	3	2
C	Masters	7	trumpet	4	2
D	Masters	7	trombone	5	3
E	Masters	26	guitar	6	4

School Descriptives

Students from six schools in the Northeast participated. I determined school settings by researching municipal websites for self-descriptions, population demographics, and average household incomes. Schools 1 and 2 are located in the same school district found in a rural middle class setting with the same instrumental music teacher. Schools 3 and 4 are also from similar rural middle class settings while Schools 5 and 6 are from middle class suburban settings. Schools 1 – 4 service students in grades Pre-K – Grade 6. School 5 services Pre-K – Grade 9 while School 6 services Grades 3 – 5. One school (school 5) is a private school while all others are public schools. Schools 1, 2, and 6 begin instrumental instruction in grade 5 while students in Schools 3, 4 and 5 begin in grade 4. See Table 2 for descriptive statistics for the six schools.

Table 2

School Descriptives

School	Teacher	Treatment Group	Total School Enrollment	Total Students Enrolled in Instrumental Music	Grade Instrumental Studies Begin
1	A	1	366	60	5
2	A	1	291	75	5
3	B	2	275	57	4
4	C	2	269	47	4
5	D	3	435	57	4
6	E	4	482	68	5

Participants

Of the participants (N = 171), 45% (n = 77) were male and 55% (n = 94) were female. Fifty-one participants were fourth-grader students (29.8%) and 120 were fifth-grade students

(70.2%). Participants ranged in age from 8 – 11 with a mean age of 9.63 (*SD* = .62). Participants reported that 52 (30.4%) of their mothers and 37 (21.6%) of their fathers played a music instrument. Not all students listed what instrument their parents played. Instruments reported played by mothers were flute, clarinet, saxophone, trumpet, violin, viola, piano, guitar, and recorder. Instruments reported played by fathers were flute, saxophone, trumpet, French horn, trombone, baritone horn, tuba, drums, violin, piano, guitar, and bagpipes. See Table 3 for descriptives of participants by school. See Table 4 for descriptives by treatment group.

Table 3

Participant Descriptives by School

School	Total Participants	Males	Females	Mean Age	*SD*	Mean Grade	*SD*	Mother Played	%	Father Played	%
1	44	16	28	9.98	.34	5.00	.00	11	25	8	18
2	32	17	15	9.88	.45	5.00	.00	11	34	6	19
3	11	6	5	8.91	.30	4.00	.00	5	45	5	45
4	19	6	13	8.84	.50	4.00	.00	5	26	2	11
5	23	10	13	9.13	.55	4.09	.29	10	43	8	35
6	42	22	20	9.88	.45	5.00	.00	10	24	8	19
Total	171	77	94	9.63	.62	4.70	.46	52	30	37	22

Table 4

Participant Descriptives by Treatment Group

Treatment	Total Participants	Males	Females	Mean Age	*SD*	Mean Grade	*SD*	Mother Played	Father Played
1	76	33	43	9.95	.40	5.00	.00	22	14
2	30	12	18	8.87	.43	4.00	.00	10	7
3	23	10	13	9.13	.55	4.09	.29	10	8
4	42	22	20	9.88	.45	5.00	.00	10	8
Total	171	77	94	9.63	.62	4.70	.46	52	37

Research Instrument Reliability

Participants ($N = 171$) completed the questionnaire I developed to determine their instrument preferences before and after witnessing instrument demonstrations within a total of four treatment groups. Prior to determining the internal consistency of the questionnaire, I eliminated the category "other" from any analyses as students entered instruments not included in the offerings of the school instrumental program, such as guitar, piano, violin, viola, and piccolo. I had added this category to allow students to enter additional instruments that instructors offered for study and demonstrated during the presentations other than the instruments listed. This problem did not occur during the piloting of the questionnaire and was unexpected.

In order to examine the internal consistency of the questionnaire, I computed Cronbach's Alpha. Prior to computing Cronbach's Alpha, I examined the additivity of the model using Tukey's procedure for non-additivity and found an additive model was achieved ($F = .71$, $p = .40$). I found an acceptable internal consistency ($\alpha = .68$). Deleting any items would not have led to a higher internal consistency. In order to answer research question number 1, in which I

ask if students' instrument preference matches typical gender stereotypes, I analyzed descriptive cross tabulations regarding the preferences of each sex for the examined instruments. As seen in Table 5, I found that generally student instrument preferences matched previously recorded gender stereotypes. In order to answer the second research question regarding change in instrument preference based on the gender of the instrument demonstrator, I conducted an Analysis of Variance on the mean gain score from pretest to posttest.

Pretest Instrument Preferences

Students rated their initial preference for playing a range of common school program instruments prior to observing instrument demonstrations on a scale of 1 – 5 (1 = no desire to play, 5 = an extreme desire to play a particular instrument). Overall, in order from most preferred to least preferred, participants preferred trumpet (M = 3.02, SD = 1.45), percussion (M = 2.84, SD = 1.56), saxophone (M = 2.83, SD = 1.52), flute (M = 2.72, SD = 1.49), clarinet (M = 2.62, SD = 1.32, and trombone (M = 2.36, SD = 1.31). Boys most preferred trumpet (M = 3.36, SD = 1.37), followed by percussion (M = 3.01, SD = 1.58), saxophone (M = 3.00, SD = 1.57), trombone (M = 2.59, SD = 1.39), clarinet (M = 2.23, SD = 1.25), and flute (M = 2.11, SD = 1.25). Meanwhile girls most preferred flute (M = 3.21, SD = 1.49), followed by clarinet (M = 2.93, SD = 1.29), trumpet (M = 2.74, SD = 1.46), percussion (M = 2.69, SD = 1.54), saxophone (M = 2.68, SD = 1.46), and trombone (M = 2.16, SD = 1.21). See Table 5 for participant preference ratings by instrument and sex.

Table 5

Cross tabulation of instrument preference ratings by participants

Instrument	Sex	1	2	3	4	5	Valid n	Missing n	Total n
Flute	Boys	32	16	12	8	4	72	5	77
	Girls	20	8	20	19	24	91	3	94
Clarinet	Boys	28	18	13	10	4	73	4	77
	Girls	16	18	23	22	11	90	4	94
Saxophone	Boys	20	10	10	14	18	72	5	77
	Girls	27	14	15	17	12	85	9	94
Trumpet	Boys	12	6	17	21	18	74	3	77
	Girls	25	16	20	11	16	88	6	94
Trombone	Boys	21	19	13	11	10	74	3	77
	Girls	34	27	13	10	5	89	5	94
Percussion	Boys	19	12	13	9	21	74	3	77
	Girls	31	11	12	18	14	86	8	94

For students in Treatment 1 (all female instrument demonstrator), boys most preferred trumpet ($M = 3.43$, $SD = 1.57$), followed by saxophone ($M = 2.55$, $SD = 1.55$), percussion ($M = 2.42$, $SD = 1.65$), trombone ($M = 2.10$, $SD = 1.35$), clarinet ($M = 2.07$, $SD = 1.33$), and flute ($M = 2.00$, $SD = 1.39$). Girls most preferred flute ($M = 3.15$, $SD = 1.53$), followed by clarinet ($M = 2.83$, $SD = 1.36$), trumpet ($M = 2.73$, $SD = 1.55$), saxophone ($M = 2.56$, $SD = 1.55$), percussion ($M = 2.54$, $SD = 1.55$), and trombone ($M = 2.25$, $SD = 1.37$). See Table 6 for participant preference ratings by instrument and sex.

