

STRING INSTRUMENT CHOICE: A STUDY ON EXTERNAL FACTORS

by

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Abstract

An aspect of instrument choice that has not been studied in such abundance as the topics of timbre and gender associations of instruments are the influences of external factors, such as ensemble director, parent and family, friends, academic diversity, travel opportunities, and medical reasons as examples; however, these factors have been briefly addressed in word alone in many of the studies completed for related examinations. This study is integral in defining how music educators can better identify supplementary factors in addition to the timbre and gender association studies that will further influence students to choose to play an instrument and more specifically a string instrument. The findings can be applied to band, choir, theater, ROTC, and any other student organization as these factors are contributions and experiences from the student's life previous to the presentation of the new activity. The current study focuses primarily on string instrument choice as gathered from a pilot survey using a string youth symphony ensemble from the Midwest as subjects and then high school students from three different but similar districts also in the Midwest. The information provided by the students was in agreement with previously performed studies; however, it also featured truths specifically unique to the ensemble and communities in which they were gathered.

The researcher will seek to answer the following research questions: 1) What are the three most influential external factors that contributed to the student's choice to begin string instruction? 2) How are these factors related to the musical culture of the student including opportunities for participation as well as observations? 3) Are family influences stronger than teacher/friend influences? 4) How does the strength of the string community (school and community) affect the beginning string student based on student perceptions of the two communities?

Using descriptive statistics, the three most influential external factors contributing to the student's string instrument choice in the pilot study were Parents, Private lesson teacher, and Other family. The three most influential external factors for the high school students were Parents, Live performance, and Friends. The three most influential external factors for High School #1 were Parents, Live performance, and Elementary Orchestra Teacher. For High School #2, the top three were Parents, High School Orchestra Teacher, and Friends. In High School #3,

Parents, Live Performance, and Private Lesson Teacher were shown to be the student's most influential external factors. In each case, Parents were reported as the most influential external factor for string instrument choice among the populations of students surveyed. When teachers determine recruitment activities, they must recruit the parent, which begins the moment the public school teacher is hired in the orchestra teaching position. Overall, parental influences trump all other external factors in the list examined by this population, which was slightly dissimilar than the review of the literature suggested.

Table of Contents

| | |
|---|-----|
| List of Figures | ix |
| List of Tables | xi |
| Acknowledgements..... | xii |
| Dedication | xiv |
| Chapter 1 - Background | 1 |
| Introduction..... | 1 |
| String Inclusion..... | 1 |
| Recruitment and Retention | 2 |
| Gender Perceptions | 3 |
| Cultural Perceptions..... | 3 |
| Instrument Selection | 4 |
| Media Perceptions and Curriculum Choices..... | 4 |
| Summary | 5 |
| Statement of the Problem..... | 5 |
| Research Questions..... | 6 |
| Definitions | 6 |
| Limitations | 7 |
| Delimitations..... | 7 |
| Overview..... | 7 |
| Chapter 2 - Review of the Literature | 9 |
| Introduction..... | 9 |
| Instrument Choice..... | 9 |
| Introduction..... | 9 |
| Career Choice Correlations..... | 10 |
| Recruitment Strategies | 10 |
| Retention | 12 |
| Multiple Influences | 12 |
| Summary | 13 |

| | |
|--|----|
| Timbre Associations or Preference..... | 13 |
| Introduction..... | 13 |
| The Science of Timbre..... | 14 |
| Aural Identification of Instrument Timbre..... | 16 |
| Timbre Affects to Instrument Choice Using Aural Stimulants | 17 |
| Contradiction to Previous Research..... | 19 |
| Summary..... | 20 |
| Gender..... | 20 |
| Introduction..... | 20 |
| Gender Perception of the Musical Instrument | 21 |
| Recruitment by Instrument Gender..... | 28 |
| Music Vocations by Gender..... | 30 |
| Relationship of Gender Perception Regarding Instruments and Music Vocations..... | 33 |
| Gender Relationships between Teacher and Student..... | 34 |
| Language Implications to Gender of the Instruments..... | 35 |
| Personality | 35 |
| Introduction..... | 35 |
| Orchestral Section Personalities and Traits | 36 |
| Personality Effects of Instrument Choice | 37 |
| Personalities of Third and Fourth Parties that Affect Instrument Choice..... | 37 |
| Summary..... | 39 |
| String Instrument Choice | 40 |
| Introduction..... | 40 |
| String Inclusion..... | 40 |
| Influences for String Instrument Choice..... | 42 |
| History of Strings and their Status in American Music Education..... | 43 |
| Advocacy for String Teachers..... | 52 |
| Guidance from Veteran String Pedagogues | 52 |
| The Future of String Music Education..... | 55 |
| Summary..... | 56 |
| Adult Education | 57 |

| | |
|--|----|
| Introduction..... | 57 |
| Adult Participation in Music Education..... | 57 |
| Summary..... | 58 |
| Chapter 3 - Methods and Procedures | 60 |
| Introduction..... | 60 |
| Pilot Study..... | 60 |
| Introduction..... | 60 |
| Instrumentation | 60 |
| Procedures..... | 61 |
| Data Analysis | 61 |
| Presentation of the Results..... | 62 |
| Three High School Studies | 62 |
| Introduction..... | 62 |
| Instrumentation | 63 |
| Procedures..... | 63 |
| Data Analysis | 63 |
| Presentation of the Results..... | 63 |
| Chapter 4 - Data Analysis..... | 64 |
| Pilot Study..... | 64 |
| External Factors that Influence String Instrument Choice..... | 64 |
| Demographic Data | 65 |
| Background Data | 66 |
| Student Perception of Strength of School and Community String Programs | 68 |
| Research Questions | 69 |
| High School Studies..... | 70 |
| External Factors that Influence String Instrument Choice..... | 70 |
| Demographic Data | 71 |
| Background Data | 72 |
| Student Perception of Strength of School and Community String Programs | 75 |
| Research Questions | 76 |
| High School #1 | 76 |

| | |
|--|-----|
| External Factors that Influence String Instrument Choice..... | 76 |
| Demographic Data | 77 |
| Background Data | 78 |
| Student Perception of Strength of School and Community String Programs | 80 |
| Research Questions..... | 82 |
| High School #2 | 83 |
| External Factors that Influence String Instrument Choice..... | 83 |
| Demographic Data | 84 |
| Background Data | 84 |
| Student Perception of Strength of School and Community String Programs | 87 |
| Research Questions..... | 88 |
| High School #3 | 89 |
| External Factors that Influence String Instrument Choice..... | 89 |
| Demographic Data | 90 |
| Background Data | 91 |
| Student Perception of Strength of School and Community String Programs | 93 |
| Research Questions..... | 95 |
| Summary..... | 96 |
| Chapter 5 - Conclusions..... | 97 |
| Research Question Analysis | 97 |
| Impact Statement | 100 |
| Further Research..... | 100 |
| References..... | 102 |
| Appendix A-Combined Informed Consent and Assent Form..... | 112 |
| Appendix B-Survey Script..... | 115 |
| Appendix C-Survey Instrument | 119 |

List of Figures

| | |
|--|----|
| Figure 2.1: Wessel, 1979: Timbre Quadrant, p. 49..... | 15 |
| Figure 2.2: Crowther, 1982: Instrument Choice ranking, p. 136..... | 23 |
| Figure 2.3: Bergonzi, 1995: A Conceptual Model Predicting String Enrollment, p. 40 | 48 |
| Figure 2.4: Culver, 1999: Community ARTS Model, p. 48 | 54 |
| Figure 4.1: Pilot: Student Population in population percentage per grade | 65 |
| Figure 4.2: Pilot: Student Population in percentage of primary instrument | 66 |
| Figure 4.3: Pilot: Student Population in percentage of students by string instrument starting grade | 66 |
| Figure 4.4: Pilot: Percentages of family members who were reported to play string instruments | 67 |
| Figure 4.5: Pilot: Comparison of School and Community String Program strength perception in percentage | 69 |
| Figure 4.6: Combined HS: Student Population in population percentage per grade | 72 |
| Figure 4.7: Combined HS: Student Population in percentage of primary instrument | 72 |
| Figure 4.8: Combined HS: Student Population in percentage of students by string instrument starting grade..... | 73 |
| Figure 4.9: Combined HS: Percentages of family members who were reported to play string instruments | 74 |
| Figure 4.10: Combined HS: Comparison of School and Community String Program strength perception in percentage | 75 |
| Figure 4.11: HS #1: Student Population in population percentage per grade..... | 78 |
| Figure 4.12: HS #1: Student Population in percentage of primary instrument..... | 78 |
| Figure 4.13: HS #1: Student Population in percentage of students by string instrument starting grade..... | 79 |
| Figure 4.14: HS #1: Percentages of family members who were reported to play string instruments | 80 |
| Figure 4.15: HS #1: Comparison of School and Community String Program strength perception in percentage | 81 |
| Figure 4.16: HS #2: Student Population in population percentage per grade..... | 84 |

| | |
|---|----|
| Figure 4.17: HS #2: Student Population in percentage of primary instrument..... | 84 |
| Figure 4.18: HS #2: Student Population in percentage of students by string instrument starting grade..... | 85 |
| Figure 4.19: HS #2: Percentages of family members who were reported to play string instruments | 86 |
| Figure 4.20: HS #2: Comparison of School and Community String Program strength perception in percentage | 88 |
| Figure 4.21: HS #3: Student Population in population percentage per grade..... | 91 |
| Figure 4.22: HS #3: Student Population in percentage of primary instrument..... | 91 |
| Figure 4.23: HS #3: Student Population in percentage of students by string instrument starting grade..... | 92 |
| Figure 4.24: HS #3: Percentages of family members who were reported to play string instruments | 93 |
| Figure 4.25: HS #3: Comparison of School and Community String Program strength perception in percentage | 94 |

List of Tables

| | |
|--|----|
| Table 4.1: Pilot: External Factors by Mean, Median, Mode, and Standard Deviation | 64 |
| Table 4.2: Pilot: Comparison of School and Community String Program strength perception ... | 68 |
| Table 4.3: Combined HS: External Influences by Mean, Median, Mode, and Standard Deviation | 71 |
| Table 4.4: Combined HS: Comparison of School and Community String Program strength perception..... | 75 |
| Table 4.5: HS #1: External Factors by Mean, Median, Mode, and Standard Deviation | 77 |
| Table 4.6: HS #1: Comparison of School and Community String Program strength perception. | 81 |
| Table 4.7: HS #2: External Influences by Mean, Median, Mode, and Standard Deviation | 83 |
| Table 4.8: HS #2: Comparison of School and Community String Program strength perception. | 87 |
| Table 4.9: HS #3: External Influences by Mean, Median, Mode, and Standard Deviation | 90 |
| Table 4.10: HS #3: Comparison of School and Community String Program strength perception | 94 |

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Dedication

For my parents M. Kent and Ruth A. Williams

Chapter 1 - Background

Introduction

Students in the public, private, and parochial schools of the United States are presented with a vast amount of class choices. The well-planned decisions the student, parents, and counselor make for each semester and each credit determine how prepared the student will be for their individual next step in the post-secondary portion of their educational lives. Arts courses are now a part of the core subjects outlined in the national school curriculum according to No Child Left Behind legislation. The arts are included for their inherent value to students and have been found to be associated with higher achievement on important measures such as the SAT math and verbal scores. Congress included music as a part of the arts in order to help the schools and the students (NAfME, 2012). Nevertheless, music offerings vary by region, state, and district and even school building itself. Music offerings fluctuate by type of school, age level of the students, general population of the community, and accessibility of the appropriately skilled teacher. Music instruction is present in a majority of school districts; however, the course selection does not reflect all music opportunities that would be beneficial for every child.

String Inclusion

If students are presented with the choice of what music course they would most be interested in taking part in, all music courses should be included in all districts at all grade levels. When considering instrumental instruction, all of the instruments should be offered including brass, percussion, string, keyboard, and woodwind instruments. Arguments can also be made for the inclusion of folk instruments for the varying cultures. Many students have developed preconceived notions about each of the instruments and the instrument families. These perceptions take into consideration the ensembles they perform in, the social stigma they see and have experienced, as well as specific gender, personality, and timbre implications of those instruments. When given the choice of a which instrument a group of students would like to learn to play, string instruments were chosen the least amount of times due to the perception that the instruments are “difficult to play” (Delzell & Leppla, 1992, p. 99). This perception derives from a societal overview and can also be ultimately attested to the string music educators of previous decades that contributed to the “elitist” attitudes conferred to the string instruments

even today. Contrary to this public perception of string instruments, one of the most recent reports *Status of Orchestra Programs in the Public Schools* conducted in 1998 by Gillespie and Hamann concluded that enrollment in school orchestras continued to increase throughout the 1990s, corroborating Leonhard (1991) who found that the number of string teachers remained stable. While enrollments may be rising, the offering of string instruction was found in only slightly more than one-third of schools across America in 1991 (Leonhard, 1991, p. 143). Bergonzi (1995) reported that the percentage of schools (public, parochial, and other private high schools) was as little as 31% (p. 36). Though these numbers seem low in comparison to estimated band and choir participation, there is a greater need for string teachers due to the rising demand of string programs in the public schools. Nevertheless, there is still a delay in the number of string players from increasing across the country. Broken down further, data reveals that school districts that offer string instruction included 56% of suburban schools, 30% of urban schools and 14% of rural districts (Gillespie & Hamann, 1998, p. 79). These radically varied percentages show that work is still needed to ensure string instrument performance as a musical mainstream in all cultural areas.

Recruitment and Retention

Assisting in the creation of string programs across the country is data gathered for several status reports conducted through the 1980s, 1990s, and 2000s alludes to important results in the recruitment and retention of string players once they begin instruction (Morehouse, 1988; Leonhard, 1991; Stewart, 1991; Hurley, 1992; Bergonzi, 1995; Smith, 1995; Smith, 1997; Gillespie & Hamann, 1998; Bayley, 2000). More must be done to make string playing interesting and more commonplace to students of varying backgrounds and academic achievements. According to Byo (1991) instrument demonstration may yield different results with respect to individual students' preferences. In light of the aforementioned study, string teachers must know and understand the group of students they will be recruiting. While student choice is preferred, parent choice for their student is also prevalent. In many cases, focus should not be simply on the student, but teachers must focus their recruiting efforts on the parents, as will be shown in the data gathered for this study. Teachers do understand this culture and in Bayley (2004) music educators confessed to guiding students to their instrumental decision 95.2% of the time, yet over

half of those surveyed, 61.9% suggested that they do take steps to address gender stereotyping during the instrument selection procedures (p. iii).

Gillespie and Hamann (1998) in their *Status of Orchestra Programs in the Public Schools* study stated that "more than two-thirds of students who begin playing a stringed instrument continue playing them until graduation" (p. 75). Even in districts where string instruction has been moved to higher grade levels, such as moving from 5th to 6th grade, teachers have found that there have actually been stronger recruiting classes and with that an increase in retention (Berger, 2004, p. 24). Delzell and Doerksen (1998) observed that in comparison, those districts that began in sixth grade with those that began one year earlier showed no significant difference in performance achievement (p. 19).

String programs are retaining their students once they become involved. The problem that most school districts have, believed by the author is two-fold; 1) String instruction must be offered as a part of the school curriculum, and 2) String instrument instruction must be promoted as an activity that students aspire to take part in. A statistic that points to the self-inflicted exclusiveness of string playing that can be drawn from the *Status of School Orchestra Programs in the Public Schools* study is that "20% of orchestra students are in the upper 10% of their graduating class, even though they made up less than 5% of the student population (Gillespie & Hamann, 1998, p. 75).

Gender Perceptions

String instruments are primarily grouped as feminine instruments (Abeles & Porter, 1978). Of many of the gender surveys conducted, the violin and cello are typically noted for their feminine qualities; however, one notices in professional symphonies that the sections are well-balanced today. The instruments themselves contain gender roles that young students are aware of, set by society and therefore draw conclusions about their own instrumental participation using reference to these cultural perceptions.

Cultural Perceptions

The string instrument family has been perceived as "difficult to play" or "not fun to play" by students in a study of instrument perception (Delzell & Leppla, 1992, p. 99). This can be true if the perception of learning the string instruments is prefaced as "difficult" and "requiring lots of practice" and also lies in performing only "dead" music where you do not march on Friday night

or perform a variety show complete with risqué dancing and revealing costumes. Unfortunately, this is a perception that the parents of our students possess, who are the most influential external factor to instrument choice, as found in this study, and, therefore, the communities in which we live. The cultural negative against string playing is ubiquitous.

Instrument Selection

Research has shown that the instrumental music classes (classes including both band and orchestra) are the most representative cross-section of the general high school population personalities of any school organization (Cutietta & McAllister, 1997, p. 292). Developing that research further, what is the breakdown of the personalities that make up a string program currently and why are they not more diverse? What external factors about string instrument choice hinder or invite a student to consider beginning instruction, not including timbre of the instrument or the gender perceptions of the instrument or ensemble?