Table 6

Cross tabulation of instrument preference ratings by Treatment 1 participants

Instrument	Sex	1	2	3	4	5	Valid n	Missing n	Total n
Flute	Boys	17	3	3	4	2	29	4	33
	Girls	9	5	8	7	11	40	3	43
Clarinet	Boys	15	5	2	6	1	29	4	33
	Girls	9	9	8	10	5	41	2	43
Saxophone	Boys	11	5	4	4	5	29	4	33
	Girls	16	4	6	7	6	39	4	43
Trumpet	Boys	7	1	4	8	10	30	3	33
	Girls	14	5	6	8	7	40	3	43
Trombone	Boys	15	5	4	4	2	30	3	33
	Girls	18	7	4	9	2	40	3	43
Percussion	Boys	16	1	5	3	6	31	2	33
	Girls	16	5	5	7	6	39	4	43

For students in Treatment 2 (all male instrument demonstrators), boys most preferred percussion (M = 3.58, SD = 1.19), followed by trombone (M = 3.25, SD = .97), trumpet (M = 3.17, SD = 1.19), saxophone (M = 2.67, SD = 1.56), flute (M = 2.42, SD = 1.24), and clarinet (M = 2.33, SD = 1.07). Girls most preferred flute (M = 3.61, SD = 1.42), followed by clarinet (M = 3.29, SD = .92), percussion (M = 2.75, SD = 1.65), trumpet (M = 2.69, SD = 1.35), saxophone (M = 2.60, SD = 1.12), and trombone (M = 2.00, SD = 1.03). See Table 7 for participant preference ratings by instrument and sex.

Table 7

Cross tabulation of instrument preference ratings by Treatment 2 participants

Instrument	Sex	1	2	3	4	5	Valid n	Missing n	Total n
Flute	Boys	3	4	3	1	1	12	0	12
	Girls	9	5	8	7	11	18	0	18
Clarinet	Boys	2	6	3	0	1	12	0	12
	Girls	9	9	8	10	5	17	1	18
Saxophone	Boys	4	2	2	2	2	12	0	12
	Girls	16	4	6	7	6	15	3	18
Trumpet	Boys	1	2	5	2	2	12	0	12
	Girls	14	5	6	8	7	16	2	18
Trombone	Boys	0	3	4	4	1	12	0	12
	Girls	18	7	4	9	2	16	2	18
Percussion	Boys	1	1	4	2	4	12	0	12
	Girls	16	5	5	7	6	16	2	18

For students in Treatment 3 (typical gender instrument demonstrators), boys most preferred saxophone ($M = 3.70$, $SD = 1.34$), followed by trumpet ($M = 3.40$, $SD = 1.17$), percussion ($M = 3.20$, $SD = 1.62$), trombone ($M = 2.70$, $SD = 1.34$), clarinet ($M = 2.30$, $SD = 1.06$), and flute ($M = 1.60$, $SD = .84$). Girls most preferred flute ($M = 3.31$, $SD = 1.53$), followed by clarinet ($M = 3.08$, $SD = 1.24$), trombone ($M = 2.85$, $SD = 1.21$), percussion ($M = 2.83$, $SD = 1.34$), trumpet ($M = 2.75$, $SD = 1.29$), and saxophone ($M = 2.25$, $SD = 1.36$). See Table 8 for participant preference ratings by instrument and sex.

Table 8

Cross tabulation of instrument preference ratings by Treatment 3 participants

Instrument	Sex	1	2	3	4	5	Valid n	Missing n	Total n
Flute	Boys	6	2	2	0	0	10	0	10
	Girls	1	2	4	4	2	13	0	13
Clarinet	Boys	3	2	4	1	0	10	0	10
	Girls	1	4	1	5	1	12	1	13
Saxophone	Boys	1	1	1	4	3	10	0	10
	Girls	4	5	0	2	1	12	1	13
Trumpet	Boys	1	1	2	5	1	10	0	10
	Girls	2	3	5	0	2	12	1	13
Trombone	Boys	2	3	2	2	1	10	0	10
	Girls	1	5	4	1	2	13	0	13
Percussion	Boys	1	4	1	0	4	10	0	10
	Girls	2	4	1	4	1	12	1	13

For students in Treatment 4 (atypical gender instrument demonstrators), boys most preferred saxophone (M = 3.48, SD = 1.57) and percussion (M = 3.48, SD = 1.36). In order from most preferred to least preferred for the remaining instruments, boys preferred trumpet (M = 3.36, SD = 1.33), trombone (M = 2.86, SD = 1.52), clarinet (M = 2.36, SD = 1.36), and flute (M = 2.33, SD = 1.20). Girls most preferred saxophone (M = 3.26, SD = 1.49), followed by flute (M = 2.90, SD = 1.65), percussion (M = 2.84, SD = 1.61), trumpet (M = 2.80, SD = 1.54), clarinet (M =

2.75, *SD* = 1.45), and trombone (*M* = 1.65, *SD* = .75). See Table 9 for participant preference ratings by instrument and sex.

Table 9

Cross tabulation of instrument preference ratings by Treatment 4 participants

Instrument	Sex	1	2	3	4	5	Valid n	Missing n	Total n
Flute	Boys	6	7	4	3	1	21	1	22
	Girls	7	1	4	3	5	20	0	20
Clarinet	Boys	8	5	4	3	2	22	0	22
	Girls	6	2	6	3	3	20	0	20
Saxophone	Boys	4	2	3	4	8	21	1	22
	Girls	4	1	5	4	5	19	1	20
Trumpet	Boys	3	2	6	6	5	22	0	22
	Girls	6	3	4	3	4	20	0	20
Trombone	Boys	4	8	3	1	6	22	0	22
	Girls	10	7	3	0	0	20	0	20
Percussion	Boys	1	6	3	4	7	21	1	22
	Girls	7	0	5	3	4	19	1	20

Posttest Instrument Preferences

Students rated their subsequent preference for playing a range of common school program instruments following instrument demonstrations on the same 5-point scale as the pretest. Overall, in order from most preferred to least preferred, participants preferred trumpet (*M* = 3.40, *SD* = 1.36), clarinet (*M* = 2.94, *SD* = 1.47), saxophone (*M* = 2.86, *SD* = 1.53),

percussion (*M* = 2.85, *SD* = 1.59), flute (*M* = 2.71, *SD* = 1.56), and trombone (*M* = 2.26, *SD* = 1.31). Boys most preferred trumpet (*M* = 3.58, *SD* = 1.33), followed by saxophone (*M* = 3.17, *SD* = 1.61), percussion (*M* = 3.09, *SD* = 1.59), clarinet (*M* = 2.58, *SD* = 1.47), trombone (*M* = 2.46, *SD* = 1.36), and flute (*M* = 2.19, *SD* = 1.34). Girls most preferred clarinet (*M* = 3.24, *SD* = 1.41) and trumpet (*M* = 3.24, *SD* = 1.36) equally, followed by flute (*M* = 3.12, *SD* = 1.59), percussion (*M* = 2.66, *SD* = 1.58), saxophone (*M* = 2.60, *SD* = 1.42), and trombone (*M* = 2.10, *SD* = 1.26). See Table 10 for participant preference ratings by instrument and sex.

Table 10

Cross tabulation of instrument preference ratings by participants

Instrument	Sex	1	2	3	4	5	Valid n	Missing n	Total n
Flute	Boys	31	14	13	5	7	70	7	77
	Girls	24	10	13	17	26	90	4	94
Clarinet	Boys	24	15	9	13	10	71	6	77
	Girls	13	18	15	21	22	89	5	94
Saxophone	Boys	19	5	13	11	22	70	7	77
	Girls	25	21	15	11	13	85	9	94
Trumpet	Boys	10	3	17	21	22	73	4	77
	Girls	11	17	19	18	21	86	8	94
Trombone	Boys	22	17	14	8	8	69	8	77
	Girls	38	24	11	9	6	88	6	94
Percussion	Boys	17	12	10	10	21	70	7	77
	Girls	33	10	12	15	16	86	8	94

For students in Treatment 1 (all female instrument demonstrator), boys most preferred trumpet (M = 3.70, SD = 1.56), followed by saxophone (M = 2.48, SD = 1.58), percussion (M = 2.36, SD = 1.59), clarinet (M = 2.34, SD = 1.42), trombone (M = 2.22, SD = 1.37), and flute (M = 2.10, SD = 1.45). Girls most preferred flute (M = 3.15, SD = 1.53), followed by clarinet (M = 2.83, SD = 1.36), trumpet (M = 2.73, SD = 1.55), saxophone (M = 2.56, SD = 1.55), percussion (M = 2.54, SD = 1.55), and trombone (M = 2.25, SD = 1.37). See Table 11 for participant preference ratings by instrument and sex.

Table 11

Cross tabulation of instrument preference ratings by Treatment 1 participants

Instrument	Sex	1	2	3	4	5	Valid n	Missing n	Total n
Flute	Boys	16	3	4	3	3	29	4	33
	Girls	14	5	1	10	10	40	3	43
Clarinet	Boys	12	6	2	7	2	29	4	33
	Girls	7	6	7	9	12	41	2	43
Saxophone	Boys	11	5	3	3	5	27	6	33
	Girls	14	4	8	6	7	39	4	43
Trumpet	Boys	6	0	5	5	14	30	3	33
	Girls	8	1	10	10	10	39	4	43
Trombone	Boys	11	7	4	2	3	27	6	33
	Girls	20	10	3	4	3	40	3	43
Percussion	Boys	13	5	2	3	5	28	5	33
	Girls	18	1	6	7	7	39	4	43

For students in Treatment 2 (all male instrument demonstrators), boys most preferred percussion (M = 4.18, SD = .87), followed by saxophone (M = 3.36, SD = 1.43), equally trumpet (M = 3.09, SD = 1.14) and trombone (M = 3.09, SD = 1.14), and equally flute (M = 2.55, SD = 1.29) and clarinet (M = 2.55, SD = 1.29). Girls most preferred flute (M = 3.83, SD = 1.39), followed by clarinet (M = 3.41, SD = 1.33), trumpet (M = 2.56, SD = 1.21), percussion (M = 2.44, SD = 1.46), trombone (M = 2.19, SD = 1.22), and saxophone (M = 2.13, SD = .92). See Table 12 for participant preference ratings by instrument and sex.

Table 12

Cross tabulation of instrument preference ratings by Treatment 2 participants

Instrument	Sex	1	2	3	4	5	Valid n	Missing n	Total n
Flute	Boys	3	2	4	1	1	11	1	12
	Girls	9	5	8	7	11	18	0	18
Clarinet	Boys	3	2	4	1	1	11	1	12
	Girls	9	9	8	10	5	17	1	18
Saxophone	Boys	2	0	4	2	3	11	1	12
	Girls	16	4	6	7	6	15	3	18
Trumpet	Boys	1	2	4	3	1	11	1	12
	Girls	14	5	6	8	7	16	2	18
Trombone	Boys	1	2	4	3	1	11	1	12
	Girls	18	7	4	9	2	16	2	18
Percussion	Boys	0	0	3	3	5	11	1	12
	Girls	16	5	5	7	6	16	2	18

For students in Treatment 3 (typical gender stereotype instrument demonstrators), boys most preferred saxophone (M = 3.80, SD = 1.62), followed by equally trumpet (M = 3.20, SD = 1.23) and percussion (M = 3.20, SD = 1.55), clarinet (M = 3.10, SD = 1.73), trombone (M = 2.60, SD = 1.43), and flute (M = 1.60, SD = 1.08). Girls most preferred trumpet (M = 3.55, SD = 1.21), followed by trombone (M = 3.17, SD = 1.27), flute (M = 3.08, SD = 1.38), clarinet (M = 3.00, SD = 1.61), percussion (M = 2.82, SD = 1.54), and saxophone (M = 2.09, SD = 1.38). See Table 13 for participant preference ratings by instrument and sex.

Table 13

Cross tabulation of instrument preference ratings by Treatment 3 participants

Instrument	Sex	1	2	3	4	5	Valid n	Missing n	Total n
Flute	Boys	7	1	1	1	0	10	0	10
	Girls	2	2	3	3	2	12	1	13
Clarinet	Boys	3	1	1	2	3	10	0	10
	Girls	2	4	0	2	3	11	2	13
Saxophone	Boys	2	0	1	2	5	10	0	10
	Girls	5	3	1	1	1	11	2	13
Trumpet	Boys	2	0	2	6	0	10	0	10
	Girls	0	3	2	3	3	11	2	13
Trombone	Boys	3	2	2	2	1	10	0	10
	Girls	1	3	3	3	2	12	1	13
Percussion	Boys	2	1	3	1	3	10	0	10
	Girls	2	4	2	0	3	11	2	13

For students in Treatment 4 (atypical gender stereotype instrument demonstrators), boys most preferred trumpet (M = 3.82, SD = 1.10), followed by saxophone (M = 3.64, SD = 1.50), percussion (M = 3.43, SD = 1.50), clarinet (M = 2.67, SD = 1.53), flute (M = 2.40, SD = 1.31), and trombone (M = 2.38, SD = 1.40). Girls most preferred trumpet (M = 3.45, SD = 1.32), followed by clarinet (M = 3.05, SD = 1.28) and saxophone (M = 3.05, SD = 1.43) equally, percussion (M = 2.90, SD = 1.65) and flute (M = 2.90, SD = 1.62) equally, and trombone (M = 1.60, SD = .82). See Table 14 for participant preference ratings by instrument and sex.

Table 14

Cross tabulation of instrument preference ratings by Treatment 4 participants

Instrument	Sex	1	2	3	4	5	Valid n	Missing n	Total n
Flute	Boys	5	8	4	0	3	20	2	22
	Girls	6	3	3	3	5	20	0	20
Clarinet	Boys	6	6	2	3	4	21	1	22
	Girls	3	4	4	7	2	20	0	20
Saxophone	Boys	4	0	5	4	9	22	0	22
	Girls	2	8	2	3	5	20	0	20
Trumpet	Boys	1	1	6	7	7	22	0	22
	Girls	1	5	4	4	6	20	0	20
Trombone	Boys	7	6	4	1	3	21	1	22
	Girls	11	7	1	1	0	20	0	20
Percussion	Boys	2	6	2	3	8	21	1	22
	Girls	7	2	1	6	4	20	0	20

Instrument Preference Change

In order to examine the impact of gender model on students' change in instrument preference in the four treatment groups ($N = 171$), I conducted a series of six one-way ANOVAs. In each case, I used the treatment group the participants were part of as the independent variable (Treatment 1 ($n_1 = 76$), Treatment 2 ($n_2 = 30$), Treatment 3 ($n_3 = 23$), and Treatment 4 ($n_4 = 42$)) and the mean gain score (MGS) as the dependent variable, (1 = least preferred – 5 = most preferred), determined by subtracting the preferences of the pretest from the posttest scores (see Table 15 for mean gain scores). In order to mitigate the threat of Type I error caused by multiple comparisons, I employed a Bonferroni adjustment and lowered alpha to .008 (.05/6 comparisons).