Media Perceptions and Curriculum Choices

String instruments have not been viewed as trendy or fashionable by immersion into popular music (VH1 and MTV videos) such as the guitar, saxophone, or drums, and many times alternatively have an arrogant impression for reasons as clear as music selection, availability, and unfamiliarity. Students from Delzell & Leppla (1993) cite that they did not choose the string instruments because they were perceived as "not fun to play" primarily. Other reasons given were (a) "Because I don't like it," or "It's dumb or stupid," 23.6%; (b) "The instrument is too big" or "weighs too much," 18.7%; (c) "I don't like the sound," 14.5%; and (d) "The instrument is boring," 7.3% (p. 99). Chanan (2002) stated that "Yet what television produced over those first 25 years, from 1945 to 1970, turns out to have been an ever-widening gap between factions, with this thing called classical music pigeon-holed as a matter of educated minority taste" (p. 370). The string instruments, commonly perceived as being locked into one genre, are actually prevalent in many genres of music and therefore, the string instrument player also a reflection of the cross-culture that music envelops. In fact, as so eloquently stated by Chanan (2002), ". . . I learnt to understand this mixture in terms of a politics of identity, in which the individual is no longer to be seen as the repository of some kind of cultural unity but as a hybrid, because in fact we are all made up of different cultural currents of which we each make what we will to make us what we become" (p. 368).

To bridge the gap between today's culture and string instrument performance, music selection, mostly attributed to the orchestra teacher and the string teachers in a community, are working to find a common road in enticing students to string instruments. In fact, a surprising fact from the *Status of Orchestra Programs in the Public Schools* found that "teachers believed that additional string and full orchestra classical music selections should be made available, and that there should be less emphasis by music publishers on country or pop repertoire" (Gillespie & Hamann, 1998, p. 84). Orchestra teachers must find balance with the populations that we serve and the classical music knowledge that is the foundation of their students' educations. Furthermore, they must always keep in mind the listening palette of their audiences, which are primarily the parents of our students. A variety of music will not only keep our audience members engaged, but will keep our students engaged. Both parties will suggest that their neighbors and Sunday school classmates join this wonderfully enriching ensemble at school. Teachers and their choice of music serve as an external factor that is causing string programs to not grow larger by taking the "fun" out of performing music that is current and evokes emotion or connection with the students alongside the music selections of the traditional string ensemble. These factors contribute to the perception of the teacher in whether their choices make students want to play a string instrument.

Summary

These studies and topics are only a few of the reasons that exist that require an examination of the external factors that influence a student to choose to learn to play a string instrument. All components have an influence, whether the student was aware of the influence at the time or has become aware of the influence over time. By having students reflect upon these external influences and rate them, orchestra teachers will be able to better understand how those external factors are ultimately affecting the choices made in the early stages of the instrumental music classroom by our students.

Statement of the Problem

It is essential that American students have the opportunity to choose instrument instruction that is best for each individual student, including selection from all instruments in the woodwind, brass, percussion, keyboard, and string families. Music educators owe this chance-to-choose to our students by creating a greater number of school districts that offer string

instruction across the country. In order to create these programs, string educators must understand what factors contribute to student choice of the string instruments and develop strategies to recruit in that way. Within this open opportunity, string music educators must recognize and identify the best devices to attract students into string playing. What external factors are currently more influential to the choice students have made to adopt string playing into their “cultural currents?” The current study focused on the external factors that influenced a student to choose to play a string instrument.

Research Questions

The following research questions were developed by the researcher for successful completion of the study.

- 1) What are the three most influential external factors that contributed to the student’s choice to begin string instruction?
- 2) How are these factors related to the musical culture of the student including opportunities for participation as well as observations?
- 3) Are family influences stronger than teacher/friend influences?
- 4) How does the strength of the string community (school and community) affect the beginning string student based on student perceptions of the two communities?

Definitions

In the current study, a few terms must be defined by the author in order to establish clarity for the reader and future researchers.

- 1) ***Middle and High School Students*** will be defined as students currently involved in a public school orchestra program (if applicable) and are currently in grades 5-12. The data collected will be the student’s perception of the influence(s) of the provided external factors. Students will also have a chance to fill in the blank for any external factors that were not provided but apply to their influences for beginning instruction on a string instrument.
- 2) ***External Factors*** are the factors that influence a student to consider playing a string instrument, outside of the instrument itself. This study is not focused on timbre or gender relationships (which have been greatly researched in the past and will be considered in Chapter 2), but on the external factors such as the influence of a music

teacher, the orchestra teacher, their family, the popularity of the program, and transcript diversification to name a few. (The entire survey including all external factors can be found in Appendix C).

- 3) *Extremely Non-influential* will be the lowest scale degree and *Extremely Influential* will be the highest scale degree to which each external factor may be rated in a Likert-type scale. Influential means that the factor either greatly affected the student's instrument choice or did not. *Neutral* is used as the middle factor on the degree scale to mean that the factor did or did not influence the string instrument choice of the student.

Limitations

The first limitation for the pilot study was time. Publication deadlines contributed to this limitation.

The second limitation was the use of the combined Consent-Assent Forms as required by the Kansas State University IRB per standard safety and regulation mandates in studies with the use of human subjects. Use of the forms was necessarily implemented in the process as the research employed human subjects. Combined Consent-Assent Form authorizations were ultimately at the discretion of the parent and student which the researcher had no control over.

Delimitations

The researcher chose to use a local youth symphony of string players, with an enrollment of 74 string players in grades 4-12 as the sample because of convenience and varying backgrounds that the students exhibited. Many students are home-schooled in the population and the researcher was initially interested in comparing their external influences with the external influences of the public school students. However, this part of the study was not approached in the analysis as it is not relevant to the larger portion of the study that will be completed with public high school students.

For the current study, only string students were surveyed.

Overview

American students should have the opportunity to choose instrument instruction that is best for each individual student. That choice should include selection from all instruments in the

woodwind, brass, percussion, keyboard, and string families. Music educators not only owe this chance-to-choose to our students, but should create the opportunity as a continuance to the greater music culture in general. Within an open opportunity, string music educators must recognize and identify the best devices to attract students into string playing. What external factors are currently more influential in contributing to the choice students have made to adopt string playing into their “cultural currents?” String teachers will use the findings to develop compelling ways of attracting string students and their families to consider string programs for student musical and personal development. The findings will ultimately contribute to the further development of stronger string and orchestra programs, a formidable part of their community and school culture, ultimately deterring cutbacks in string and orchestra programs from budget reductions, and creating continuous string instruction for the students who rely on their music instruction daily in the string and orchestra classroom. From Stewart (1991), “Strings are commonly the last to be added in good financial times and the first to be eliminated during financial difficulty (because so few students participate). Therefore, the strength and appeal of these programs often rely on the persistence and tact of the teacher and the image of the program in the community” (p. 133). Using research previously presented by Stewart and many others, this study will focus on discovering the top three external factors that most strongly contributed to string instrument choice by current high school students in order to assist string music educators and string music education to become more familiar and accessible to all students.

Chapter 2 - Review of the Literature

Introduction

Extensive research has been conducted regarding a student's choice of musical instrument in relation to timbre preference as well as gender association with their respective instruments (Abeles and Porter, 1978; Abeles, 2004; Conway, 2000; Delzell & Leppla, 1990; Fortney, Boyle & DeCarbo, 1990; Nierman & Veak, 1997; Rentz, 1992). These studies have been monumental in steering the recruiting practices of instrumental music teachers across the country. Studies have focused on populations that were manipulated, such as using various instructional practices and methods in collaborating schools, posters and aural identification of instruments, hands-on applications, as well as simple identification of instruments by collegiate music majors and nonmajors. Age ranges of the populations used in this research have been as young as elementary school students and as old as collegiate students, as well as one study using adults in regards to their preferences in musical applications that could be enjoyed in adult education. This researcher, using data to find the most influential external factors that lead current high school string students to initially choose to play a string instrument, has been guided by the research discussed in this chapter.

Instrument Choice

Introduction

Students are faced with decisions of varying magnitudes and in the world of music are encouraged to choose a musical instrument from myriad choices. In many areas of the United States, those instrumental choices are severely limited because of class offerings in the schools they attend. In this section, research will be presented that will enlighten readers on how influences for instrument choice come from many different directions, on how instrument choice can be steered by observation and familiarity, how students' perceptions of the difficulty of the instrument could hinder their choice to learn to play it, and what mode of instrument introduction can better influence a student to choose a particular instrument based on two different studies.

Career Choice Correlations

Abeles (2004) found that students in elementary classes make career choices based on the choices that are the most familiar to them, such as a teacher, a coach or even a basketball player. Using this information, the author predicted that elementary students would use the same guidelines when surveyed about what musical instrument they would like to learn to play. Students in three different partnerships were supplied with variables to provide students with a heightened awareness of instruments; their performance, their sound and build, and even how lessons learned in music can be used in other core classes. Using a survey instrument, the results showed to be transformed from each partnership, even compared to the nonpartnership control. Abeles' prediction did prove to be correct, as students who were surrounded by those in the music vocation became more aware of this career as a viable possibility for themselves and were more likely to choose to become a musician in their future. Abeles (2004) is an important study in that we cannot expect students across the country to choose to play a string instrument if they are rarely exposed to them. Still today, many rural schools do not offer string programs (only 14% of rural schools offer strings according to Gillespie & Hamann (1998) and even in larger suburban and urban schools, the only instrument choice a student may have are in the wind, brass, and percussion families; string programs only exist in only 56% of suburban schools and 30% of urban schools (Gillespie & Hamann, 1998, p. 79), leaving many students unaware of the possibilities of learning a string instrument can beget.

Recruitment Strategies

In Nierman and Veak (1997), the authors shared that according to the Second National Music Assessment, 67.9% of all students at age 13 have never taken or participated in even one year of band and not surprisingly, the student average of time in participation in orchestra is much worse. Those students who have never taken a course in orchestra have been documented as being as high as 91.3% (p. 381). Music teachers were looking for the reasons that students were not considering being a part of an instrumental ensemble. In Lincoln, Nebraska, Nierman and Veak set out to discover what was and was not working in their local school district. After labeling the elementary schools as low-socioeconomic status (SES), middle-SES, and high-SES, samples from those schools were presented with either: 1) instruction on the recorder, 2) special demonstration programs (movie, video presentations), and 3) no instruction in instrumental

music. Following the completion of the prescribed curriculum, students were asked to complete a survey instrument that consisted of: 1) Gordon's (1979) *Primary Measures of Music Audiation* (PMMA) and 2) *Survey of Fourth-Graders' Interest* (SFGI), a twenty-item, five-option Likert-scale questionnaire designed by the researchers. In the end, familiarity was found to continue to affect intentions and the conclusion by the researchers was that through, "Systematic investigation of students' attitudes toward music activities is an area filled with challenges surrounding internal validity. Yet, with some information about attitudes, music educators may be guided to make decisions that will increase the number of students who elect to participate in music activities and who will have an opportunity to discover the meaning and value of music in their lives," was determined by the researchers (p. 388).

Bayley (2000) sought to understand what methods instrumental music teachers used for introduction of the instruments to be chosen by the students shortly after introduction. Music teachers were also surveyed on the ways that they encourage a student or do not encourage a student to choose a certain instrument. Questions were also posed regarding gender perception, influences of instrument choice, and general perceptions about the instruments themselves. The researcher surveyed 322 music teachers in the province of Alberta, Canada. Most teachers from the study use the following activities to educate students on the instruments that they will have to choose from in order of most used to least used (though all were high): 1) Look at a variety of instruments on display, 2) Touch/hold a variety of instruments, 3) View pictures/diagrams of musical instruments, 4) Hear live performances of instruments, 5) Produce a sound on a variety of instruments, and 6) Hear recorded performances of instruments. The teachers taking part in the survey believed that their role in the instrument choice of the students is to fit into one of the following four categories (listed in order of the responses): 1) Students were guided in making their instrument choices, 2) Students are guided in making their choice from a limited number of instruments, 3) No attempt is made to influence or guide students in making their instrument choices, or 4) The appropriate instrument is chosen for the students. Overall, in regard to instrument choice, Bayley found that instrumental music teachers in the population surveyed used the method of presenting a variety of instruments to the students and did their best to have the students make their instrument choice with a small amount of guidance.

Retention

The question of instrument choice became even more greatly related to the actual start year associated with the time line in which students are actually faced with instrument choice. Delzell and Doerksen (1998) found that the grade level selected has potential ramifications on many matters, including the percentage of students who decide to participate, the rate of learning and performance achievement, and students' retention in the program. Many school districts have moved their start year to the later grades. Research shows that a 6th grade instrumental start was not a hindrance to the quality of the program and actually increased retention. Districts are all very different concerning the components that can alter instrumental start grade such as the grade configuration of school buildings in the district, number of instrumental music staff, and fiscal realities.

Multiple Influences

In reviewing common instrument choice articles, Coffman and Sehmman (1989) concluded that all had significant influence on the instrument choice of students, that one influence (gender perception, parent perceptions, timbre preference, and even physical preference) from the list would not be the only determinant for an instrument choice. The authors strongly suggest that teachers not encourage preferences through sexist teaching of the instruments. "Thoughtful considerations of the sources and development of these preferences should help the music educator guide students to instruments that will enhance, not limit their potential success in music making" (p. 34).

Delzell and Leppla (1990) set out to determine if Abeles and Porter's (1978) research were still reliable after twelve years. They were searching for the answers to the following problems: (a) To measure possible changes in gender association of musical instruments from earlier research, (b) To estimate current preferences of fourth-grade students for selected instruments, (c) To gain an understanding of reasons expressed by students for preferring certain instruments and not others, and (d) To compare students' perceptions of their peers' preferences to the actual choices their peers made. Results were found using written survey instruments in both the collegiate setting and the elementary school setting were that: (a) Gender roles had lessened but were still in existence, (b) The ranking of preferred instruments to learn to play according to the elementary population were: Drums, saxophone, flute—then clarinet, trumpet,

violin, trombone, cello, (c) “Quality of sound” was the most chosen answer as to why the student wanted to play the instrument. Students did not want to play it if it was perceived as “too difficult to play,” and (d) Student choice was moderately related to what their peers actually chose. Also, girls were more accurate in predicting preference of boys. In relation to the current research, the observations that were most intriguing were those pertaining to the string instrument choices and that they were ranked so low in lists of preferred instruments to learn to play. There is sad news involving the string instrument decline, at least in this population, and the author was further disappointed by the reasons from the children being surveyed that revealed that the instruments were “too difficult to play” and that they “were not fun” (p. 99). This common and far-too-prevalent misconception of the string instruments is a large basis behind the need for the author’s study.

Summary

Once the choice has been made by the student to learn to play an instrument, students must choose which one. All instruments have specific timbre characteristics that create the beauty of the sound each instrument projects. Prior research has been conducted on the effect of each instrument’s timbre to the choice of playing the given instrument. Below are a few of those investigations.

Timbre Associations or Preference

Introduction

According to the Merriam-Webster Dictionary, *timbre* is defined as, “1: the quality given to a sound by its overtones: as, 2: the resonance by which the ear recognizes and identifies a voiced speech sound, 3: the quality of tone distinctive of a particular singing voice or musical instrument.” *Timbre* evokes the personality of the instrument and the distinctive color of the sound that each instrument emits must be nothing short of beautiful to the instrumentalist who chooses to perform that instrument, from the first day of learning. It has been found that if a student likes and enjoys the timbre of his instrument, the student is more likely to choose to play that instrument and usually to continue playing that instrument (Cutietta and Foustalieraki, 1990).

The Science of Timbre

Before the teachers and students embark on the process of choosing an instrument based on the timbre it creates, Wessel (1979) and other scientists studied timbre. The researcher describes a system for taking subjective measures of perceptual contrast between sound objects and using this data as input to computer programs. The computer programs create geometric representations of the input data (p. 45). Digital synthesis of timbre had previously been explored by Peter Samson (1977) and was in use at the Stanford Center for Computer Research in Music and Acoustics prior to Wessel's study. The sounds used for the study were obtained from John Grey, a fellow researcher on the topic, and consisted of 24 orchestral instrument timbres (listed beneath the timbre quadrant in Figure 2.1 below) that had been synthesized and equalized subjectively for pitch, loudness, and duration. On a two-dimensional plane, the vertical axis would represent the *spectral energy distribution* and the horizontal axis would represent the *nature of the onset transient*. Therefore, the sounds would be bright starting in quadrant 1 and become mellower in 2, 3, and 4, shown below in Figure 2.1 (p. 49). Being able to analyze the timbres that the musical instruments produce can better assist us in describing the sounds we hear and the relating the timbres to the instruments themselves.

Figure 2.1: Wessel, 1979: Timbre Quadrant, p. 49

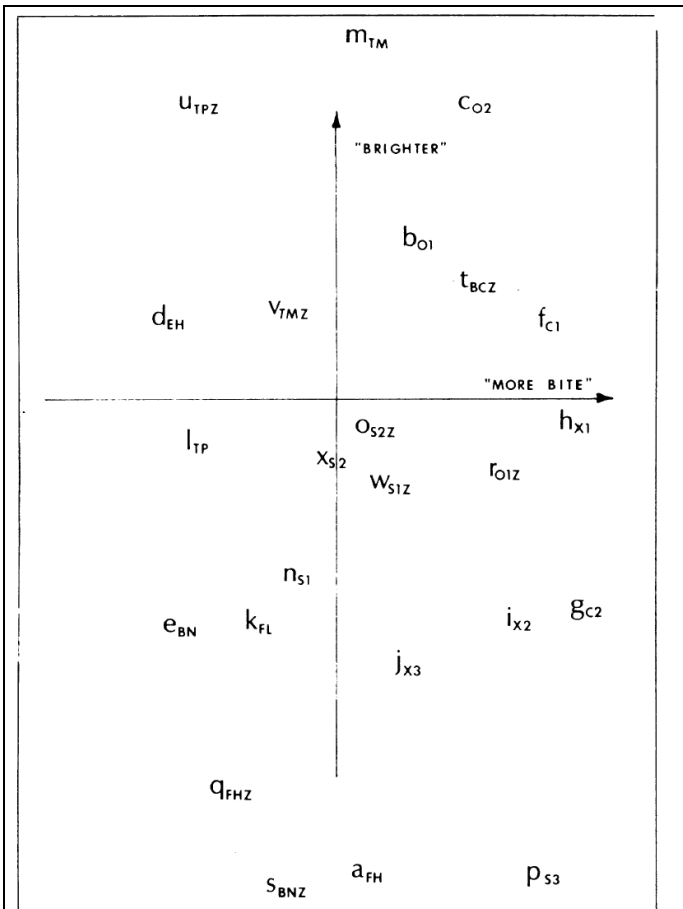


FIGURE 1. Two-dimensional timbre space representation of 24 instrument-like sounds obtained from Grey. The space was produced by the KYST multidimensional scaling program from dissimilarity judgements made by Wessel. The lower-case letters identify the sounds as recorded on a cassette-tape prepared to accompany this paper and distributed by IRCAM. The upper-case subscripts at each point identify the tones as reported in (Grey: 1975, 1977), (Grey and Gordon: 1978) and (Gordon and Grey: 1978). The original analyzed tones upon which these synthesized versions are based are being presented in the *Computer Music Journal* series "Lexicon of Analyzed Tones."