Table 15

Mean Gain Scores by instrument

Instrument	*N*	Minimum	Maximum	*M*	*SD*
Flute	159	-2.00	2.00	.00	.74
Clarinet	159	-2.00	4.00	.32	1.19
Saxophone	153	-3.00	4.00	.04	1.07
Trumpet	157	-3.00	4.00	.38	1.18
Trombone	156	-4.00	3.00	.09	1.16
Percussion	155	-4.00	4.00	.01	1.07

Using the Levene Test I examined homogeneity of variance, I determined that all instrument mean gain scores had an appropriate level of homogeneity of variance with the exception of the trumpet. See Table 16 for Test of Homogeneity of Variances results. Due to

this finding, I did not conduct any subsequent inferential analyses regarding changes in trumpet preferences.

Table 16

Levene Test of Homogeneity of Variances

Instrument	Levene Statistic	*df*1	*df*2	*p*
Flute	.289	3	155	.833
Clarinet	1.318	3	155	.271
Saxophone	.990	3	149	.399
Trumpet	2.987	3	153	.033
Trombone	.090	3	152	.966
Percussion	.588	3	151	.624

When investigating significant changes in the mean gains score in preference for each instrument, I determined that none existed within any of the treatment groups. See Table 17 for the ANOVA results.

Table 17

ANOVA Results

Instrument		Sum of Squares	*df*	Mean Square	*F*	*p*
Flute	Between Groups	1.512	3	.504	.924	.431
	Within Groups	84.488	155	.545		
	Total	86.000	158			
Clarinet	Between Groups	1.574	3	.525	.365	.779
	Within Groups	223.067	155	1.439		
	Total	224.642	158			
Saxophone	Between Groups	.255	3	.085	.073	.974
	Within Groups	173.510	149	1.164		
	Total	173.765	152			
Trombone	Between Groups	2.276	3	.759	.559	.643
	Within Groups	206.467	152	1.358		
	Total	208.744	155			
Percussion	Between Groups	.227	3	.076	.065	.978
	Within Groups	175.747	151	1.164		
	Total	175.974	154			

Descriptive Trumpet Finding

Participants' change in trumpet preference did not pass the Levene Test of Homogeneity of Variance. Eliminating female participants allowed trumpet to meet an acceptable significance level. I determined that female participants' trumpet preference within Treatment 3 moved from

their fifth choice (M = 2.75, SD = 1.29) to their first choice (M = 3.55, SD = 1.21) from pretest to posttest. Within Treatment 4, female participants' trumpet preference moved from their fourth choice (M = 2.80, SD = 1.54) to their first choice (M = 3.45, SD = 1.32). This change in preference may have accounted for the significance level of the Levene Test of Homogeneity of Variance.

Open-Ended Preference Question

I asked the participants to tell me why they were interested in their favorite instrument. Ninety (52.63%) of the participants (N = 171) responded. After I compiled the written responses, I coded them to determine if any themes emerged. From the varied answers, 10 themes emerged based on my initial content analysis. The response given most often by the participants (n = 60, 66%) was the sound of the instrument. Next, students most frequently indicated perceived level of difficulty (n = 17, 18.89%) and perceived level of enjoyment (n = 16, 17.78%) impacted their instrument preference. Eleven participants stated they preferred an instrument because a family member played the instrument and therefore they felt the family member could help them or they wanted to play like the other family member. Family members considered were father (n = 3), mother (n = 1), sister (n = 3), brother (n = 3), and cousin (n = 1). Some participants stated more than one reason why they preferred an instrument. The least common reasons for preferring a particular instrument included the ability to play the instrument in church, (n = 1, 1.11%), the ability to play the instrument with peers (n = 1, 1.11%), and the instrument is already available for use (n = 1, 1.11%). See Table 18 for reasons and frequency given for instrument preferences.

Table 18

Emergent Reasons and Frequencies for Instrument Preferences

Reason for Instrument Preference	Frequency Given as Response
Sound of the instrument	60
Perceived level of difficulty	17
Perceived level of enjoyment	16
Family member plays the instrument	11
How the instrument looks	5
Familiarity with the instrument	2
Possibly leading to further advantages	2
Instrument is already available for use	1
Will be able to play the instrument with peers	1
Will be able to play the instrument in church	1

Chapter 5

Discussion

Summary

The purpose of this study was to examine the effect of model gender on instrument preference of beginning band students during the selection process. I wanted to determine if the instrument demonstrator's gender could affect a student's preference for a particular band instrument as he or she experienced the instrument demonstration and selection process. Given typical gender stereotypes of instruments as found by Abeles and Porter (1978), Griswold and Chroback (1981), Delzell and Leppla (1992), and Abeles (2009), I thought that observing a different gender modeling an instrument other than what was typically expected could persuade a student to change his or her preference to study a particular instrument. For example, beginning male band students typically expect that a female will play the flute and therefore may not be inclined to select the flute for their instrument of study. Perhaps if a male student observed the flute modeled by a male demonstrator, he may be encouraged to feel comfortable in selecting the flute for future study. The same might hold true for females should they observe a female demonstrator modeling instruments typically gender stereotyped as masculine.

Two research questions are:

1. Do student instrument preferences prior to an instrument demonstration reflect typical trends in gender stereotypes of instrumental performers?
2. Does the gender of the person modeling the instruments during a demonstration and selection process affect the instrument choice preference of the student?

In order to answer the first research question, I designed a questionnaire for students to rate their preferences for offered instruments during their instrument demonstration and sign-up

process. Students rated their preference for selecting and studying an instrument based on a five-point scale. From this, I determined what their instrument preferences were before they observed the demonstration. I could then compare their preferences to typical gender stereotypes of instruments to determine if they followed the same patterns of typical gender stereotype assignments. I also asked if their parents played instruments, and if so, which ones, to determine if any patterns existed with typical gender stereotype assignments, which might influence the students' choice of instrument. In keeping with earlier gender stereotype assignments by adults as found by Abeles and Porter (1978), the majority of mothers played flute, clarinet, and violin while the majority of fathers played percussion or brass, such as trumpet, French horn, trombone, baritone or tuba. I determined that the same patterns existed without change compared to earlier research.

In order to answer the second research question, I secured five teachers that agreed to allow me to conduct my research during their instrument demonstration/recruitment events. I purposely sought out events where only a female or only a male would demonstrate the instruments, or where the teacher would allow typical or atypical gender stereotype modelers to demonstrate the instruments. In addition to participants answering the initial questionnaire at these events regarding instrument preferences, the participants answered a second questionnaire identical to the first following the instrument demonstrations to determine if their preferences had been affected by the gender of the instrument modelers. To further clarify their preferences, participants answered an open-ended question as to why they had the preferences they did. To pilot the questionnaire, I used one intact class of 23 participants from the all-female modeler demonstrations.

Once I collected the data from all demonstrations, I used a series of cross tabulations to determine student instrument preferences from both the pretest and posttest. I analyzed the reliability of the student questionnaire using Cronbach's Alpha. I determined a means gain score by subtracting the participants' pretest preferences from their posttest preferences. Next, I conducted a Levene Test of Homogeneity of Variances followed by a series of ANOVA tests to determine if any significant changes in mean gain scores had occurred for each instrument and determined that none existed.

Conclusions

Pretest instrument preferences aligned with typical gender stereotype perceptions. When pretested about what instrument they preferred from most to least, boys and girls preferences aligned with previous research findings by Abeles and Porter (1978), Griswold and Chroback (1981), Delzell and Leppla (1992), and Abeles (2009). Boys preferred instruments that are typically gender stereotyped as male while girls preferred instruments typically gender stereotyped as female. Boys most preferred trumpet, followed by percussion, saxophone, trombone, clarinet, and flute. Meanwhile, girls most preferred flute, followed by clarinet, trumpet, percussion, saxophone, and trombone. Delzell and Leppla (1992) found similar instrument preferences by participants in their study in which males named percussion, saxophone, trumpet, and flute as their top four choices and females named flute, percussion, saxophone, and clarinet as their top choices. While there was some fluctuation in the middle preferences of instruments, girls continue to most prefer the flute, a female gender stereotyped instrument, and least preferred a low brass instrument (trombone), typically gender stereotyped as male. Meanwhile, the boys most preferred a male gender stereotyped instrument, the trumpet,

and least preferred a female gender stereotyped instrument, the flute. These findings coincided with those of Delzell and Leppla (1992).

No significant changes of instrument preference occurred following demonstrations regardless of the gender of the modelers, aligning with findings by Killian and Satrom (2011) while contradicting findings by Harrison and O'Neill (2000), and Pickering and Repacholi (2001), who found that opposite gender stereotype modelers did affect students' instrument choices. Harrison and O'Neill (2000) worked with students aged seven and eight years old and determined an immediate influence on student preferences, however, the participants held typical gender stereotype preferences. Pickering and Repacholi (2001) determined that using opposite gender stereotype modelers may have had only a short-term effect on student preferences, but found that boys still tended to prefer masculine instruments. I determined from the results of the posttest that boys most preferred trumpet, followed by saxophone, percussion, clarinet, trombone, and flute. While there was some change in the boy's preferences, the most and least preferred instruments remained constant, trumpet and flute respectively. Percussion changed from their third to their second preference while saxophone changed from their second to their third preference. Trombone changed from their fourth preference to fifth while clarinet changed from their fifth to their fourth preference.

From the results of the posttest, I determined that girls most preferred clarinet and trumpet equally, followed by flute, percussion, saxophone, and trombone. A shift in the top three preferences occurred. Flute changed from their first preference to their third. Meanwhile trumpet changed from their third preference to a tie for first preference with the clarinet, which had been their second preference. The other three preferences remained the same with the girls maintaining their fourth through sixth preference as percussion, saxophone, and trombone. The

shift in trumpet preference is reflective of findings by Zervoudakes and Tanur (1994). They determined that females were more likely to play historically male instruments such as the trumpet than in earlier periods. In addition, it is reflective of research by Wrape, Dittloff, and Callahan (2014) who also determined that beginning female band students were more likely to designate the trumpet as a girl instrument than were older, more accomplished band performers.

While the change in trumpet preference was not statistically significant, it failed the Levene Test of Homogeneity of Variance. This led me to investigate further why such measurable differences in variance existed further. I investigated changes of instrument preferences through cross tabulation within treatment groups and discovered that there was no change for boys' preference for trumpet within Treatment 1, 2, or 3. Within Treatment 4 (atypical gender stereotype modelers), boys' preference for trumpet changed from their third preference to their first. Meanwhile girls' trumpet preference within Treatment 1(female modeler), their third preference, remained the same. However, girls' preference changed from fourth to third within Treatment 2 (all male demonstrators), fifth to first within Treatment 3 (typical gender stereotype modelers), and from fourth to first with Treatment 4 (atypical demonstrators). Findings for female participants in Treatment 4 may be similar to the findings of Pickering and Repacholi (2001), who determined that about half of the fourth-grade female participants in their study selected gender-inconsistent instruments after observing opposite gender stereotyped instrument demonstrations.

Several reasons for these changes in trumpet preference may exist. After hearing the tone of the trumpet demonstrated, participants may have decided that they preferred the trumpet more. Since the trumpet has only three buttons, the participants may have perceived it as being less difficult to play than other instruments. The male trumpet modeler of Treatment 3 may have

impressed the female participants with his charm, expertise, or solo piece in such a way that they decided to make the trumpet a higher preference. In Treatment 4, the major instrument of the atypical gender stereotype modeler was the trumpet. The quality of her tone and possible perceived expertise may have swayed the preferences of both the male and female participants as trumpet changed to a higher preference for both male and female participants within this treatment group. However, there was no change in trumpet preference within Treatment 1 in which the same female modeled the trumpet that modeled it in Treatment 4.

Instruments played by parents may also have influenced the participants' choice of instrument. However, of the 90 participants that responded to the question of why an instrument was their most preferred, only four participants stated that it was because one of their parents played the instrument. Of band instruments played by mothers, the most often played instrument was the flute followed by the clarinet, trumpet, and saxophone. Of band instruments played by fathers, the most often played instrument was percussion, followed equally by trumpet, French horn, and trombone, and subsequently tuba. While one participant reported that her father played the flute, instruments performed by the parents also followed typical gender stereotype norms.

Sixty-six percent of the students who responded to the open-ended question as to why they preferred the instrument they did stated that instrument tone was the reason. This aligns with previous research findings (Conway, 2000; Delzell & Leppla, 1992; Fortney et al., 1993; O'Neill & Boulton, 1996; Sinsabaugh, 2005; Sinsel, Dixon, & Blades-Zeller, 1997; Tarnowski, 1993; Taylor, 2009) and is the reason most often given for preferring an instrument. Examples of participants' responses include "I think they make a great sound," " I like the quiet, more

minor sound of the clarinet," "It's the best sounding," "It sounds pretty," "It sounds cool," "it sounds jazzy," and "it sounds peaceful."

The next reason given by 17 participants for preferring an instrument was how they perceived the level of difficulty of performing on the instrument. This reason has appeared in previous research by Conway (2000), Delzell and Leppla (1992), Fortney et al., (1993), Tarnowski (1993), and Taylor (2009). One participant acknowledged that the trombone appeared to be easy to put together and play. One participant responded that the saxophone was "the easiest instrument," while another thought it would be "easy to blow into." One participant acknowledged that the clarinet was "easier than the other instruments." One participant viewed the trumpet as being difficult and "welcomed the challenge." Participants evenly acknowledged the perceived level of difficulty throughout the instruments offered.

Sixteen participants responded that they preferred the instrument they did because of a perceived level of enjoyment should they play the instrument. One participant thought that the saxophone would be "enjoyable" to play while another thought that drums seemed "fun." The descriptive, fun, was also used to describe the flute and trombone. One participant responded that the instrument seemed "just right for me." Researchers have determined that enjoyment is important to music lesson satisfaction (Rife, Shnek, Lauby, & Lapidus, 2001).

Ten participants responded that they wanted to play an instrument because a family member played it, aligning with research by Sinsabaugh (2005) and Katzenmoyer (2003). Family members cited as influencing the participants' preference were their father, mother, sister, brother, and cousin. One participant looked up to his father's playing and wanted to play like him while the others cited that their father or sibling would be able to help them with learning their instrument.