Abbreviations for stimulus points: O1, O2 = oboes, FH = French horn, BN = bassoon, C1 = E-flat clarinet, C2 = bass clarinet, FL = flute, X1, X2, X3 = saxophones, TP = trumpet, EH = English horn, S1 = cello played *sul ponticello*, S2 = cello played normally, S3 = cello played muted *sul tasto*, FHZ = modified FH with spectral envelope, BNZ = modified BN with FH spectral envelope, S1Z = modified S1 with S2 spectral envelope, S2Z = modified S2 with S1 spectral envelope, TMZ = modified TM with TP spectral envelope, BCZ = modified C2 with O1 spectral envelope, O1Z = modified O1 with C2 spectral envelope.

D. Wessel: Timbre Space as a Musical Control Structure

Aural Identification of Instrument Timbre

Thus far, none of these studies have made use of the string instruments in a great amount of detail. The argument can be made that even without the existence of a string instrument program in all school districts across America populations still embody the aptitude to inherently distinguish the timbres of the various instruments recognized as comprising the twenty-first century orchestra in the four commonly recognized instrument families. As a part of a study done in 1992, subjects from a large university were used to analyze which of the instrumental families (brass, percussion, woodwinds, strings, or all) they could decipher in a six-minute excerpt of Copland's *Billy the Kid* (Rentz, 1992). Sixty musicians and 60 nonmusicians listened to the selection in a room and were asked to manipulate a Continuous Response Digital Interface (CRDI) to indicate which instrumental families they could identify for the duration of the performance.

Following the listening portion, subjects were asked to complete a survey about the process. Musicians and nonmusicians did hear the distinct families as being dominant in the selection with the brass and percussion family instruments being the most often indicated by the nonmusicians as being the most dominant. Musicians chose strings more often. The researcher attributes these differences to the lack of aural perception because many nonmusicians have not developed an ear for or are unfamiliar with the string timbre while being performed at the same time as the percussion and brass lines and, therefore, hear the percussion and brass lines more dominantly when they actually enhance lines already being performed by the woodwind and string instruments. The conclusion was made that musicians have a stronger aural hierarchy than nonmusicians, and nonmusicians' lack of musical example (timbre recognition) prevents them from more accurately identifying timbres. Based on this research, varying roles for strings should be explored.

To further support the argument of expanding string instruction to a wider population of students, simply being aware of the varying timbres will broaden the perspectives of the American culture. Michael Chanan reflects that we are exposed to the great composers each day on the radio, the television, and the computer, but are simply unaware that, ". . . everyone knows what Elgar and Vaughan Williams and Mahler sound like, even if they don't know that they know. In short, music which untutored listeners would find mystifying or dull if they were asked to sit down and listen to it quietly provides no one with any problems of comprehension when it

turns up on the soundtracks of everyday life” (p. 368). Chanan makes a directly relevant point that the string sounds are not as unfamiliar to the broader population as many say but are so familiar that they blend into the background like the buzz of an overhead light. Their presence is ubiquitous, but in order for more listening audiences in any venue to be alerted and listen, they must be given something to hear that is not the buzz of the overhead light, but a stimulating spark.

Timbre Affects to Instrument Choice Using Aural Stimulants

Students are exposed to the timbre of the instruments in various ways. Gordon (1986) points out that a student may recognize and “choose a timbre that he hears performed on an actual instrument because his parents want him to play that instrument, because one of his relatives plays that instrument, because one of his friends plays or wants to play that instrument, because a famous artist plays that instrument, because he associates that instrument with a favorite piece of music, or because he knows that it is easier to transport that instrument” (pp. 10-11). In his research, Gordon monitored students for three years. The researcher arranged for them to complete a *Musical Aptitude Profile* and an *Instrument Timbre Preference Test*, and sought to find a correlation between the students’ scores on the *MAP* and their instrumental timbre preference. Gordon found that, “the students who were studying instruments for which they demonstrated a timbre preference overall profited more from instruction from their teachers, were better able to prepare lessons without assistance from their teachers, and sight-read better than students who had not demonstrated a timbre preference for instruments they were studying” (p. 14) When the student enjoys the timbre their instrument projects, they will enjoy perfecting the performance of their instrument and work diligently to accomplish the highest quality playing attainable. Interestingly, fewer than 25% of students who enroll in beginning instrumental music voluntarily choose to study instruments for which they truly have a timbre preference, states Gordon (p. 15). This could be due to many varying factors. Gordon believed in his method and process passionately and stated that, “The playing of an instrument for which one has a timbre preference is an important factor, second only to that of music aptitude, for success in beginning instrumental music” (p. 16).

A timbre preference can be observed in specific types of instruments and researchers have categorized instruments into common groups. A student’s timbre preference can be

representative to which ensemble that instrument is most typically performed in. In a collaborative report by Cutietta and Foustalieraki (1990), preference for Band and Non-Band Instrument timbres were researched in populations in both the United States and in Greece. They found that traditional Band instruments were ranked higher in the United States and Non-Band instruments were ranked higher in Greece. The variation of cultures and the overall of access to the instruments along with the varied familiarity to those categorical instruments will alter the preference to the more familiar timbre as well. If the timbres are familiar to the aural palette of the listener, that person would enjoy the performance of that instrument at an increased level, but if it were unfamiliar, the listener may not enjoy the performance or choose to learn to play that particular instrument. The researchers address this pondering briefly in their discussion, reflecting that it is serving the band programs well in the United States.

Common in academic investigations, studies are readdressed after time to verify or denounce the previous truths and correlations that had been found. Gordon (1991) continued his research on timbre preference and its relationship to instrument choice, this time focused primarily on the following research questions: 1) Are certain timbres or groupings of timbres preferred more than others? 2) Do students who have more than one instrument timbre preference or have a stronger preference for any one timbre than do students who have only one timbre preference? 3) Does the preference for one timbre or groupings of timbres indicate the preference or non-preference of other timbres or groupings of timbres? 4) How many students have one or more timbre preferences? 5) How many students have no timbre preference? 6) How many students dislike certain timbres? 7) Do boys and girls have different timbre preferences? 8) Are there differences in the pattern of timbre preferences between students who are considering participation in a beginning instrumental music program and students who actually enter the program? 9) Do students who have high music aptitude have stronger timbre preferences than do students who have low music aptitude? 10) Do students who have high music aptitude have different patterns of timbre preferences from students who have low music aptitude? 11) Do students who study an instrument for which they have a timbre preference demonstrate more success in beginning instrumental music than students who study an instrument for which they do not have a timbre preference? 12) Do teachers evaluate differently the music achievement of students who do not share the same timbre preferences?

Results for the above questions showed that 1) Students prefer higher rather than lower sounds, regardless of the timbre, 2) Most students had a preference for one timbre, 3) Not necessarily, but it is not as strong, 4) 47% indicated they had one timbre preference and 33% indicated they had two timbre preferences, 5) 19% indicated they were indifferent to all of the timbre preferences presented, 6) more than fifty percent of students dislike the timbre that represented the Sousaphone or the tuba, 7) There is no more than 4% in common between sex and any instrument timbre preference, 8) Approximately 50% of the students who score in the upper 20% on valid music aptitude tests do not participate in special school instruction, 9) All students have timbre preferences, whether they have a high or low music aptitude, 10) Less than 1.5% in common between music aptitude and specific instrument timbre preference, 11) Yes, and 12) Unfortunately, they do.

A study has also been conducted by simply asking participants, through the implementation of a survey instrument, what factors led them to choose their current instrument without using listening methods to enrich the sound of the instrument, but by recalling their aural memory. Fortney, Boyle, and DeCarbo (1992) is one of the seminal studies on instrumental timbre regarding instrument choice. Fortney, et al. researched the influences on the instrument choice of middle school band students. They surveyed students in the Dade County (Florida) Public Schools in the fall of 1990. Using a previously piloted survey on 12 of the selected schools, band students completed the survey while in their band classes and administered by their band directors. The researchers found that students were influenced by many factors in regards to instrument choice. Students make choices, according to findings in this study, based on the timbres that they prefer the most often. Information provided by the students also suggested that gender associations continue to exist with the various instruments. Also, highly influential were the suggestions placed to the students by their instrumental teachers, parents, and friends.

Contradiction to Previous Research

In contrast to Gordon's studies, Williams (1996) raised the concern with the use of the synthesized sounds that are used in the Gordon study. Williams asked 128 subjects to respond to questions related to and to also identify the actual sound test items, which were recordings of instruments and their actual timbres. From the study, "Overall, students recognized the timbre of

their own instrument 800 times out of 1,541 times they heard it (only 52% of the time) and preferred it 880 times (57% of the time). Individually, timbres were recognized as seldom as 23% of the time and preferred as little as 43% of the time” (p. 268). If this is so, how can the Gordon, 1991 study be submitting any relevant data when most subjects cannot even identify their own instrument’s timbre or even prefer it in its current sound state? Williams’ strongest argument is stated in the study: “To claim that a student showing preference for a synthesized sound will then enjoy the sound of a certain wind instrument requires that the synthesized sound closely represent the timbre of the actual sound. It is fair to conclude that such a synthesized sound should therefore be recognizable as representative of the actual instrument it is intended to represent” (p. 275).

Summary

There is a need for further research to define stronger relationships between the selected factors to further assist students to find their most compatible instrument. For the current study, the author referenced the survey from the Fortney, Boyle, and DeCarbo (1991) and formulated it to improve the acquiring of data needed to answer the research questions. Besides timbre, other perceptions influence instrument choice. The next category to be explored is that of gender.

Gender

Introduction

Gender and its effects on instrument choice are great indeed. Instruments throughout history were regarded as being acceptable only when performed by certain sexes. For instance, gender appropriate instruments, once women were finally allowed to take up such a discipline, were those of the harpsichord, later the piano, the cello, and the violin (Macleod, 1993, p. 294). Instruments that required a woman to blow into it to produce sound was considered greatly inappropriate and in some cases, even thought to be too difficult for the angels to maneuver efficiently by the men who created the mechanisms (Macleod, 1993, p. 294). Over time, both women and men have become closer equals on all instruments, however, stereotypes still permeate the social implications of certain instrument choices for both girls and boys. Many studies have been completed in this regard and are briefly discussed below (Abeles & Porter, 1978; Griswold & Chrobak, 1981; Crowther & Durkin, 1982; Brophy, 1985; Byo, 1991; Elliot

& Yoder-White, 1992; Bruce & Kemp, 1993; Zervoudakes & Tanur, 1994; O'Neill & Boulton, 1996; Sinsel, Dixon, & Blades-Zeller, 1997; Conway, 2000; Harrison, 2000; Pickering & Repacholi, 2001; Cramer & Perreault, 2002; Johnson & Stewart, 2004).

Gender Perception of the Musical Instrument

The most pivotal gender research regarding musical instruments was that of Abeles and Porter (1978). Actually four different studies Study 1 sought adult musical instrument preferences for children and indicated significant differences ($p < .05$) in instrument selections due to the sex of the child. Study 2 employed a paired-comparison strategy to place eight instruments under investigation on a masculine-feminine continuum. Study 3 investigated children's (K-5) instrumental preferences and showed a significant sex by grade interaction. Study 4 examined three procedures for presenting the instruments to preschool children and showed significant gender differences by method of presentation interaction. The researchers observed that "Sex-stereotyping of musical instruments, therefore, tends to limit the range of musical experiences available to male and female musicians in several ways, including participation in instrumental ensembles and selection of vocations in instrumental music. The results of the association of gender with instruments is evidenced in the predominance of males in band programs and the predominance of females in orchestra programs, particularly at the college and secondary school level" (p. 65). Still in evidence today, the current survey found that in the three high schools surveyed consisting of 277 participants, 188 of the students were female (68%).

Abeles and Porter (1978) results revealed to the researchers and the music education community what they had been observing in their own classrooms and music studios. Study 1 showed that in the "single variable examination of the eight instruments, the average rankings indicated that respondents preferred clarinet, flute and violin for their daughters, and drum, trombone, and trumpet for their sons. The cello and saxophone produced nonsignificant differences at the .05 level due to the sex of the child" (p. 67). Study 2 reported that "in the masculinity pairing comparison, flute, violin, and clarinet we rated as being the three most feminine instruments and the drums, trombone, and trumpet the most masculine instruments. The cello and saxophone, which were not affected by the sex of the child variable in Study 1, appear in the middle of the scale" (p. 68). Study 3 used both a visual and an aural preparation of all eight instruments selected for the study. For the visual component, inserts of a child playing the

instrument were used; however, male students were used as models for the masculine instruments and females for the others. Subjects listened the same piece played (*Spagnotetta* by Praetorius) and then circled the name of the instrument they would most like to play based on having seen the image of the instrument (with the gender-heightened model present) and the aural component of the performance. Data showed a significant ($p < .05$) differences due to the main effects of sex and grade, and sex by grade interaction. Primary grades (K-2) and intermediate grades (3-5) is where grade effect occurs. Overall, “the sex-stereotyping behavior in musical instrument preference is not very strong in young children (kindergarten) but is more pronounced in children beyond grade 3. Study 4 showed nonsignificant ($p < .05$) results due to the main effects of group and sex, but does indicate a significant different ($p < .05$) in the interaction hypothesis between the pooled experimental group results and the Control Group by sex. These results indicated that young girls were generally not affected by the mode of presentation, whereas young boys responded different in the unbiased presentation than in the other two conditions. It should also be noted that both boys and girls tended to choose instruments at the masculine end of the continuum, and that as found in Study 3, girls selected a wider variety of instruments than did boys” (p. 72).

Overall, this research is a cornerstone of gender and instrument choice studies. This series of studies suggests that musical instrument gender associations are widespread throughout all age groups, starting with children’s initial introduction to the instruments, and may be the dominant factor in instrument selection, possibly having a major effect on the music vocational choices of individuals.

Crowther and Durkin (1982) worked with British secondary students who were in the age range of 12 to 18. Students were from one rural community in southern England. They had all received the same general music education, with some emphasis on Kodály. The subjects completed two questionnaires. One was a *Musical Interests Questionnaire* that gathered information on the subjects’ musical activities, preferences, hobbies, and their attitudes towards music education. The other was an *Attitude to Music Scale* which provided quantitative data on the subjects’ attitudes towards music. Attitudes showed a greater positive from the girls than the boys at each grade level and the overall attitude increased positively from the youngest to the oldest children surveyed. In the presence of a negative attitude with responses from boys, there was a greater chance that the attitude would be more extreme than that of negative responses

from girls. All responses were favorable in the attitude of listening to music, and this also increased as the subjects age increased.

The top ten choices for instrument choice were reported by gender. The female section chose the recorder as their first choice and the males chose guitar.

Figure 2.2: Crowther, 1982: Instrument Choice ranking, p. 136

| TABLE III. Rankings of instrumental choices by male and female subjects | |
|---|-------------------|
| Girls | Boys |
| 1. Recorder | 1. Guitar |
| 2. Piano | 2. Piano |
| 3. Clarinet | 3. Clarinet |
| 4. Guitar | 4. Trumpet/cornet |
| 5. Violin | 5. Violin |
| 6. Flute | 6. Horn |
| 7. Trumpet/cornet | 7. Recorder |
| 8. Organ | 8. Banjo |
| 9. Cello | 9. Saxophone |
| 10. Oboe | 10. Organ |
| 11. Others | 11. Others |

Unlike other studies, the violin is ranked at the same level for both girls and boys in this population. Frequently ranking much lower for boys, this leads to questions about the influences of violin players that these students are familiar with that may be men.

Byo (1991) suggests that there are significant differences in the instrument preference of male and female subjects. In his assessment of third-grade students, the researcher used a pre-test/post-test design where subjects placed six band instruments in rank order according to

preference. Students were then grouped and presented with varying demonstrations of the instruments—a clarinet biased condition; an unbiased, full demonstration condition; and a photos-only condition. The results indicated that there was agreement among groups on the pre-test, but no significant agreement among groups following treatment, suggesting that different modes of instrument demonstration may yield different results with respect to students' preferences. Also included in the simple instrument choice data gathered, information was taken into account regarding the gender association of the instrument. Those results indicated the significant difference in the instrument preferences of the male and female subjects.

Elliot and Yoder-White (1992) explored two research questions: 1) Do seven, eight, and nine year old children make consistent masculine/feminine judgments about instrument timbre when those timbres are presented in isolation, and 2) Are there difference in seven, eight, and nine year old males and females with respect to masculine/feminine judgments made about instrument timbres when those instruments are presented in isolation? The researchers used trumpet, flute, clarinet, French horn, alto saxophone, oboe, bassoon, and trombone as these instruments are have been historically researched. Students would listen to a recording tape of the actual performance of instruments and indicate on their answer sheet whether the instrument was “masculine,” “feminine,” or “neither/both” represented by a series of drawings because of the ages of the respondents. Each instrument timbre was to be statistically significant beyond the .01 level. The oboe, flute, and clarinet were found to be feminine in that order and the bassoon, trombone, French horn, trumpet, and alto saxophone were selected at being masculine in that order. The findings were consistent with previous research. The researchers did conclude that the timbre gender could have been influenced by the range at which the excerpt was performed.

Bruce and Kemp (1993) investigated questions on the limited range of instrumental selection made by boys and the effects of children's gender associations on their preferences for musical instruments. “The research project was devised to investigate the responses of infant school children to male and female musicians. The findings indicated that instrumental preferences were influenced by gender associations which could be lessened by providing positive role models. Whereas, girls were more able to cross over gender divisions than boys, boys had a narrower range of interests in instruments. It was shown that the provision of an opposite gendered role model helped to overcome the associations made with particular instruments” (p. 213). Short demonstration concerts were performed to children between the ages

of five and seven. There were an equal number of male and female musicians in each concert and the respondents were equally girls and boys. At the end of the concerts, the students were invited to look at one instrument. The number of students per instrument was tallied and the findings were supported by previous research. “One of the most striking features of these results is the children’s identification with a musician of their own sex for each instrument in all the concerts. Girls moved towards the female musicians and boys were attracted to the male musicians” (p. 215).

In much the same way, Tarnowski (1993) examined gender bias and musical instrument preference in an attempt to expand on the previous studies. The author examined three research questions:

- 1) Studies have shown the presence of gender-instrument associations by Grade 3. When do these associations develop? What are the attitudes of children in Grades K-2 concerning instrument preference?
- 2) The influence of parents, educators, and other authority figures are factors in the development of listening preference (LeBlanc, 1982). Preferences in musical instrument selection may be subject to the same influences. What attitudes do pre-service classroom teachers bring to their teaching? How are their views different from those of their young students?
- 3) Some studies have suggested that the attitudes of young children may be shaped by the manner in which instruments are presented. What are the effects of a gender-neutral presentation on the gender-instrument associations and instrument preferences of young children?

Results for the first part of the study showed that in over 50% of the respondents, the piano, violin, saxophone, and snare drum were the instruments that both children and adults deemed as gender-neutral. Masculine instruments were indicated as being the tuba, trombone, bass drum, and the string bass. Feminine instruments were indicated as being the flute, clarinet, and the oboe. There was not a gender association indicated for viola, cello, trumpet, or French horn. There was a significant indication of age response. Children were more likely to indicate that an instrument was gender-neutral than a pre-service teacher. For research question number two, the researcher found that pre-test and post-test data were quite different. More instruments were ranked as gender-neutral on the post-test than were originally indicated on the pre-test.

Between pre-test and post-test for this section, students were presented with the opportunity to learn from music education assistants how to play the instruments from the string, woodwind, brass, keyboard, and percussion families. An equal number of male and female demonstrators were used. Students were exposed to equal representation of gender demonstrators for each instrument family. For the third research question, students were more likely to choose instruments they had themselves indicated as gender-neutral.

O'Neill and Boulton (1996) sought to discover if the preferences that boys and girls showed for certain musical instruments were a function of their gender. This study, taking place in England, investigated children's preferences for learning to play musical instruments and the extent to which boys' and girls' preferences are based on the gender stereotyped associations that have been found in previous studies. Instruments used in the study were flute, violin, drum, trumpet, piano, and guitar. Overall, it was found that girls showed a significantly stronger preference for the piano, flute, and violin than boys, whereas boys expressed a stronger preference for the guitar, drums, and trumpet than girls. The researchers also analyzed their data using log-linear analyses, which revealed that boys and girls have similar ideas about which instruments should not be played by members of each sex. Further, more male participants than female participants indicated that males should not play the violin, and more male participants than female participants indicated that females should not play the violin. This indicated that there was a greater sex difference when participants were thinking about whether boys should not play the violin than when they were thinking about whether girls should not play violin.

Just as with other gender studies, the authors challenge that schools, parents and others in a position of influence need to do more to challenge children's gender stereotyped views of musical instruments if boys are to have a wider choice of instrument to select from (O'Neill and Boulton, 1996).

Sinsel, Dixon, and Blades-Zeller (1997) further expanded the two-choice sex type to include an androgynous category in classifying students, discovering that these children were actually more flexible in their instrument preference. The purpose of the study was to investigate relationships between children's psychological sex type (masculinity, femininity, or androgyny) and children's most-preferred and least-preferred musical instruments. Results showed that masculine sex-typed students preferred masculine-stereotyped instruments, feminine sex-typed students preferred feminine-stereotyped instruments, and androgynous students preferred neutral

instruments. The converse pattern was obtained for least-preferred instruments, with the exception that androgynous children disliked both categories of sex-typed instruments. These results suggest that to enhance retention in musical instrument education, children's psychosocial identity ought to be considered.

O'Neill (1997) indicated that "Gender stereotypes refer to a range of physical, psychological, and social characteristics considered to be typical of males and females in a particular culture or social group. As children grow up they learn to accept and conform to their culture's stereotyped beliefs about the appropriate characteristics and behavior for males and females" (p. 47). Just as with occupations, there are gender differences in many difference aspects of our social lives such as education, experience, opportunity, and even levels of aspiration, O'Neill suggests.

Even though students may be able to aurally distinguish between the four standard instrumental families, this successful identification does not imply enjoyment from each instrument or solidify the type of person that perceptually should be performing on that instrument. Gender and the perceived gender role an instrument embodies is still a prevalent factor in overall instrument choice as studied by Conway (2000). The researcher was seeking the perceptions of gender roles on instrument choice affected the choices made by students in two communities. Following an in-depth literature review, Conway derived a thorough interview guide and interviewed students who 1) play a generally gender stereotyped musical instrument and 2) play a gender non-stereotyped instrument. The general conclusions were that most students were choosing their instrument based on timbre preference, though some did have gender perceptions, and made choices based on those general population stereotypes as well. Conway calls for "The music education profession . . . to continue to work toward the goal of a gender neutral instrument choice world for the next generation of instrumental music students" (p. 14).

Relating to the gender-role changes that have occurred in other aspects of human life during the past thirty years, Abeles (2009) cites that music, as with social and political actions, are calling for equal opportunities for men and women. Two studies were created and compared to previous gender research of the past thirty years. Study 1 showed that the female and male perception of certain instruments was still present with college student survey participants. Scores were not as drastically different as they were in the original study conducted by Abeles

and Porter (1978) but were much closer to the range of scores presented in Delzell and Leppla (1992). Study 2 looked at middle school instrument selection. Of the 2,001 students participating in instrumental music at the school surveyed, 1,148 (57.3%) were girls. Middle school students showed very similar sets of data in comparison to Fortney, Boyle, and DeCarbo (1993) findings in that girls for the most part still chose to play flute, clarinet, and saxophone where the boys chose to play drums, trumpet, and trombone. Overall, there has been little change even as society has grown more equal in the gender roles.

Recruitment by Instrument Gender

Using two studies to determine whether the instrument preferences made by students could be modified by presenting counter-examples and whether a student's gender or age influence the efficacy of such interventions was the focus of a project by Pickering and Repacholi (2001). In Study 1, a video was shown to the students that included four high school girls and four high school boys to perform a short excerpt on their gender specific instruments and reversed for the counter-stereotyped video and drawings of the instruments only in Study 2. Study 2 included pictures used that included elementary students this time with the gender-stereotyped instruments and then in reverse. "Children exposed to counter-examples were less stereotyped than those who saw the instruments without musicians (Study 1) or with gender-appropriate musicians (Studies 1 and 2). Age did not influence children's responsiveness to the counter-examples, but boys were more resistant to the intervention than girls" (p. 623). Overall, there were no preferences for gender-typed instruments when musicians were not present in the drawings. As stated above, the counter-examples were effective; however, the children's instrument choices also appeared to be motivated by a desire to avoid behaving like musicians of the other-sex. Also, the age range did not present overwhelming evidence that showed the efficacy of such interventions.

Looking into the effect music directors have on assisting students in choosing instruments based on the sex of the student, Johnson and Stewart (2004) found that their results indicated that simply knowing the sex of the student did not have a significant impact on what instrument band directors recommended the students play. Participants were solicited at music conferences and asked to complete a two-minute survey from a previously designed and launched website. All participants completed one of two questionnaires on the website. Participants were presented

with eight pairs of student pictures and asked to assign one of six instruments (flute, clarinet, saxophone, trumpet, horn, or trombone) based solely on the picture. Participants were evenly divided between female and male. Researchers were aiming to validate previous studies in which researchers examined the social effects of what instruments students express interest in playing, as well as correlations with previous timbre studies, in that they may well be more pertinent as to why there still seem to be significant gender differences in what students are playing in bands. Without new data, it seems clear that band directors do not steer students toward or away from a particular instrument based solely on the sex of the student.

Furthering their research to include race identification in regards to the sex and instrument assignment by the music educators, Johnson and Stewart (2004) employed music educators, solicited from various music education conferences. Participants took an online survey that included the same pictures used in their previous study, but one group were only pictures of the mouth area to analyze to decide whether race was also playing a factor in instrument assignment from the music educator. One significant difference involved an African-American boy that the researchers had noticed received inconsistent feedback in the original study. This student represented a group that was of keen interest due to a previous study that indicated a somewhat compelling difference hypothesized due to race, which prompted this follow-up investigation. “There were notable differences between the two groups in the instrument assigned to this individual. From the Mouth Group to the Face Group for the male participants, there was a substantial decrease in the number of people who assigned this student to clarinet (from 5 to 0) and saxophone (11 to 5), and a notable increase in trumpet assignments (8 to 14). These results would all parallel the earlier data. However, there was also a contrasting increase in flute (1 to 3) and horn (2 to 5) assignments. A decrease in trombone assignments (11 to 7) was also noted. These changes in assignment were contrary to the results found in the original study. This finding might suggest that stereotypical assignments found in the last investigation were not as insidious as they first seemed. Even with this student, who did have differences in assignments; the assignments in question were not nearly as one-sided as the student selections made in the previous investigation for the African-American student.

Johnson and Stewart concluded that it seems that investigations as to why sex differences exist in ensembles might focus on such aspects as the social perception of the instruments

students express interest in playing, as well as some of the timbre studies. At this time, director bias simply does not seem to be a significant contributor to the noted differences.

Music Vocations by Gender

Lending itself to the vocational choices of musicians in America, Lyon (1973) claimed that 56% of the amateur musicians were female, whereas 83% of the instrumental instructors were male. In secondary schools at the time, only 27% of the directors were female. Yet 80% of the music teachers in the elementary schools are women. Female instrumental directors represented only 5% of all of the public school and college band directors in 1973. “A successful director is successful at any age” (p. 5). The writer notes that supplemental to the increase in female directors were the rise of women instrumentalists on previously considered “masculine” instruments and a general population increase overall. The author does forecast hope for an increase of female instrumental directors as the numbers were already rising and in correlation, the number of female trumpet players was also rising. The author points out that the oldest women’s symphony, the California Women’s Symphony in Los Angeles, was founded in 1893. There is a long standing history of women in music; the history must outweigh the stereotypes.

Mayer (1976) calculated the percentage of women among the faculty in the *1972-74 College Music Directory*. These results are very close to the stereotyped genders of the instruments having been found in previous studies. The greatest percentage of women teaching applied music was within the keyboard division that showed 41 percent. The next highest division was early music at 27 percent followed closely by strings at 25 percent. The least percentage was represented by the brass applied teachers with females only representing 3 percent of the teachers between 1972 and 1974.

“Even though music programs expanded rapidly in the public schools after 1900, women rarely achieved prominence as instrumental music teachers; and the discomfort of male music teachers with girls in marching band has often shunted girls into baton-twirling and flag-waving. The likelihood that women would play particular instruments did not change significantly between the late nineteenth century and the 1980s. In short, the gender expectations that defined and limited women’s musical participation at the turn of the century are, for the most part, still in place one hundred years later” (Macleod, 1993, p. 291). This document provides a historical perspective on the role women have (or really have not) had in the instrumental world. Though

rising in participation numbers, Macleod points out that the perspectives of the general population of the United States is so well ingrained that it will likely be many more years before the gender biases that relate to instrument selection for women and men will claim to be balanced.

In a study to find the number of female players of typically female instruments and vice versa, Zervoudakes and Tanur (1994) found an increase in the amount of females that were playing in ensembles on commonly classified “male” instruments. There was also an increase in the amount of females who were playing “female” instruments. The researchers concluded that gender-based segregation has increased at the high school and college level ensembles, but there was no evidence that it has done so at the elementary level ensembles. Using samples from six hundred institutions, schools were chosen at random. Programs were collected from the schools for their bands and orchestra ensembles and names were accounted for in each instrumental section as being male or female. The authors concluded that the rise of feminism and the increased participation of women in the work place are also affecting the rise of female ensemble members.

In the book entitled *Music, Gender, Education*, Green (1997) questions the gender roles that women have taken in regards to instrument performance and accuses those women of isolating themselves to the femininely appropriate instrument, “Why is it that – like singing – some instruments have for centuries been welcomed by women, and have been seen as acceptable or even desirable feminine accomplishments, whereas – unlike singing – certain other instruments have at various times been shunned by women, frowned upon or even prohibited?” (p. 72). She suggests that the woman singer is acceptable as the creation of music is created from the body, a body that is “affirmed and celebrated” where “The instrument which she wields or controls interrupts the centrality of the appearance of her in-tuneness with her body” (p. 76). Also, the woman instrumentalist is “no longer a mere part of the nature that man controls, she steps out, into the world, into the position of controller” (p. 122). Green referenced a comment she heard regarding a school concert. “‘There was this young girl on stage, and this enormous drum kit. I couldn’t believe that she was going to play it: but she walked across the stage and sat down behind it, and she did play it – and she played it well too!’ Behind the speaker’s words is an indication that the idea of the girl’s femininity, as well as other qualities such as her youthfulness and small size perhaps, had fleetingly become a part of the music’s delineations”

(p. 126). Ultimately, “the instrumental performance of classical music, especially in the domestic or educational sphere, especially solo, on keyboards, plucked strings, and certain orchestral instruments, is relatively affirmative of femininity” (p. 128).

Harrison (2000) believed it was time for an intervention regarding the role gender was playing in the instrument choice of our students. The researcher set up a study in which various clusters of students would observe a performing ensemble that included females and males to observe the students perception. Intervention concerts were performed at two of the three clusters of schools. Cluster 1 received concerts with gender-consistent role models (i.e., females playing flute, males playing drums); Cluster 2 received concerts with gender-inconsistent role models; and Cluster 3 did not receive concerts (control schools). Instrument preferences were measured previous to the intervention concerts and again immediately following the concerts. Results indicated an immediate impact of providing a counter-stereotypical role model on preferences for perceived “own-sex appropriate” instruments. Girls expressed less preference for the piano after observing a male musician playing the instrument. Boys ranked the guitar less favorably after they saw a female musician playing the guitar. The student’s perceptions of gender assignment per instrument had been interrupted, and the students’ first reaction was to not like it. Music educators cannot use the “shock and awe” approach to balance the instrumental gender perception, but it must be a role developed over time.

College students are not shy to share their reflections on the world. Cramer and Perreault (2002) took full advantage of this group’s honesty regarding the social perception of individuals engaged in activities atypical to their gender as shown through instrument performance. Students were asked to evaluate fictitious male or female musicians playing either a masculine (drum or tuba) or feminine (flute or harp) instrument. Results showed that female musicians were perceived as more dominant, active, and better leaders than male musicians. Moreover, musicians of feminine instruments were perceived as more caring, warm, sensitive, and better adjusted but less dominant and prone to leadership than musicians of masculine instruments. In particular, results showed that regardless of participant gender and the covaried personality measures, judgments of male and female musicians depended on the instrument they played. For masculine instruments, there were no significant differences between perceptions of male and female musicians; but for feminine instruments, males were judged significantly more harshly than females. Specifically, males playing feminine instruments were perceived as less dominant

and active and had fewer leadership skills than females playing identical instruments. It is noteworthy that this interaction was significant only with respect to ratings in the masculine domain. That is, interactions between the same factors failed to reach significance when asking participants their judgments about feminine or gender-neutral qualities. Females are permitted (socially) to select from a broad spectrum of instruments, but males are permitted to select only from the set of masculine instruments. This can be seen in the four populations surveyed for this study where the female numbers were more prevalent than those of the male instruments, with the string instruments being perceived as more feminine.

While observing an international band performance, the researchers of Sheldon and Price (2005) observed that a large number of the players in the trumpet section were women. They were intrigued by this uncommon finding. At the same time, questioning the origination that this observation was peculiar to common trends they were familiar with, the researchers set out to examine other sections in various ensembles from across the world to observe their sex and instrument distribution. They also wanted to discover whether the limited perspective of the United States and other English cultures was simply due to a limited geographical representation of extant research.

While aware that instruments that have become generally accepted or expected for women to perform have changed considerably over time, it appears that little has changed instrument choice by boys and girls in the latter half of the 20th century (Zervoudakes & Tanur, 1994). Results reported that “Overall, we find a trend towards proportionately more females performing on flute, oboe, and clarinet, and proportionately more males performing on trumpet, trombone, euphonium, tuba, and percussion; sexes of students playing bassoon, saxophone, and horn were more closely matched. The anomaly appears to be the Asian ensembles, with females represented more often than males overall; however, these data only represent Japan” (p. 46).