Five participants liked the physical characteristics of the instrument. Responses included that the instrument looked "cool," or "pretty." They also mentioned the shape and size of the instrument. This aligned with student concern for the look of the instrument found in research by Conway (2000) and Katzenmoyer (2005). Participants mentioned being familiar with playing the instrument already either having played it or feeling it would be an easy transition, such as from recorder to flute. One participant felt that playing an instrument would help him be more successful in his other classes while one had a clarinet already available for use. One participant looked forward to playing the instrument with his peers while another thought he would eventually be able to play it in church.

However, no participants related their preference to being appropriate for their gender. Regardless of the modeler, no participant acknowledged wanting to play what his or her teacher played or that the modeler was influencing his or her preference. The reasons given seemed indigenous to the instrument itself in either how it looked or sounded. A modeler could have made it appear easy to play to the participant. Gender did not appear to be a factor in their preference to play an instrument.

Limitations

The use of intact groups along with the requirements specified by the instructors in charge of the instrument demonstration events created a limitation for this study. Due to availability and common limitations in social science research within schools, I was unable to create specific groupings of students from one school setting. Instead, I had to rely on the intact groups that came by chance to the events held by the directors who agreed to participate in the study. In addition, participants were limited to identifying themselves as boys or girls and could not identify themselves beyond the traditional male/female binary. While most school settings

were similar, there were some differences in the types of communities and socioeconomic make-up of the participants involved. Four public schools were located in similar rural settings, two of which were from the same school district, while one was from a suburban area and one, while in a suburban setting, was an affluent private day school comprised of students from varied communities.

It had been my intent to control the modelers by providing two people, one male and one female, which would model instruments at all events. I intended they would both dress in similar clothing and would perform the same excerpt on every instrument at all events. However, all teachers that participated wanted to maintain these controls as they felt the success of their programs was so reliant on the outcome of the demonstration event. As a result, the schools using a female only modeler and the two schools that used a male only modeler agreed to participate only if they could model the instruments themselves. In the typical gender stereotype scenario, the private day school, the director had always brought in professional private teachers to model each instrument, and therefore would not allow me to decide who would model. The director from the suburban school supported having the instruments modeled by atypical gender stereotypes. However, he wanted to be the male modeler demonstrating instruments himself, but agreed to let me provide the female modeler for his event. Fortunately, I was able to secure the teacher who had provided the all-female modeling scenario to provide further consistency in the demonstrations.

It had also been my intention that all instruments would be modeled using the same musical example. However, the modelers all wanted to decide what musical example they would perform. All but the typical gender stereotype modelers used a simple song from a beginning method book so were comparable and all used the same excerpt for all instruments they

demonstrated. Instead, the professional private teacher modelers all chose a commonly known piece that would display the instrument in a more professional manner. However, all examples performed were of comparable quality. While this was a limitation, I believe that the examples performed by all modelers were consistent and would not have swayed any of the participants in their decision regarding their instrument preference.

Another limitation was how the students completed the questionnaire. The category of "other" was intended to be used by the participants to write in any instruments other than the six listed that were being offered in their respective school programs. In addition to the six instruments listed, depending on which school program, instructors offered oboe, French horn, baritone horn, or tuba as possible instruments for instruction. While some participants appropriately listed these instruments, other participants listed piano, guitar, violin, viola, and piccolo, instruments not offered within any of the participating instrumental programs. While the level of Cronbach's Alpha was acceptable, the research instrument may have had a higher internal consistency had the participants filled out the questionnaire appropriately. In addition, while students received instruction to rate all instruments in both the pretest and posttest at all events, some participants did not completely fill out the form accurately. They may have rated some instruments in only the pretest or posttest, or rated the instrument they preferred, but may not have designated their preferences for other instruments of which they were interested. I did acknowledge this in my reporting, but I believe the results would have been more accurate had students filled out all questionnaires completely as instructed.

Numerous factors that cannot be controlled influence participants' instrument preferences. However, any of these factors would have been present and accounted for in the participants' pretest preferences. The participant would have taken into account any preferences

based on instrument availability, preconceived tone of the instrument, perceived level of enjoyment, or other reasons to prefer a particular instrument as he or she filled out the pretest questionnaire. However, all participants observed similar instrument demonstrations with the only variable being the gender of the modeler dependent on the treatment group. While participants listed various reasons for preferring the instrument they did in the final open-ended question, no participant made reference to any possible gender association with an instrument other than a particular sibling or parent played the instrument he or she preferred.

One other variable that I could not control and therefore became a limitation was any participant interactions with peers or parents during the pretest and posttest completion. Participants sat either with their parents or with peers at each event thereby giving them the opportunity to discuss their preferences. This may have influenced their preferences in some manner.

In consideration of general threats to internal validity as described by Creswell (2009), based on the research design of this experiment and the brief time that transpired during the data collection, I avoided some possible threats such as history, maturation, and mortality. Given that the experimental groups were intact classroom groups or groups of whoever randomly came to an instrument demonstration/recruitment event, no randomization was possible thus possibly causing a threat to the internal validity because of the selection process. While I used intact groups for the experiment, no selection process took place within the experiment groups. Participants either were already part of an intact group of classroom students or were whoever randomly came to the instrument demonstration event. Given that the treatment groups came from different school districts from different communities and were of a young age, it is highly doubtful that they would have communicated with each other during the collection of data.

Since no control group existed, the threats of diffusion of treatment, compensatory/resentful demoralization, and compensatory rivalry are not a consideration. Participants only completed one posttest, so the threat of testing did not exist. The instrument did not change between the pretest and posttest, thereby avoiding the threat of instrumentation.

Concerning external validity, music teachers may generalize these results out to only a limited amount of students that are undergoing an instrument selection process. Instructors may generalize the results of this study to students in grades four and five that are about to select an instrument for study in a school music program, however, only if they have the same characteristics and are from similar settings as the participants from this study. In addition, these results are time-bound. Therefore, others should not generalize the results to past and future situations.

Implications for Future Research

Investigators should continue to research why each gender continues to prefer the instruments that it does, which has remained relatively unchanged since Abeles and Porter first investigated gender stereotyping of instruments in 1978. Each gender continues overwhelmingly to choose certain instruments, such as upper woodwinds for females and lower brass for males within beginning instrumental programs. Yet many professional performers play instruments that do not fit these beginning instrumentalist norms. Moreover, the definition of gender and gender roles in music continues to accommodate a broader range of possibilities and understanding of gender and the impact of how these ever-changing definitions and societal expectations affect student involvement in music.

In order to focus the research by controlling additional variables, researchers should replicate this study using the same two modelers, one male and one female, to demonstrate all

instruments. The two modelers should be similar in age, clothing styles, physical make-up, and should perform the same excerpt on all instruments when modeling. Each student should observe the demonstration isolated from peers and parents. This would be a much lengthier process and would require more time to complete the demonstration process. To overcome binary sex identification, researchers could ask participants to identify their sexuality using a Likert scale with male at one end of the spectrum and female at the other. Researchers could code sexual identification later as needed. In addition, students could be from the same grade level as they begin the process of selecting instruments. In addition to the four treatment groups used, researchers should consider a fifth treatment group where both female and male modelers demonstrate the instruments identically within the same presentation. This would provide the participants the opportunity to observe the instruments equally demonstrated by both genders.