Relationship of Gender Perception Regarding Instruments and Music Vocations

Griswold and Chrobak (1981) determined that sex-stereotyping of instruments and music occupations were related. In this study, music majors and non-majors were asked to qualify a list of seventeen instruments and two occupations as either female or male on a 10-point Likert scale. The following instruments and occupation that were listed as having feminine qualities were harp, flute, piccolo, glockenspiel, cello, violin, clarinet, piano, French horn, oboe,

and choral conducting. The instruments and occupation that were listed as having masculine qualities were trumpet, string bass, tuba, guitar, cymbals, saxophone, bass drum, and instrumental conducting. The researchers observed that perhaps the students answered in the above ways because of the exposure and experiences those students had had with those instruments and those occupations and the social reality of it.

Gender Relationships between Teacher and Student

Gender relationships also exist between the sex of the teacher and the sex of the student. Research has shown that male teachers assign higher marks to female students, but that male teachers interact more with male students, whether in a positive or negative fashion. Brophy (1985) witnessed that since the previous decade, one major change has been the switch of males to females as the at-risk group of interest, a focus at the secondary level, and the switch to emphasis in math and science. The studies conducted have not been in music classrooms, but have continually discovered that both male and female teachers are much more similar in their approaches to teaching, and one would predict that the same would be true in the music classroom. Brophy states, "...it should be noted that both male and female teachers (and male and female students, for that matter) have been exposed to the same gender role socialization pressures and thus have come to share essentially the same views of what males and females should be like. This is why students' gender-related classroom experiences then to be the same whether the teacher is male or female" (p. 121). This must simply be an awareness of the music teacher in an instrumental setting with gender-type instruments.

MacKenzie (1991) studied the motivational factors that contributed to a group of 48 students to start learning to play a musical instrument. Large contributions to the student choice were interest factors and encouragement from the teacher. The researcher did find some indication of differences in the criteria used by girls and boys, particularly in regard to the socialization aspect of instrumental learning. The survey completed by the students included the following influences completing the sentence, "I started to learn to play a musical instrument..."

- 1) Because my friends played musical instruments
- 2) Because I wanted to play in the school orchestra.
- 3) Because my sister/brother played a musical instrument
- 4) Because I was interested in learning an instrument

- 5) Because my parents wanted me to learn an instrument
- 6) Because my teacher wanted me to learn an instrument
- 7) Because I wanted to make new friends
- 8) Because I like music

Almost one out of every five respondents indicated that their teacher was highly influential factor of choosing a musical instrument to learn to play. The most prominent factor for both girls and boys was that they were interested in learning an instrument. The next highest factor for the girls was that their friends played musical instruments. The next highest factor for boys was that their teacher wanted them to learn an instrument. Interestingly, the girls did not list their parents as being influential where a few of the boys did indicate that their parents were an influence.

Language Implications to Gender of the Instruments

Trollinger (1993) revealed a correlation in reviewing the literature based on gender perception and instrument choice that “. . .while English and Scandinavian languages use gender-free articles, Italian, Spanish, French, and German assign gender articles to instruments. Furthermore, gender assignments are not cross-culturally consistent: Italian uses a masculine article for the flute, while Spanish, French, and German use a feminine article; the clarinet is masculine in Spanish and German, but feminine in Italian and French. The use of a generic ‘he’ pronoun has been shown to affect the way children and adults think about activities and occupations” (p. 34).

Going further from the gender relationship and instrument choice is that of personality and instrument choice which is addressed next.

Personality

Introduction

Personality can be a major factor to the instrument choice of any student. Similar to the implications that were found in gender perception of the instruments, the same rings true for the personality of the student, the generally perceived personality of certain instrument players, as well as the personalities of certain ensembles.

Orchestral Section Personalities and Traits

Davies (1978) completed a series of studies in which investigators examined images of the members of the four orchestral sections (string, woodwinds, brass, and percussion). From these studies, the researchers interpreted gender-typing across the ensembles. From an orchestra in Glasgow, Scotland, the most striking comments heard in the open conversation were the particular ways that the sections perceived and described the other sections, most often in a derogatory or bantering way. The greatest differences were found between the brass and string sections. The author stated that the string section members found the brass section members “slightly oafish and uncouth,” and even “loud-mouthed and coarse.” Conversely, the brass section found the string section “oversensitive and touchy,” “weaklings,” and even “precious.” After discussing the instrument families in regard to the conversations with the musicians, the author states a point. “There can be very little doubt that there is a type of class difference between brass and string in the public imagination. Historically, the strongholds of brass in this country (Great Britain) are the industrial towns of the North . . . The essentially working class image (myth?) of a man coming out of the pit, going home for a bite of tea and then repairing to the bandroom with his cornet wrapped up in a brown-paper bag simply has no string counterpart” (p. 202).

Builione and Lipton (1983) studied in the same manner as the Davies (1978) interviews as above using high school orchestra members. They pointed to the important socialization agent of children’s literature in formatting a young person’s ideas and perceptions of the broad world around them. The study was an attempt to solidify the findings of Davies (1978) in concrete data. One hundred students from suburban upstate New York who were enrolled in string orchestra, woodwind ensemble, and concert band were asked to participate in the study. In general, uniformity was found in the responses from section members. Overall, the brass sections were still considered largely different than the string sections. Brass section members found the string section members “feminine, intelligent, and unathletic,” where the string section members found the brass section members “extroverted, loud, and sexual.” The brass section members qualified themselves as “sexual, athletic, and humorous,” where the string section members qualified themselves as “intelligent, humorous, and serious.”

Strong similarities were found between the Davies (1976) and the Builione and Lipton (1983) studies, even with the dissimilarities of the surveyed and interviewed groups. Conclusions

are drawn that symphony orchestras do reflect the microcosm of the greater society. The authors emphasize that more research is needed in the subjects of “causal links between personality and particular instrument” choice. Lipton (1987) will also make this point.

Personality Effects of Instrument Choice

Lipton (1987) studied professional orchestra members in the United States and Canada. The 227 participants from 16 cities answered freely and spoke of the members of each orchestral section. Similar stereotype responses were given as previously found in Davies (1978) and the Builione and Lipton (1983). Lipton suggests that “a fascinating, though largely anecdotal, source of information on why people select certain musical instruments comes from the psychoanalytic perspective” (p. 86). Overall, there was a “strong tinge of general negativity . . . also some consistency in stereotypes.” There are many similarities to the Davies (1978) study, providing a glimpse into these cultural universals. The author points out that it is widely accepted that children’s books are the first resources that we have provided for influencing our children and if instruments are stereotyped, so too is the performer of those instruments.

Cutietta and McAllister (1997) set out to observe student personality and instrument choices and participation across six grade levels to determine whether relationships exist. Based on four questions, they found by using Junior Eysenck Personality Questionnaires in eight different schools representing rural, suburban, and urban environments that each school population was well represented in the school instrumental ensembles, both band and orchestra. They gave questionnaires to 688 students in grades 7-12. In general, the findings pointed out that the music teacher is reaching a cross-section of student personality types in their ensembles. They also found that if students that are not “of the norm” experiment with participating in a school instrumental ensemble, they would choose to play a woodwind instrument, but not continue. The researchers also found that percussion students are becoming more homogeneous the longer they have been playing and will ultimately need more care and attention from the director.

Personalities of Third and Fourth Parties that Affect Instrument Choice

Processing data in both a quantitative format and a qualitative format, Sloboda and Howe (1991) showed the quantitative results from a study where students age 10 to 18, attending a specialist music school in Manchester, England were interviewed for up to forty minutes. Each

student was questioned in detail about the early years of their learning experience with music. The students described the events and experiences that were influential to their music study. Parents were also interviewed to supplement the previously given information. In Howe and Sloboda (1991a), the same data was analyzed in a qualitative manner. The researchers found that many parents had very little interest in music. Even those students, who their teacher qualified as exceptional musicians, were likely not to come from a musical home. Nevertheless, most parents had at one time experienced some active participation in music.

In the subject of sibling influences, the presence of an older sibling who plays an instrument certainly creates awareness of music and of the instrument, but this also creates tension in the family and jealousy. Overall, subjects stated to the interviewer that musical events had a high influence on them in their choice to participate in music and even what instrument to learn to play. Further, Howe and Sloboda continued their qualitative analysis of their 1991 quantitative study in 1991b that focused on the influences of teachers, practicing, and performing. On the subject of influence from teachers, student's beginning teachers were rated as warm, or friendly, as the researchers will find with other populations, but overall the student's perceptions of their teachers were extremely diverse. At least one teacher was highly regarded. Other teachers were not viewed in such a way. Older students showed interest in studying with teachers of a higher level of expertise as they themselves became more proficient at their instruments. The other influences addressed in this study I will not address here, as they do not pertain to the current study.

The personality of the teacher can also be an external influence for students who may or may not desire to pursue the performance of a string instrument based solely on the qualities that their teacher have. In Sloboda and Howe (1992) the researchers focused on the transitions that young students make from teacher to teacher during their early careers. They generally found that teachers of students early in their musical careers, though not ranking exceptionally high as a professional standard, were described as warm, friendly, and encouraging. Then in Davidson, Sloboda, and Howe (1995/1996), students were found to need that warmth and support from the beginning teacher for encouragement to continue on. Davidson, Moore, Sloboda, and Howe (1998), discovered that the children who were the most successful learners regarded their teacher differently from those children who ceased music study. The report stated, "The more successful learners rated their first teacher higher than did other learners on personal dimensions such as

friendliness, and rated their current teacher higher than did other learners on task-oriented professional dimensions such as pushiness. Additionally, the highly successful learners studied, on average, with more teachers than did the other learners; these learners also generally received more individual instruction than did the children who eventually ceased lessons.

These findings confirm the importance of matching teacher characteristics to the changing requirements of learners in enabling the development of high levels of musical expertise.” Students must feel safe in all environments and the choice of an instrument based on the personality of the person who teaches it is not uncommon. The report also made a wonderful point that “teachers can also be perceived as a parental figure to students.” The teacher is an authority figure in that child’s life and works tirelessly to enrich and motivate the student, just as their parent does at home. The teacher will have an influence on the instrument choice. But teachers must also be “awe-inspiring” and respected for their craft.

The researchers found that “School teachers who presented challenges to teenage students by, for instance, demonstrating personal talents and commitment to their own subject area were the most effective and admired instructors. The teachers were regarded as role models for their specialist skills, and not admired for characteristics such as personal warmth.” So the role of the teacher will change from age group to age group where younger students want to feel safe and loved, the older student is much more interested in having a role model and being inspired by their teacher’s specialist skills. The researchers also found evidence to support and hypothesize, “that girls may respond more readily to teachers who they perceive to possess personal warmth characteristics than do boys, but boys may be more geared for an achievement-oriented teaching program.

Summary

Personalities of the students and the teachers must align in order for learning to occur in most instances. From the research conducted, we can see that both sides of the relationship is looking to the opposite half for something that they both need. For the current study, the researcher is explicitly interested in the first conclusion that all student personalities participate in the instrumental ensembles and is interested to develop it further into the singular string ensemble to observe how it compares with this research. String instrument choice is the focus of this study and below, other such studies are referenced.

String Instrument Choice

Introduction

String instrument options are on the rise. Gillespie (2010) continued the survey of school orchestra programs and showed that between 1999 and 2009 that at least 150 new string programs had been created across the country (p. 66). In this section, previous research shows a steady growth in the most recent decades; a growth that is projected to continue with assistance from the data found in this study.

String Inclusion

Heinlen (1965) stated, “The avowed goal of music educators, ‘Music for every child; every child for music,’ has been slow to gain support from some instrumental music teachers. These instrumentalists would support the idea in theory, but in practice would have ‘every child’ given the opportunity to take ‘singing’ lessons and to leave the instrumental study to those who have superior intelligence, excellent motor-coordination, strong white teeth, healthy lungs, and money and incentive to invest in an instrument” (p. 54). The researcher suggested that all students have the opportunity to try various instruments in a short period before choosing the instrument they felt the most comfortable with and the most successful on. Many schools across the country offer this type of “trial period” as a part of their music education curriculum. Heinlen implemented his method at the University School, a laboratory school at Florida State University. Students studied a string instrument first for seven weeks and then had a choice of any other instrument for the following units that were split as needed to add up to eighteen weeks. Students covered the same materials in the three instrumental units, and therefore, not as much time was needed in unit two or unit three as there was needed for unit one. At the end of the eighteen week program, the student simply chose the instrument that they were the most successful with.

Lewis (1974) stated that the opportunity to achieve basic performing skills on an instrument of some kind was the driving force in creating a learning environment in this manner. “The ideal situation”, the author explained, “would be that every child be musically self-sufficient when he leaves elementary school” (p. 74). Students should absolutely have the opportunity to learn performance skills on an instrument as young as possible, as long as all instrument families are represented within physical reasons. String instruments can be more

accessible to this type of thought in that 1) the use of fractional instruments are commonplace, 2) Once students have developed muscles motor skills and singing skills, they are ready to apply making music to a string instrument, and 3) Younger students form to the physical posture and position much easier than older beginners who have preconceived notions about the role of the muscles in their bodies that are usually contradictory to the ways the muscles are required for performance on a string instrument.

When should these students begin instruction? Doerksen and Delzell (2000) reported that MENC lists in its *Opportunity-to-Learn Standards* that string students should begin by fourth grade and band no later than fifth grade. Even Elizabeth A. H. Green suggested that it takes longer for string players to create a mature sound and therefore should be started in the schools prior to the band instruments. The debate today seems to be that students who begin in the elementary grades require a large asset from the school district—a teacher to teach on that campus or campuses.

In an article entitled “Why Strings?” Klotman (2000) told music educators that when faced with the question, there are several answers to progress the status of string playing. First of all, string instruments, like percussion, are adaptable to the size of the child in a fractional manner. Second, the string instrument family has played a major role on the stage of the world’s greatest musical creations. Third, no other family of instruments requires more skill and overall basic learning skill. Students who work to play string instruments not only foster physical control of multiple limbs, but precision and fine muscle skills. Fourth, all string instruments exhibit a plethora of colors and nuances that are exciting to explore for each student. Fifth, all music performers have the opportunity to collaborate in ensembles and participate in a replicated community of sound. Sixth, in a world that is becoming more technological and where humans are losing the sense of truly being human, participating in an orchestra program keeps musicians connected. Ultimately, Klotman stated, “Because humanity benefits from its study” (p. 45).

The past study showed that string teachers are needed across the country, but in an effort to balance string offerings across the country regionally and across the varied SES tiers, Moss (2002) sought to examine the attitudes towards curricular string instruction among South Georgia’s Public School Superintendents. These schools serve primarily rural populations and represent the population area in which the study of strings is generally perceived as selective or “high-class.” This was reflected in that 84% of superintendents who responded to the survey,

89.2% did not offer curricular string programs in their schools currently. When presented with the idea that if money were not a factor, would they hire a string teacher and begin to offer curricular strings in their programs, 78.4% answered that they would present such an offering to their school boards.

Berger (2004) shared that starting students in string programs as late as the sixth grade can actually be beneficial for your students. The teacher found that sixth graders learn quickly and the physical techniques could still be applied at the older age. The age level is an exciting age for the students and they become enthusiastic about the possibility of performing a string instrument. Band and orchestra recruit at the same time and therefore, once you have your string students, they will not be jumping ship when the band suddenly is the “new, bright, and shiny” thing. If you are continually comparing your class numbers to that of the band, you will be disappointed. The addition of a strings program will serve as a musical outlet for some of the students who would not have signed up for band. Strong string programs can still be grown when started in the middle school.

As teachers were continually having to alter their curriculums to start later and later into the middle school years, teachers became concerned about the effect this was having on their programs and the probable effects it would have on the longevity of the program. Hartley and Porter (2009) discussed the influence of beginning instructional grade on string student enrollment and how that starting point affected the student enrollment, retention, and music performance of the string student. This was a substantial study and assisted string programs across the country. To support their research, they did not find any studies that provided empirical justification for when to begin instruction, only that instrumental music educators must balance the quality of their programs with the number of students who choose to participate. The researchers ultimately found that, “The results of this study along with previous research seem to support the view that starting instruction earlier has little if any bearing on ensemble performance level in the upper grades and appears to negatively affect retention of students” (p. 382).

Influences for String Instrument Choice

Going beyond the size of the school and other demographic information, Hurley (1992) looked at the topic of student motivations for beginning string music instruction when the

courses were offered in their schools district. Hurley used interviews with middle school-aged students to discover their motivations for beginning string instruction. Focusing on the motivational factors that the author is most concerned about in regards to the current study, Hurley determined that students were motivated to begin string instruction if they felt that it would be valuable to them by their immediate social circle that included friends, siblings, parents, and teachers. Those from the previous list were most influential when they were an instrumentalist in some capacity, making the discipline more familiar to the student. In this particular population, only two of the students interviewed mentioned that there was no one in their family or social circle that did not already play an instrument, which made most students extremely conscious of the strong cultural influence of instrumental music. In order of influence for this population, the following factors ranked highest to lowest as motivators to begin instruction on a string instrument: 1) friends, 2) siblings, 3) parents, and 4) prior musical experiences.

History of Strings and their Status in American Music Education

“During World War II the string program in music education suffered a serious decline. Many reasons were offered and some are still used as a means of forestalling the initiation of string programs. It is for this reason that the educators periodically should examine their programs to determine whether they are attaining the full objectives established for the music program” (Klotman, 1957, p. 82). Still a concern today in many geographic regions, Klotman states that skeptics, even in 1957, contended with the length of time required to develop successful string players. “Another factor to be considered is the inherent glamour of the band. If orchestra were made similarly appealing an offered comparable status, students would be eager to play in such an organization” (p. 82). String choice should, first, be an option for all students, and should secondly, work in tandem with the band to create ensembles that one of the best developments of human kind, the symphony orchestra.

Morehouse (1987) studied the participation numbers in string programs in Texas. From forty-seven teachers, the researcher received information from 1,229 string students. Morehouse aimed to evaluate the student and parents’ 1) attitudes towards string instruction, and 2) the attitudinal factors that discriminate retention and drop out in beginning string students (p. v).

Morehouse found that the following variables are significant predictors of student retention and dropout in beginning string instruction:

- 1) Attitude Toward Strings as a Class
- 2) Attitude Toward Music Played
- 3) Expected Overall School Grade
- 4) Attitude Toward String Teacher
- 5) Attitude Toward String Classmates
- 6) Teacher MTAI (Minnesota Teacher Attitude Inventory) Raw Score
- 7) Attitude Toward String Instrument Chosen
- 8) Attitude Toward Playing in Concerts
- 9) Ownership of Instrument
- 10) General Overall Negative String Class Experience
- 11) Perceived Parent Support
- 12) Sex of Student
- 13) Private String Lessons
- 14) Attitude Toward Practicing
- 15) Expected String Class Grade
- 16) Perception of Improvement in Playing

Students indicated whether these factors were true by marking “Positive” or untrue by marking the “Not Sure/Negative” response. Students that responded were primarily female (60%) and over 86% were between the ages of 11 and 13. In this study, nearly 60% of the sample had previous instrumental experience before entering the string classroom. Of that 60%, 30% had previous experience on their primary string instrument before entering the string classroom. Overall, from the list stated above, students showed agreement (84.5%) that their attitude for staying in strings was based on Perceived Improvement on Instrument. On a side note, Morehouse mentions that 83% of the respondents felt string instrument support from their parents for playing a string instrument, which is congruent with the current study. The second most powerful discriminating factor in the completed surveys reflected that students may choose to quit based on their Attitude Toward Music Played. The Attitude Toward the String Teacher was fourth in ranking followed by Attitude Toward String Classmates. Several of these factors were adopted into the survey instrument used in the current study and similar findings were

found. Morehouse even stated in his conclusions that female students tend to remain in strings and male students tend to drop out. There are many implications from this study that have correlation to the current study and it will be interesting to see how the populations combine even after twenty-five years.

In an attempt to determine the most current status of the string instrument populations in the United States, Leonhard (1991) carried the examinations done in Morehouse (1987) further. The researcher examined the effect that school size has on the access to string instruction. Using a stratified random sampling technique, 1,366 surveys were sent to public schools United States that represented varying school populations, in multiple geographic regions, and serving varied backgrounds of people. Data collected from the surveys returned reflected that:

1. String-class instruction was offered in approximately 35% of both small elementary schools (fewer than 550 students) and 36% large elementary schools (more than 550 students).
2. String orchestra was offered in 41.9% of large middle schools (more than 500 students) and in 14.8% of small middle schools (fewer than 500 students).
3. String orchestra was offered in 36.9% of large high schools (more than 1,000 students) and in 5.5% of small high schools (fewer than 1,000 students).
4. Symphonic orchestra was offered in 16.1% of large middle schools and in 7.4% of small schools
5. Symphonic orchestra was offered in 32.0% of large high schools and 3.2% of small schools.

Leonhard showed that string classrooms are more likely to exist in larger school district that can afford to offer a varied curriculum for their students. Going further, Stewart (1991) looked at many contributing factors that welcomed string programs across the country.

Stewart (1991) the researcher found that high school orchestra offerings were present by geographical regions, school locations, and socioeconomic quartile rankings were as follows:

1. Geographical regions: a) northeast—31.4%, b) south—13.9%, c) north central—20.8%, and d) west—22.0%.
2. Community type: a) urban—35.3%, b) suburban—28.0%, and c) rural—10.2%.
3. School Sector: a) public—24.0%, b) Catholic—5.8%, and c) other private—6.1%

4. School size: a) small: <500—3.7%, b) medium: 500-1499—31.5%, and c) large: \geq 1500—96.7%.
5. Number of Classes per Day: a) 6 or fewer—20.4% and b) 7 or more—83.2%.
6. Socioeconomic quartile rankings: a) lowest—12.2%, b) second—34.1%, c) third—40.5%, and d) highest—36.6%.
7. % Minority: a) low: \leq 10%--16.7%, b) medium: 11-50%--29.6%, and c) high: >50%--25.7%.
8. % College-bound: a) low: \leq 33%--12.0%, b) medium: 34-66%--24.2%, and c) high: > 66%--22.8%.

“Strings are offered so much less often that comparisons with other offerings are not meaningful. Two points are worth noting. First, large schools offer strings with nearly the same probability that small schools offer band and chorus. Second, although strings on average, are offered in 13% fewer schools than theory (another aspect of her study), these two courses are offered at similar rates in large schools. Students who attend large schools, then, have the greatest opportunity to take strings” (p. 109-110). This finding corroborated those that were found by Leonhard (1991). However, only 4% of students in schools that offer strings actually take part in these courses. These students do not know what a rarity it is to have this course offering. Compiling the above data into one statement to outline the typical string student, Stewart shared that, “Students with the following characteristics are more likely to enroll in strings: they are White, have had previous music lessons, attend medium size schools, attend schools in the West or North Central regions, attend schools that have low or high (compared to moderate) proportions of minority students” (p. 126).

Continuing from Stewart (1991), “high school string students exhibit behaviors similar to band students. Those in the academic track, those who participate in several activities, and those who have high academic achievement are more likely to take string classes. Previous musical training is especially important here. Students who have no previous music lessons have less than a 1% probability of enrolling in strings. In addition, the probability of taking string is zero for students who attend small schools. Enrollment in strings is not statistically related to student social class, gender, sports participation, or employment (although somewhat more females and higher SES students are enrolled). Schools with relatively high probabilities (4.5% or greater) of offering strings are other private, rural, medium, and in the North Central region. String class

election is also not associated with the school's community type, sector, average social class, proportion of college-bound students, or the scheduling of a seven-or-more period day" (p. 127).

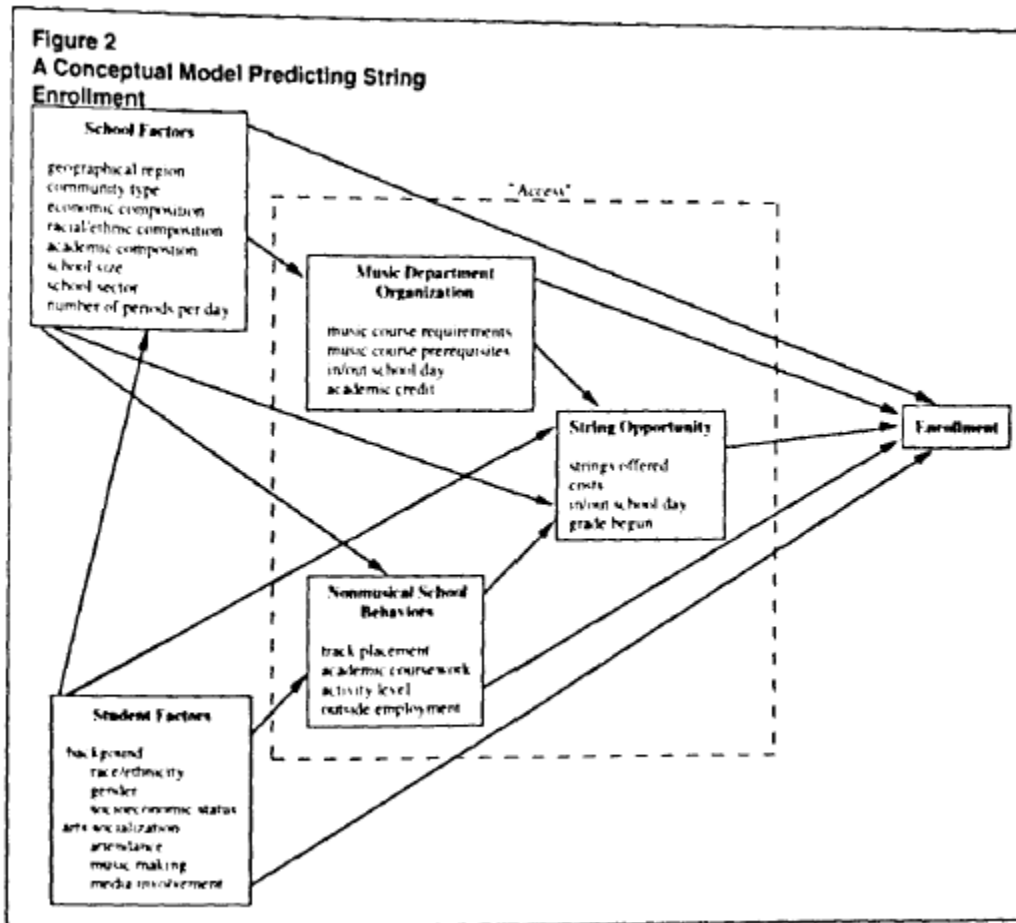
Bergonzi (1995) was a monumental study that assessed the status of string programs in the United States. Drawing from previous studies such as the ones listed above, Bergonzi attempted to show growth and a greater appreciation for the string instrument culture. His first question: What size are the schools that do and do not offer string instruction to their students? drew the following results:

1. Strings are offered more frequently in or near urban communities than in rural.
2. Strings are offered in larger than smaller schools, therefore the existence of strings in the schools is directly related to the size of the school.
3. "Knowing a school was among the 25% least affluent indicated a significantly ($p < .05$) decreased likelihood that it offered strings, as only 12% of schools in communities in the lowest SES quartile supported this type of instruction."

Secondly, the researcher looked at: Which High School Students Take Strings?

1. 1.5% of HS students are involved in strings, regardless of whether their schools offer strings or not.
2. Of the students enrolled in schools that offered strings, 4% were involved in strings increasing from the Stewart (1991) report.
3. Students in an academic program were five times more likely to enroll in strings than comparable students in the general track; whereas those in the vocational/remedial track were five times less likely to do so than their general track counterparts.

Figure 2.3: Bergonzi, 1995: A Conceptual Model Predicting String Enrollment, p. 40



In discussing the model for string enrollment, Bergonzi stated, “String enrollment is a function of school and student factors, as well as string opportunity, music department organization, and student nonmusical school behaviors. In addition to the direct impact each of these elements may have on string participation, each in turn may be affected by those that precede it. Thus, each also affects string participation indirectly.”

In order to grow the string instrument community, string educators must be able to recruit from non-string instrument and even non-musical families. Bergonzi indicated, “One should be able to respond to some degree to those students whose parents are not musically disposed, thus attracting and introducing students of low arts specialization to a whole new world, thereby leading them toward preciously unforeseen personal possibilities in music.” Just as other studies and reports have contributed, by simply making populations aware of string instruments will allow them to become familiar with the instruments and will ultimately increase participation.

Along with the idea of reaching out to unfamiliar populations, Bergonzi also quoted, “Humphreys (1992) contends that, as orchestra directors, we have shown less concern for the social utility and public relations aspects of orchestra than our band colleagues and that our ensembles and their repertory have ever been the most popular musical medium in this country. Humphrey’s concludes that these two factors, as well as differences in the learning curves between wind and string instruments, have contributed to our reduced presence in schools. Although one could and should argue with the last-mentioned point, I agree that they do reflect our history. The question is how relevant we will allow them to be in our future” (p. 43). String music educators must take heed of the example set to us by our instrumental colleagues.

Bergonzi (1995) found that there was more access to strings in 1990 than in 1980; the numbers do not align with the reports from the National Endowment for the Arts studies. According to the *1994-1995 Market Data Retrieval School Directories*, 16% of school districts offered string instruction. Most often, string instruction was being offered in average-socioeconomic-level, medium-sized, urban districts in the Eastern, North Central, and Northwest Music Educators National Conference divisions. In the Southern, Southwestern, and Western divisions, string instruction most likely occurs in average-socioeconomic-level, large, metropolitan districts. Overall, string instruction was offered the least in low-socioeconomic-level school districts, regardless of their size.

Continuing the work Leonhard (1991) and Stewart (1991) had previously examined, as well as further developing his own studies, Bergonzi (1996) showed through a study of the U.S. Department of Education’s *National Assessment of Educational Progress, Basic Math Assessment*, that in high schools where strings are offered, there are still children who are inhibited by obstacles in their option of choosing string instrumental possibilities for music instruction, more specifically in the categories of gender, race, and region. This report was based on his larger 1995 report. Less than one-third of the school programs in the United States offered strings in 1990. Less than two percent of all high school students were enrolled in strings. Bergonzi suggests that more schools, especially small- and medium-sized schools look into offering string instrument learning opportunities in their schools. Community string teachers must look to non-traditional systems of educating students in the disciplines of strings and involving technology as well. Suggestions were also made that the National Standards should not be seen as a limitation, but as an opportunity to explore new and diverse ways of differentiated

instruction and avenues to provide string instrumental music to more diverse populations. This call to action acted as a reinforcement to many public school string teachers as well as private studio teachers to become more involved in the string education of the community.

Smith (1997) expanded on the research of Morehouse (1987), Leonhard (1991), Stewart (1991), and now Bergonzi (1995, 1996) to consider the geographic area of the schools in each state of the United States. This study would be the largest study yet as far as representing school districts in each state. The author posed the research questions of 1) What is the current relationship between access to string instruction and school-district location, size, and socioeconomic level? 2) How does access vary by school type—elementary, middle, high school? and 3) How does access vary in different regions of the country? In the Southwestern division, which includes Kansas, Missouri, Oklahoma, Arkansas, Texas, Colorado, and New Mexico, the researcher found that there were 3,024 school districts with only 196 (6.5%) of them offering string instruction. Within those 196 school districts, 132 (67%) elementary schools, 188 (96%) middle schools, and 190 (97%) high schools offered string instruction. For the state of Kansas, only 9.1% of school districts offered strings. Of the 196 school districts that offer strings in the Southwest division in 1990, 8 (4%) were considered rural, 57 (29%) urban, and 103 (53%) were metropolitan. In those 196 districts that house string instrumental programs in the Southwest division, 11 (6%) were small, 79 (40%) were medium, and 106 (54%) were large. 19 of the 196 (10%) programs were considered low socioeconomic, 131 (67%) average, and 46 (23%) high. String instrumental instruction is continually being offered in the same regions, same populations of schools, and now emphasizes the middle of the SES categories with only slight increases in the amount of participants in the given categories.

Because of these low averages and the consistency in the reports, Smith questioned if string music education had become the stepchild of American music education in Smith (1997). The article cited that 84% of school districts do not offer string instruction and that low socioeconomic students have limited access to string instruction. The author addressed the district issues that in metropolitan and rural districts, where students are the least likely to receive string instruction. More a call to current string teachers to encourage their own students into string teaching, the author viewed her research as a catalyst for change to lead to improved access to strings in school districts throughout the United States.

Continuing to gather more data from across the country in regards to the status research, Gillespie and Hamann (1998) found that slightly more than half (53%) of elementary schools with orchestra classes had fewer than 500 students, most (59%) of the middle/junior high schools had between 500 and 1,000 students and 63% of high schools had more than 1,000 students attending. Most string programs were located in suburban districts at 56% while 30% were urban and 14% were rural. Only about half of the surveys indicated that there was a parent booster group in place for the organization. The programs were supported in a variety of ways. Support came from local college, music teaching colleague, superintendent, parents of the string students, local private teachers, building principals, nonmusic teaching colleagues, school counselors, local professional performers, and professional music associations with the highest support coming from music teaching colleagues and building principals.

Most teachers reported that the amount of string students in their schools had dramatically increased in the past five years. Most interesting, the report showed that the current teachers had been teaching for 10 years or more (72%), where 17% had been teaching for five years or fewer. This is a dramatic concern as the majority of teachers approach retirement age, there still does not seem to be enough teachers to take their place, and even more with the increasing amount of positions due to increasing interest in string music education. Concerning this exact issue, Gillespie and Hamann aimed to find out more information in the next study.

As a part of the continuance of the report involving the Status of Orchestra Programs in the Public Schools, Hamann, Gillespie, and Bergonzi (2002) reported that the number of string teachers have declined while string enrollment in the country had increased, causing almost one-fourth of the schools in 1999-2000 school year and over 43% in the 2000-2001 school year to not find qualified teachers for their string programs. The need for string teachers continues to increase.

Continuing to monitor the status of the string programs in the United States, Gillespie (2010) continued the survey of school orchestra programs and showed that between 1999 and 2009 that at least 150 new string programs had been created across the country (p. 66). Regarding the number of all of the string programs, those in suburban string programs were still the strongest with 60% of the total programs in existence, 24% were in rural settings, and 15% in urban settings by 2009. The breakdown of the typical student enrolled in the program remained the same, in that Caucasian females reported a higher population than males.

Advocacy for String Teachers

Based on the information provided by Morehouse (1987), Leonhard (1991), and Stewart (1991), a call was being made in the early 1990s to teachers of current string players to encourage them to enter the string teaching field. A focus on string teacher training at the collegiate level was being examined. Smith (1995) examined the undergraduate string teacher education in American colleges and universities. A random sample of 180 NASM-accredited teacher training institutions was selected from the six MENC divisions. The researcher sought to uncover the answers to the following research questions: 1) What types of string education courses are required for undergraduate music education majors? 2) What content is included in these courses? 3) How does string teacher education vary in different regions of the country? and 4) How well are undergraduate students prepared to function as future public school string teachers? For this study, the current researcher will only examine the fourth research question. It was found that students who were taught by string education specialists felt they were more successful and also those that participated in a greater number of semesters of courses cultivated a stronger background in the subject.