While there were no significant changes in instrument preferences within the present study, it did appear that students did change the order of some of their preferences. Further investigation may help determine why this occurred. In this study, I asked the participants why they preferred the instrument they did most. In future research, investigators perhaps should directly ask participants if they changed their minds about their preferences, and if so, why.

Numerous factors affect students as they determine which instrument they would like to study. However, many patterns of choice have continued to exist. From this study, I have concluded that the gender of the modeler did not appear to make any significant changes in instrument preferences. Participants in this study credited tone with being the foremost reason for instrument preference. Therefore, it could simply be that specific timbres create consistent instrument preferences within each gender of the age group studied and that gender stereotyping of instruments has little or no influence on a student's decision to play a particular instrument.

However, until gender stereotypes assigned by our society change, students who are contrary in their preferences to the norm will need support. A need for further research exists to help music educators understand why musical instrument gender stereotypes exist, if they are changing, and what support systems are necessary for students to feel comfortable studying any instrument they prefer.

Implications for Practice

Through my research, I determined that the gender of the model had no significant impact on student instrument preferences as they proceeded through the instrument demonstration process while selecting band instruments for study. There were no significant changes between assignments of preference level prior to observing the demonstration and following the demonstration in all four experimental groups. This finding was in agreement with findings by Kinney (2010), and by Killian and Satrom (2011). However, this was opposite the findings of Pickering and Repacholi (2001) who determined that exposing students to instruments played by gender-inappropriate musicians appeared to modify children's instrument preferences. Harrison and O'Neill (2000) also determined that an immediate influence of exposure to counter-stereotypic role models playing certain gender-related instruments existed and affected instrument preference with students aged seven and eight. However, students held typical gender-stereotype preferences, which occurred in my research as well.

Therefore, I would suggest that instructors continue to be sensitive to the gender stereotyping of instruments and be aware of how those stereotypes influence student instrument preferences. Considering the conflicting research on the effect of gender model on student instrument preferences, instructors should continue to be cognizant of this portion of their instrument presentations and provide opportunities for students to observe instruments modeled

by both genders within the same demonstration. In this manner, students affected by the demonstration process may feel that either gender can play any instrument.

Given that students continued to prefer instruments as related to pre-conceived typical gender stereotype assignments, instructors may want to consider educating students about the acceptability of performing with any instrument regardless of their gender. Dispelling gender stereotyping of instruments is a formidable task given the way in which society naturally continues to perpetuate stereotyping. While there has been some change in gender associations of instruments by various age groups suggested by Delzell and Leppla (1992), Tarnowski (1993), and Zervoudakes and Tanur (1994), the extreme ends of the gender stereotype spectrum continue to prevail with upper woodwinds, especially flute, designated as feminine instruments and lower brass and percussion designated as masculine instruments (Abeles, 2009; Hallam, Rogers, & Creech, 2008; Sheldon & Price, 2004). While many instructors typically tend to support both genders playing any instrument (Bayley, 2004), not all teachers do. Teacher support has been determined to help break down gender stereotype barriers in the selection of instruments (Conway, 2000; Sinsabaugh, 2005; Taylor 2009). Instructors may want to consider remaining vigilant about providing support to students who desire to study an instrument that is of an atypical gender stereotype nature.

I determined that a majority of students (66%) designated timbre as the reason for their most preferred instrument. This confirmed previous research (Delzell & Leppla, 1992; Fortney et al., 1993; Graham, 2005; Tarnowski, 1993; O'Neill & Boulton, 1996; Sinsel et al., 1997; Conway, 2000; Sinsabaugh, 2005; Taylor, 2009). Teachers may consider administering a timbre preference test (e.g., Gordon's Timbre Preference Test) as an element in the instrument selection process. Using the results of the test, students may make better-informed choices of instruments

to study. The majority of students may prefer the timbre of instruments that coincidentally coincide with typical instrument gender stereotypes (Payne, 2009). However, should an instructor determine that a student is interested in pursuing an instrument that is contrary to typical gender stereotype norms, the instructor may then encourage the student to pursue the instrument that he or she most prefers and in turn help the student to overcome the influence of societal expectations. Administrators may need to provide monetary and scheduling support for the administration of a timbre preference test. Knowing that instrument choices based on gender stereotype properties may have an effect on performance opportunities (McKeage, 2004) and how others perceive them (Cramer, Million, & Perreault, 2002), students should be provided support in their instrument choices by teachers, parents, and peers. While additional factors other than instrument gender stereotypes may have an effect on instrument preferences and the selection process, addressing the gender stereotyping of instruments may lead students to have more successful and satisfying experiences as instrumental performers.

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APPENDICES

Appendix A

Dear Colleague,

I am completing my dissertation at The Hartt School, University of Hartford as I pursue my Ph.D. in Music Education. The purpose of this study is to examine the effect of a model's gender when demonstrating musical instruments during the selection process. In order to explore the effect of a person's gender when modeling music instruments on a student's selection, I will focus on the following research questions:

1. Do student instrument selections prior to an instrument demonstration reflect typical trends in gender stereotypes of instrumental performers?
2. Does the gender of the person modeling the instruments during a demonstration and selection process affect the instrument choice of the student?

For this study I will need five schools who put on an evening demonstration event for students who are about to select a band instrument for study in the school's instrumental music program. I will ask each student who comes to the event to fill out a questionnaire before and after the demonstration of instruments offered to the students for study. I will determine the gender of the person demonstrating the instruments. All participants' identities will be completely anonymous. Should you be willing to have you and your students participate in this study, please contact me via email at mvickers@hartford.edu or call me directly at 860-632-8122.

Thank you for your help in finding participants for this study.

Sincerely,

Mark Vickers, M.M.Ed.
Ph.D. Candidate – The Hartt School, University of Hartford
Phone: 860-632-8122
Email: mvickers@hartford.edu

Appendix B

Dear Administrator (to be determined),

I would like to start by introducing myself. I am Mark Vickers, a music education Ph.D. candidate from the Hartt School, University of Hartford. I am currently working on my dissertation, in which I will examine the effect of a person's gender when modeling instruments for students as they choose which band instrument they will study. I am seeking your permission to involve your students in this study. The students will respond to a brief written questionnaire asking what their instrument choice preference is before the presentation, and then will complete the survey, responding what their instrument preferences are after seeing the entire presentation. The questionnaire will take approximately five minutes to complete and all student answers will remain anonymous and confidential. I have spoken with the music teacher from your school, TBD, and he (or she) has agreed to let me be part of his (or her) instrument presentation night as he (or she) recruits students for your instrumental band program.

I hope you have a positive response, as I would like to provide music educators with more knowledge concerning instrument gender stereotypes for beginning band students. I look forward to your response.

Sincerely,

Mark Vickers
Ph.D. Candidate, the Hartt School, University of Hartford
860-632-8122
mvickers@hartford.edu

Appendix C

UNIVERSITY OF HARTFORD

Human Subjects Committee

November 5, 2014

Mark Vickers
14 Allen Road
Cromwell, CT 06416

Dear Mr. Vickers:

Upon review of your modifications/clarifications by the Human Subjects Committee, your proposal, *The Effect of Model Gender on Instrument Choice of Beginning Band Students,* has been approved for one year according to full review guidelines established by federal regulation 45 CFR 46.101.

Approval for this project expires November 5, 2015. If an extension is needed, please submit a request via email to at least one month prior to that date.