Continually recruiting for string teachers, an investigation by Gillespie and Hamann (1999) set out to seek from the American string music education populations at seventeen American colleges and universities with active, full-time string music educators on faculty how often students sought to be a string orchestra educator. The researchers found that graduating string music educators chose to pursue becoming string music educators because they liked teaching as a profession and found it to be rewarding work. As a part of the survey completed by these students, the factors that were most frequently addressed in ways for school orchestra teachers to interest students in string teaching was to serve as a role model; relate positively to students by showing your love for teaching and creating a positive learning environment. More research is needed to see how private studio teachers affect their students' career choice as well.

Guidance from Veteran String Pedagogues

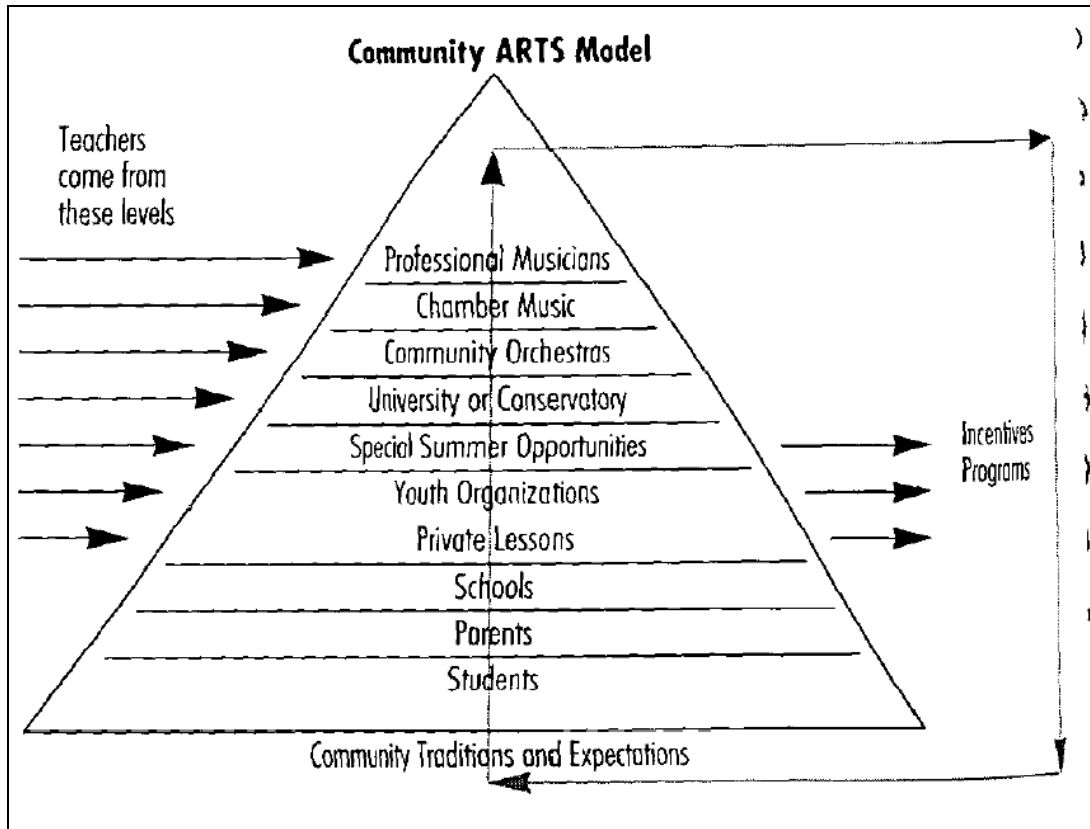
We continually look to our mentors for guidance as we teach and learn more about our profession. Robert Culver, the eminent string music educator, was sought out for his guidance as a national figure in the movement for increasing string instrument music education. Culver (1999) provided string teachers with a variety of options to teach communities about string

instruments and their inclusion, feeling that the best way to bolster or even start a program is to have the community on your side. Beginning in 1889 in Richmond, Indiana by Will Earhart, string teaching in communities is not new; however, for many communities this may be true. Culver saw that the following building blocks are necessary if string programs are to flourish in communities:

1. Community structure and conceptual roles are widely understood, and instructional functions are placed in the larger construct of the entire community.
2. A model of excellence is widely agreed upon and used as a goal in creation of the program.
3. A Change Agent emerges in each site who can lead and facilitate growth of the program.
4. Progress must proceed from the grass roots up without repression by top-down administration.
5. Models of success can be adopted without penalty of ownership—that is, without inspiring political jealousy.

The Community ARTS Model below shows how the different musical components of a community should interact in order to create the most beneficial ARTS collaboration in any municipal community.

Figure 2.4: Culver, 1999: Community ARTS Model, p. 48



“When interaction between the levels from students up through professional musicians is perceived as valuable, community support, traditions, and expectations will result” (Culver, 1999).

Culver also recommended that each site provide a change agent, one who is willing to be the liaison to the larger group of community ARTS supporters. The researcher outlines that the principles needed in order for the Change Agent to be effective are:

1. The best changes occur slowly.
2. The best changes come from within and the ground up.
3. The longest lasting changes involve the most people.
4. The strongest changes are perceived to be win/win.
5. The best changes become the ideas of others without being attributed to any individual.

Culver states, “The artistic community must realize that its existence and growth will be initiated and guided by skills not necessarily present in the majority of members’ discipline and training

backgrounds.” Culver called us to reach out for assistance from those who have the skills for publicity or communications, or other functions of running an operation, in order to assist with the attempt to collaborate for the greater good. ARTS are for the greater good.

The Future of String Music Education

At the completion of the first decade of the twenty-first century, string music educators are working to create plans for the future. The world is developing at warp speed. With the continual revamping of hands-on technology we will continue to redesign education at breakneck speeds. Benham (2011) presented facts for why string instruction is imperative for the 21st century. While attempting to bring string instruments to primarily urban populations that had not been offered this type of instruction before, Benham felt animosity and strong distrust from the community. One such project was developed in the inner city culture where there was a belief that those students would not achieve at a very high level, and that those looking from afar at the research concluded that the researchers were wasting their time. The reason behind starting a string program in this environment was not simply for the spread of string instruction. “Music instruction also contributes to an increased sense of self-worth, an enhanced personal identity, and toward countering some of the characteristics associated with students in at-risk population” (p. 29). All cultures create music. All students must have the opportunity to create. String instruction can be a vehicle for creativity, just one of the skills needed in the 21st century. Other aspects taken into account in this article were the current trends in string music education and the population that it primarily serves. Those students who are Caucasian and living in suburban school districts represent the most saturated group of string players. This newer development of the white, female, suburban, middle-class student is quite contrary to the history of string music education in America. “Historically in the United States, string performers represented many ethnic groups. Performance on string instruments was a part of traditional African culture that was transmitted via the African diaspora during the era of slave trade dating from the late eighteenth-century. Though the specific origins of Mariachi music are unknown, its roots likely go back hundreds of years, preceding even the Spanish colonization of Latin America. Mariachi music is strongly associated with Hispanic culture and is increasingly found in school music programs. Today, an average of only 35% of string student participants are non-white” (p. 29). In the Bronx KIPP Academy David Levin of the Bronx implemented a lottery-based enrollment

educational philosophy. Many inner-city districts across the country use instrumental music as part of the daily routine to assist the most poverty-stricken students in the country to achieve high goals and even inspire them to go to college and dig themselves out of the poverty trap. In Malcolm Gladwell's *Outliers* (2008), Levin breaks down the daily schedule of the students at the KIPP Academy, "They start at seven twenty-five," says David Levin of all the students at the Bronx KIPP Academy. "They all do a course called thinking skills until seven fifty-five. They do ninety minutes of English, ninety minutes of math every day, except in fifth grade, where they do two hours of math a day. An hour of science, an hour of social science, an hour of music at least twice a week and then you have an hour and fifteen minutes of orchestra on top of that. Everyone does orchestra . . ." (p. 260-261). The statement, so matter-of-fact, is not expanded upon in the book, but is recognized as extremely important to the academic prescription that these students apply each and every day in their quest to better themselves and to better their place in society.

Also, the string music education focus in the United States has had a European influence where string instruments were part of cultured society and could have been deemed as "privileged." Today, reaching into the styles and genres of string music that have been neglected in the past century, focus has been given to the newly titled "eclectic styles" in order to entice and lure more culturally-varied students into an interest of string instruments. The goal of the Eclectic Strings Festival and movement in America has been to create authentic learning and performing experience in a variety of musical genres for young musicians and their teachers (ASTA, 2012). "Increasingly, the string profession has seen an increase in interest in the performance of diverse musical styles from different cultural sources (such as the eclectic strings movement into the mainstream of string performance and education), but access to string instruction does not reflect that same increasing diversity, and remains primarily limited to those students who are Caucasian living in suburban school district. Even among new string programs, the majority (60%) are found in suburbs, with only 24% in rural and 15% in urban locations" (Gillespie & Hamann, 2010, p. 66).

Summary

Though string music education in the United States has seen desolate times within the last century, the outlook is promising as teachers continue to work to improve the general image of string performance and continue to outreach into eclectic styles and populations.

Adult Education

Introduction

As we will see in the current study, parental influences were the most influential for student string instrument choice in the four populations surveyed. String music educators must grasp this data and change the way they recruit for their program. We are not simply trying to interest the student, but more importantly, the parent. This includes the community-wide perception of string instruments in the geographic area. I have pointed out various other influences that contribute to discouraging students, parents, and the community from supporting the string instrument population in a municipal community and a school district community. Adult education, and therefore, parent education, must be insisted upon to direct adults to see the benefits of string instrument study before we can expect the students in our schools to view strings in a more pleasant and interesting light, ultimately encouraging higher string enrollment.

Adult Participation in Music Education

Bowles (1991) sought to find how many of adults would be interested in furthering their music education and continuing their music experiences. Those surveyed were asked to rank what instrument, what music ensemble, and what courses in academic music they would most be interested in participating in if money or time were not an issue. Among adults who expressed interest in music participation, piano was the instrument most frequently chosen for private study, followed by voice and guitar. Choral organizations ranked highest among preferred performance organizations, and aural analysis and introductory music history courses ranked highest among preferred areas of academic study. Within the results, the positive responders who indicated positive responses towards participation were abbreviated “PR” where those who had indicated negative responses towards participation were abbreviated “NR.” Within another section of the survey, the responders were asked to choose the three persons who had a positive influence on developing their interest in music and then to rate them. In alignment with this surveys results, Bowles found similar findings. Respondents were asked to choose, from eight options, three people whom they believed to have had the most positive influence on developing their interest in music and to rate them in importance from 1 to 3 (1 being the most influential). Options (parent or guardian; private instrumental or vocal teacher; elementary music or classroom teacher; secondary school ensemble director or music teacher; secondary school,

college, postsecondary or postcollege classroom teacher; college ensemble director or music teacher; postcollege or postsecondary ensemble director or music teacher; friend) were ranked according to choice frequency. Sixty-five percent of the PRs chose a parent or guardian as a positive influence, and 42% rated this option as first choice (most influential person). Private instrumental/vocal teacher was chosen by 45% of the PRs, and 15% rated this option as the most influential person. A procedure similar to the "influential person" ranking was included for influential experiences, showing that 57% of the PRs chose home experiences that occurred prior to formal education as important in developing their interest in music; 41% rated this option as the most influential experience (first choice). The rating order of NRs was similar to that of the PRs, with parents and home experiences the most frequently chosen positive influences in developing music interest.

In the instrument choice section, where participants were asked which instrument they would most be interested in learning to play, violin ranked sixth behind piano, voice, classical guitar, organ, and folk guitar. This represents the highest ranked instrument among those that are commonly offered in the instrumental programs of American schools, outranking all band instruments. In regard to the ensemble participation section, respondents ranked classical orchestra fourth in ensembles they are most interested in performing in. Those that ranked above the classical orchestra were classical choir, musical theater choir and show/swing choir, in order from highest to lowest ranking. None of these ensembles are bands.

Bowles concluded that "It seems that the more involved adults become in music performance, attendance, and study, the higher the probability may be that their children will be involved in music in adulthood. Adults who may be served by adult education are those who provide home music environments and experiences for their children, who participate in making crucial decisions regarding the quality of music experiences in the schools, and who support and participate in music and the arts in the community. If we are to secure the future of music as an art in our society, we must consider more carefully the music education of the present generation of adults" (p. 203).

Summary

In many of the documents presented, acknowledgement was given to the presence of an array of influential factors that would contribute to the instrument choice of a student.

Ultimately, Johnson and Stewart (2004) declare that the responsibility for all of the contributing factors covered in this chapter as well as others that can be present in unique situations falls to the instrumental music educator to enrich the community, enrich the parents, and enrich the students in their discipline. Johnson and Stewart (2004) stated that “A student's attitude toward musical instruments, parental influence, peer influence, cost, availability, societal influences, perceived degree of playing difficulty, and teacher influence are all critical factors that may guide decision making. It is the responsibility of instrumental music educators, with proper knowledge of the influences, factors, and the research about instrumental selection, to guide students through informed instrument selection” (p. 130).

String music educators must remember that, as Susan Haugland stated in her book *Crowd Control: Classroom Management and Effective Teaching for Chorus, Band, and Orchestra*, “our students are not placed in our class, but they *join* our organization” and “You’re not only a teacher; you’re also a salesperson. You have to sell your program to students and parents, and more importantly, you have to sell yourself as a teacher. If your class is run poorly, word will get out. You won’t be able to recruit as many students, and your class sizes will decrease. This puts your program in jeopardy of getting cut back or eliminated altogether” (p. ix-x). Teachers must be the world’s best salesman in order to sell our product to the parents, the students, and most of all, to the community as we have seen from the previous research.

String teachers are fighting an uphill battle against perceptions of General Instrument Choice, Timbre Associations or Preference, Gender Perceptions, Personality, String Instrument Choice, and ultimately Adult Education. The esteemed orchestral mentors have written many years ago, that no instrumental program can be considered complete unless it includes a functional orchestra program within its framework (Dillon-Kraus and Kriechbaum, 1978) (Klotman, 1988). And most importantly, an excellent recruiting program depends on an excellent public image established by the director of that program (Klotman, 1988).

Chapter 3 - Methods and Procedures

Introduction

The current study focused on the external factors that influenced a student to choose to play a string instrument. The researcher examined the perceptions of middle school and high school string students to discover the most prominent external factors that contributed to their string instrument choice. The pilot survey was administered to both middle and high school students who participated in a local youth symphony. Following a thorough analysis of the results, the researcher adjusted the questions and formatting to alleviate any issues with validity or reliability and then presented the survey

Pilot Study

Introduction

Subjects ($N = 48$) for the pilot study were chosen from a local auditioned string youth symphony that allows members to enroll from grades 4-12. Students have a varying degree of backgrounds including some who are home-schooled, some who are from rural school districts that do not have a school string program, and some who are participants in their urban school district that does have a school string program. The tradition of the youth symphony is very strong and is heralded in the region as a premier ensemble for the area youth. There are 73 students in the ensemble and on the day of the survey pilot, 48 students returned the necessary parental consent forms and agreed to complete the surveys themselves by signing the assent form. This was a return rate of 65%. There were several factors that contributed to the decreased number of surveys completed ranging from an increase in illness in the area causing absences from the rehearsal and a large piano competition that conflicted with the rehearsal time. All of the parental consent forms that were returned gave consent for their student to participate in the survey and all students assented to completing the survey.

Instrumentation

The written survey has been formatted and amended to better attain the information needed in this research from the Fortney, Boyle, and DeCarbo study of 1993. External factors

from the Fortney, et. al. study were merged with external factors that the current researcher was interested in to complete the instrument. Students completed the survey in the presence of the researcher and the researcher gave directions from a written script. The script and the survey instrument is located in its entirety in Appendices B and C.

Procedures

With the researcher present, students were verbally instructed and guided through the survey instrument. The researcher followed a script that can be found in Appendix B. The researcher read each question separately and the group was asked to answer the question at the same time as the group. Together, those who were completing the survey moved through the instrument together, question by question. The researcher took questions from the students at any time. The survey instrument collected basic demographic information from the student sample and asked questions relating to their instrument choice and their families' instrument background. Also, they were asked more detailed information about the external factors that influenced the student's initial choice to begin instruction on their string instrument. Students who were home-schooled were instructed not to answer questions specifically relating to school-based reflections, but to answer questions for community string reflections.

Once the students completed the survey, they were returned to the researcher. The students were debriefed about how significant the data returned would be to professional string music educators across Kansas and potentially across the country. This information could be used to better recruit string students and the avenues that best attract students into the string instrument community.

Data Analysis

The researcher analyzed the data comparing means, medians, modes, and standard deviations between factors. Following analysis, the external factors were then ranked based on the mean, showing results for the individual school and the high schools as a collective. When figuring the results, the missing answers were marked with a "0" in order for the statistical equations to work properly. All data was analyzed using Microsoft® Excel®. The researcher used tables and graphs to display the information gathered and the comparison thereof. Results can be found Chapter 4.

Presentation of the Results

The researcher compared the data collected with her assumptions and hypotheses as well as compared them to the knowledge base of previous studies contained in the Chapter 2 of this document.