Please keep in mind that it is your responsibility to notify and seek approval from this Committee of any modifications to your project, and that it is your responsibility to report to this Committee, any adverse events that occur related to this study. Reporting forms
are available online at the HSC website, http://www.hartford.edu/hsc.

This institution has an Assurance of Compliance on file with the Office of Human Research Protections (Federalwide Assurance

FWA00003578). Congratulations and good luck.

Sincerely,

Stephen J. Misovich, Ph.D.
Chair, Human Subjects Committee
Cc: J. Russell

200 Bloomfield Avenue, West Hartford, CT 06117 P 860.768.4721 F 860.768.5085 E Misovich@hartford.edu
www.hartford.edu

Appendix D

Instrument Choice Questionnaire - #1

Name _____Grade ____Age ____
Are you a boy or girl? _____
Does your mom play an instrument, yes or no, and if so, what instrument? _____
Does your dad play an instrument, yes or no, and if so, what instrument? - _____

Some of the instruments that you are able to pick are Flute, Clarinet, Saxophone, Trumpet, Trombone, and Drums/Percussion. If there is something else, write it in next to "Other".
If you had to choose right now, rate how much you want to play the instrument with the following scale. Circle the number that best represents how you feel about the instrument:
1 – I do NOT want to play this instrument, No way, No how!
2 – I don't really care to play this instrument.
3 – I don't care either way if I play this instrument or not.
4 – It's not my first choice, but I'd be pretty happy playing this instrument.
5 – Now this is the instrument I really want to play!!!
So how interested are you in playing these instruments?

Instrument	I do NOT want to play this instrument, No way, No how!	I don't really care to play this instrument.	I don't care either way if I play this instrument or not.	It's not my first choice, but I'd be pretty happy playing this instrument.	Now this is the instrument I really want to play!!!
Flute	1	2	3	4	5
Clarinet	1	2	3	4	5
Saxophone	1	2	3	4	5
Trumpet	1	2	3	4	5
Trombone	1	2	3	4	5
Drums/Percussion	1	2	3	4	5
Other_____	1	2	3	4	5

Instrument Choice Questionnaire - #2

Congratulations! You have seen the demonstration!
Now that you have seen the demonstration, rate how much you want to play the instrument with the following scale. If it's a different instrument, write it in next to "Other". Circle the number that best represents how you feel about the instrument:
1 – I do NOT want to play this instrument, No way, No how!
2 – I don't really care to play this instrument.
3 – I don't care either way if I play this instrument or not.
4 – It's not my first choice, but I'd be pretty happy playing this instrument.
5 – This is the instrument I really want to play!!!
So how interested are you in playing these instruments now?

Instrument	I do NOT want to play this instrument, No way, No how!	I don't really care to play this instrument.	I don't care either way if I play this instrument or not.	It's not my first choice, but I'd be pretty happy playing this instrument.	Now this is the instrument I really want to play!!!
Flute	1	2	3	4	5
Clarinet	1	2	3	4	5
Saxophone	1	2	3	4	5
Trumpet	1	2	3	4	5
Trombone	1	2	3	4	5
Drums/Percussion	1	2	3	4	5
Other _____	1	2	3	4	5

Tell me why you are interested in your favorite instrument:

_____
_____
_____
_____
_____
_____






Appendix E

Music Instrument Preferences
Parent Permission Form

Dear Parent:

I am a researcher from the University of Hartford. I am asking your permission for your child to be in a research study about which musical instruments students like to play.

In this research, I am studying which instruments students would like to play before and after they see and hear instruments. With your permission, I would like your child to fill out a questionnaire that asks them how much they want to play the instruments before and after they see and hear them. Your child will complete their answers directly before and after the demonstration.

Your child's responses will remain confidential.

No reports about the study will contain your child's name. I will not release any information that identifies your child in any way.

Taking part is voluntary.

Whether you choose not to have your child take part, your child's grades or opportunities to participate in music activities will not be affected. With your permission, I will ask your child to participate. Only children who want to will take part in the study. Your child may choose to stop at any time. The data will be kept for a minimum of five years following publication. After that time, all questionnaires will be destroyed.

If you have questions about the study, please call Mark Vickers at (860) 632-8122. If you have any questions about your rights within this research, you can call the University of Hartford Human Subjects Committee at (860) 768-4721. They review research and protect people's rights involved in research. You can also call the advisor, Dr. Joshua Russell. His phone number is (860) 768-4127.

Attached is a form for you to sign. Please indicate whether or not you agree to have your child be in the study and return the form to me. I thank you for your help in this research.

Music Instrument Preferences
Parent Permission Form

I have read and understand the information about Mark Vickers' research study on music instrument preferences by students.

_____
(Date)

I ____give my permission to have my child_____
____do not give (child's name)

to be included in the study.

_____
(Parent's or Guardian's Signature)

Appendix F

Music Instrument Preferences
Student Assent Form

I want to know about what instruments you like. I wonder what instruments your classmates like. I hope you will help me find out about it.

A teacher is going to show you some band instruments. You will pick one to study. I would like you to let me know how much you like an instrument before the teacher shows you and plays it for you. I would like you to let me know how much you like an instrument after you hear and see it. You can just answer by filling out a piece of paper. Your teacher will give you time to do this.

Your parents and other students will not know how you answered. Only I will ever know. I will never tell anybody your name. I will keep your paper to myself. Eventually I will just throw it away after I complete my report.

You don't have to do this if you don't want to. Even if your parents said it was OK. Just tell me. Nobody else will know you didn't want to. You can still do anything you want in music. You can still learn how to play an instrument. If you start answering questions and decide you don't want to finish, that's OK too. Just tell me.

If you have any questions later about it, just ask your parents. They know who to ask.

Do you have any questions right now?

If you agree to do this, I would like you to sign this paper.

_____

The study about what instruments I like has been explained to me. Any questions I had were answered. I would like to take part in this study.

Print your name here: _____
Sign your name here: _____

Appendix G

Script

The purpose of this study is to examine beginning band students' instrument preferences. Students will fill out a researcher-designed questionnaire. Instrumental teachers may be able to use this information to address issues with beginning instrumentalists.

- You must be an elementary age student about to begin study of a band instrument to participate in this study.
- Completing the questionnaire is voluntary.
- Your grades or opportunity to participate in music activities will not be affected by participation in this research.
- You may choose not to complete the questionnaire, simply tell the researcher that you do not wish to continue.
- Risks of participation in the survey are not greater, considering probability and magnitude, than those ordinarily encountered in daily life.
- It will take you about **5 minutes** to complete the questionnaire.
- By participating in this study, you may add to the existing knowledge base on gender preferences when selecting instruments.
- Information may be used in presentations and publications.
- Participants will not be identified by their names in the research.
- The data will not connect participants to the study in any identifiable way.
- All questionnaires will be stored in a locked file cabinet.
- All questionnaires will be destroyed after five years following publication of the study.
- If you have questions about your rights as a research subject, please contact the University of Hartford Human Subjects Committee (HSC) at 860.768.4721. The HSC is a group of people that reviews research studies and protects the rights of people involved in research. Or contact Dr. Joshua Russell at 860.768.4127, the Hartt faculty advisor to this research.

Thank you for participating. If you have any questions about this survey, you may contact:
Mark Vickers, M.M.Ed.
Ph.D. Candidate – The Hartt School, University of Hartford
Phone: 860.632.8122
Email: mvickers@hartford.edu