Three High School Studies

Introduction

Subjects ($N = 277$) participating in the study were students who were enrolled in courses that feature string instrument instruction at three large high schools in the Midwest. These campuses were located in municipalities that feature a Department or School of Music at a Division I and II level university. Schools were chosen for having long standing orchestra programs in large high schools. All three communities had varied degrees of arts programs available for student and adult participation including string programs as a part of the school curriculum and community activities that encourage string learning for both students and adults. Teachers were asked for their participation and consented to their school participation following the appropriate administrative approval.

At High School #1, ($N = 122$) there were 160 students enrolled in string instrument offerings such as orchestra. Of those students, 122 opted to complete the survey for a return rate of 76%. Of the consent forms returned, only one of these students was absent on the day of the survey completion. At High School #2, ($N = 134$) there were 175 students enrolled in string instrument offerings such as orchestra. On the day the survey was given, 134 completed the consent forms and completed the survey. This is a return rate of 77%. At High School #3, ($N = 21$) there were 43 students enrolled in string instrument courses. Of those 43, only 21 students returned the consent form and completed the survey during class. This is a return rate of 49%.

Students were selected only at the high school level to participate in lieu of including the middle school level students following the collection of data from the pilot study. High school students were more specific in indicating the precise ranking that each external factor influenced them individually; therefore, only high school students were surveyed in the data collection.

Instrumentation

The written survey has been formatted and amended to better attain the information needed in this research from the Fortney, Boyle, and DeCarbo study of 1993. External factors from the Fortney, et. al. study were merged with external factors that the current researcher was interested in to complete the instrument. Students completed the survey in the presence of the researcher and the researcher gave directions from a written script. The script and the survey instrument is located in its entirety in Appendices B and C, consecutively.

Procedures

With the researcher present, students were verbally instructed and guided through the survey instrument. The researcher followed a script that can be found in Appendix B. The survey instrument collected basic demographic information from the student sample and asked questions relating to their instrument choice and their families' instrument background as well as more detailed information about the external factors that influenced the student's initial choice to begin instruction on their string instrument.

Once the students completed the survey, they returned it to the researcher. The students were debriefed about how significant the data returned will be to professional string music educators across Kansas and potentially across the country as information to better recruit string students and the avenues that best attract students into the string instrument community.

Data Analysis

The researcher analyzed the data, comparing means, medians, modes, and standard deviations between factors. Following analysis, the external factors were then ranked based on the mean, showing results for the individual school and the high schools as a collective. When figuring the results, the missing answers were marked with a "0" in order for the statistical equations to work properly. All data was analyzed using Microsoft® Excel®. The researcher used tables and graphs to display the information gathered and the comparison thereof. Results can be found Chapter 4.

Presentation of the Results

The researcher compared the data collected with the knowledge base of previous studies contained in the Chapter 2 of this document.

Chapter 4 - Data Analysis

Pilot Study

External Factors that Influence String Instrument Choice

The following external factors were listed for the students in the survey instrument. For each item, students were to indicate how influential on a Likert-like scale consisting of *Extremely Non-Influential, Non-Influential, Neutral, Influential, and Extremely Influential*, each of the factors were to their string instrument choice. Their responses are shown below using mean, median, and mode analyses.

In the pilot study, students, on average, primarily based their instrument selection on the external factor of parental influence. This was a strongly influential factor for this population with a strong mean of 4.00. The second strongest external factor that influenced string instrument choice was the presence of a private lesson teacher. The external factor of Other family ranked third according to the analysis of the mean, but frankly was not strong.

Table 4.1: Pilot: External Factors by Mean, Median, Mode, and Standard Deviation

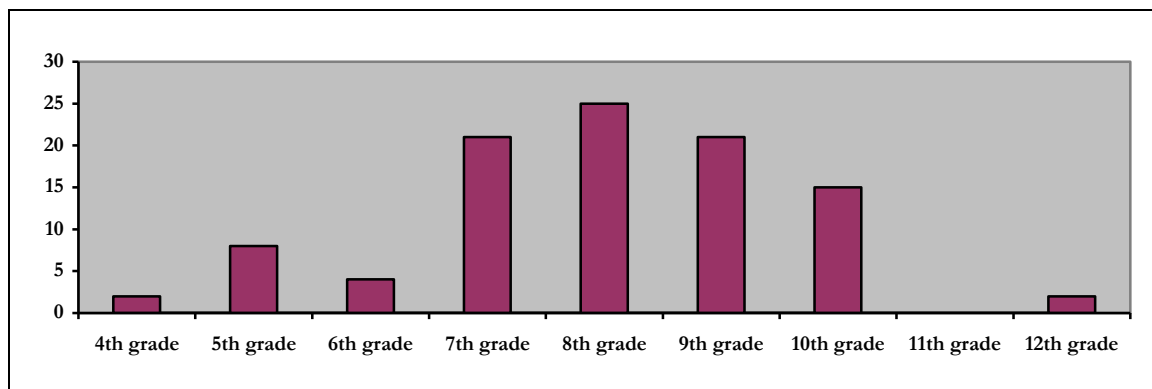
| <i>External Factors</i> | <i>Mean</i> | <i>Median</i> | <i>Mode</i> | <i>Standard Deviation</i> |
|---------------------------------|-------------|---------------|-------------|---------------------------|
| Parents | 4.00 | 4.00 | 5.00 | 1.19 |
| Private lesson teacher | 3.42 | 4.00 | 5.00 | 1.54 |
| Other family | 2.75 | 3.00 | 1.00 | 1.44 |
| Siblings | 2.56 | 2.00 | 1.00 | 1.41 |
| Friends | 2.56 | 3.00 | 1.00 | 1.33 |
| Live performance | 2.48 | 2.00 | 1.00 | 1.44 |
| Travel opportunities | 2.44 | 2.00 | 1.00 | 1.50 |
| Tradition of the program | 2.33 | 2.00 | 1.00 | 1.36 |
| Famous performer | 2.33 | 2.00 | 1.00 | 1.47 |
| Elem music teacher | 2.31 | 2.00 | 1.00 | 1.42 |
| Availability | 2.23 | 2.00 | 1.00 | 1.40 |
| MS Orchestra teacher | 2.15 | 1.00 | 1.00 | 1.45 |
| Other teacher | 2.13 | 2.00 | 1.00 | 1.31 |

| | | | | |
|-------------------------------|------|------|------|------|
| Elem Orchestra teacher | 2.08 | 1.00 | 1.00 | 1.37 |
| MS music teacher | 2.02 | 1.50 | 1.00 | 1.28 |
| Cost of instrument | 2.00 | 1.00 | 1.00 | 1.31 |
| Size | 1.94 | 1.00 | 1.00 | 1.31 |
| Transcript | 1.83 | 1.00 | 1.00 | 1.31 |
| TV | 1.83 | 1.00 | 1.00 | 1.12 |
| HS Orchestra teacher | 1.77 | 1.00 | 1.00 | 1.21 |
| Relationships | 1.56 | 1.00 | 1.00 | 0.91 |
| Medical reasons | 1.33 | 1.00 | 1.00 | 0.87 |

Demographic Data

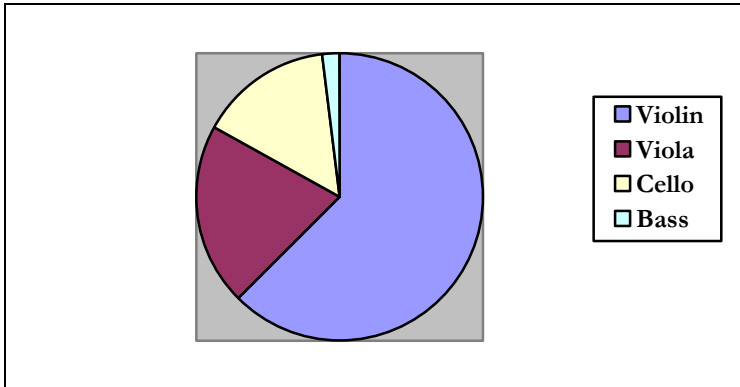
The students surveyed were evenly divided as males and females: 24 males and 24 females. This split was not done on purpose, but was completely random. Participating students were currently in the following grades: 4th: 2 (4%), 5th: 4 (8%), 6th: 2 (4%), 7th: 10 (21%), 8th: 12 (25%), 9th: 10 (21%), 10th: 7 (15%), 11th: 0 (0%), 12th: 1 (2%).

Figure 4.1: Pilot: Student Population in population percentage per grade



There are 30 violin students, 10 viola students, 7 cello students, and 1 bass student. Shown as a percentage, violin students represented 63% of the population, viola students represented 21% of the population, cello students represented 15% of the population and the bass student represented 3% of the population.

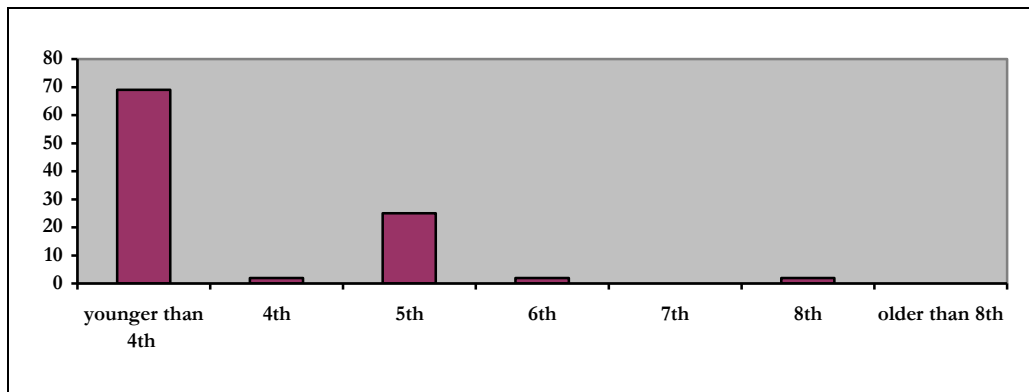
Figure 4.2: Pilot: Student Population in percentage of primary instrument



Background Data

- 1) Thirty-three students (69%) started playing an instrument younger than 4th grade with the next highest age being 12 students (25%) who began playing instruments in the 5th grade.

Figure 4.3: Pilot: Student Population in percentage of students by string instrument starting grade

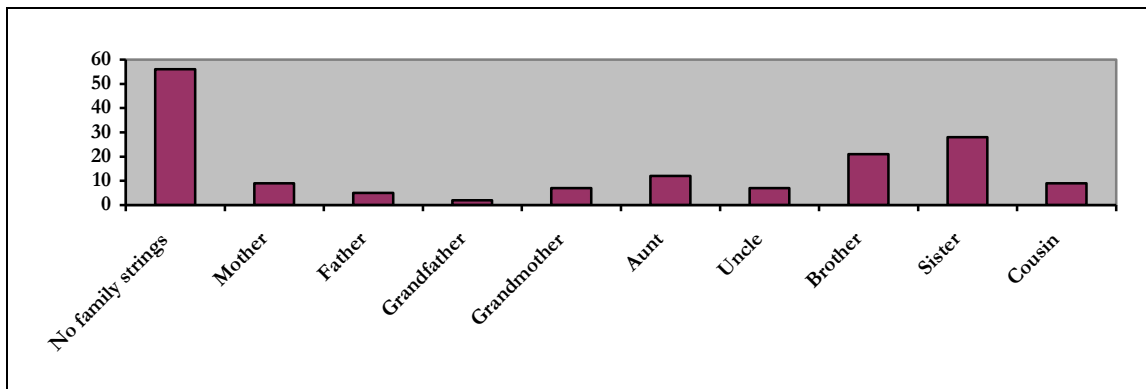


- 2) On average, students play at least 2 other instruments in addition to their primary string instrument. Forty-four percent of the 86 other instruments performed by the 43 students that play a secondary instrument play the piano and/or organ. The second highest category represented in the secondary instruments was in instruments within the string family with 15 students performing other string instruments representing 17% of the instruments tallied. Voice and guitar were tied for a close third with 9

students performing both of them at 10% of the secondary instruments. Twenty-three of the 38 students who initially started playing an instrument before the 4th grade began on the violin. The remaining 15 students began instrumental instruction on the piano.

- 3) All 48 students surveyed participate in at least two ensembles that meet outside of school. Obviously all 48 perform with the youth symphony, however, only 43 marked that they participate in a “Youth symphony.” Nineteen students or 21% participate in choir-related activities, 12 students or 13% participate in band-related activities, 58 students or 65% participate in orchestra-related activities.
- 4) Twenty-one students (44%) reported that they have a relative who also plays a string instrument. There were 43 total relatives indicated as playing a string instrument, which tells us that each student who indicated they have a relative who plays a string instrument marked at least two relatives who play. The highest ranked relative who also plays a string instrument were indicated on the survey as the student’s sister at 28% and brother at 21% and aunts at 12%. Twenty-seven students (56%) indicated that they did not have any family members who play a string instrument.

Figure 4.4: Pilot: Percentages of family members who were reported to play string instruments



- 5) Students surveyed are not only involved in music, but many other school and community activities. Students are mostly involved in athletics (20%), church (19%), clubs (13%), other music ensembles (12%), babysitting/jobs (12%), other activities (8%), performing/visual arts (6%), student leadership (6%), and scouts (5%). Students

are balancing their lives and diversifying them, whether parentally-influenced or self-influenced.

- 6) Fifty-eight percent of the students indicated that they do attend music events regularly; however, 42% do not attend music events on a regular basis. This was a shocking statistic to the researcher considering the proximity of a local university with an active music department, a large school district with an active and administratively-supported fine arts department, and the general culture of the community. Of the 28 students who indicated they regularly attend music events, 24% attend symphony concerts, 18% attend other school music events, 17% attend musicals, 14% attend solo recitals, 9% attend chamber music recitals, 9% attend concerts presented by professional, popular touring artists, and 6% attend church ensemble concerts.

Student Perception of Strength of School and Community String Programs

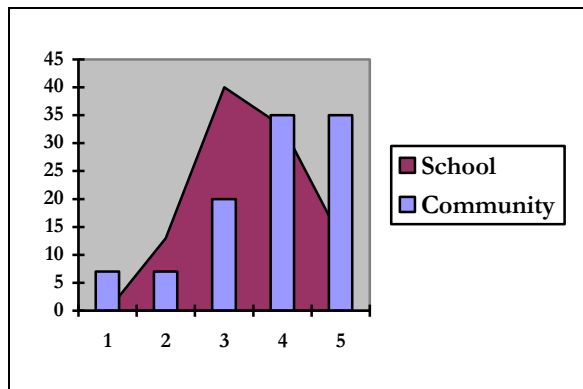
Students were also asked in the survey to give their opinion on the strength of both the school and the community string programs for their community. If students are home-schooled, they were instructed to leave the “school” option blank, and all students were to answer the community question.

Table 4.2: Pilot: Comparison of School and Community String Program strength perception

| <i>Likert-Type Scale</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|--------------------------|----------|----------|----------|----------|----------|
| School | 0% | 13% | 40% | 33% | 13% |
| Community | 7% | 7% | 20% | 35% | 35% |

The above table is further illustrated in the figure below.

Figure 4.5: Pilot: Comparison of School and Community String Program strength perception in percentage



The average ranking for school string program was a 2.2. This is rather low, but was influenced by the zeros placed in the non-response fields by home-school students who were asked to leave this question blank. For those in public school, the average rises to 3.4. The community string ranking was 3.6.

When the zeros are removed, the actual ranking for the school string program rose to 3.5. The average for both the school and string community were then similar.

Research Questions

Below are the responses based on the research questions presented by the researcher in Chapter 1, below is the information discovered to answer them.

- 1) What are the top three external factors that were the most influential in student's choice to begin string instruction?

The top three external factors using the mean were Parents with a 4.00, Private Lesson Teacher with a 3.42, and Other Family with a 2.75. Opting to focus on the ranking based on the mean scores, these scores show the most precise ranking format.

- 2) How are these factors related to the musical culture of the student including opportunities for participation as well as observations?

From 3) and 6) above in the *Background Data* section, students have opportunities to be involved in string playing at school, in the community, and at church; however, as discussed above, students are not always taking full advantage of those performance or observational opportunities.

- 3) Are family influences stronger than teacher/friend influences?

Family influences were stronger than teacher influences. Other family (mean = 2.75) seems to pivot from the parents (mean = 4.00), as the most prevalent relative to also play string instruments were the sister(s) or brother(s) of the student at a combined 44%.

- 4) How does the strength of the string community (school and community) affect the beginning string student based on student perceptions of the two communities?

Students most consistently perceived that the strength of the school string community was only ranked as a 3 on a 5 point Likert-Type scale with 40% of the population indicating this level. Thirty-three percent saw that their school string program strength was rated at a 4. The community perception was much more varied, but, overall ranked higher than the school strength with 35% of the students surveyed. The community indicated that the strength was a 4 and 35% also indicated that the strength was a 5.

The average ranking for school string program was a 2.2. This is rather low, but was influenced by the zeros placed in the non-response fields by home-school students who were asked to leave this question blank. For those in public school, the average rises to 3.4. The community string ranking was 3.6. Overall, the perceptions from the string students participating in the survey were that the string programs in the school and in their community were slightly above average.

High School Studies

External Factors that Influence String Instrument Choice

The following external factors were listed for the students in the survey instrument. For each item, students were to indicate how influential on a Likert-type scale consisting of *Extremely Non-Influential, Non-Influential, Neutral, Influential, and Extremely Influential*, each of the factors were to their string instrument choice. Below, their responses are shown using mean, median, mode and standard deviation analyses. Parents were the most influential external factor (3.28) followed by Live performance (3.01) and Friends (2.94). However, all of these factors are not strongly supported by the entirety of the population, reflected in the average mean scores.

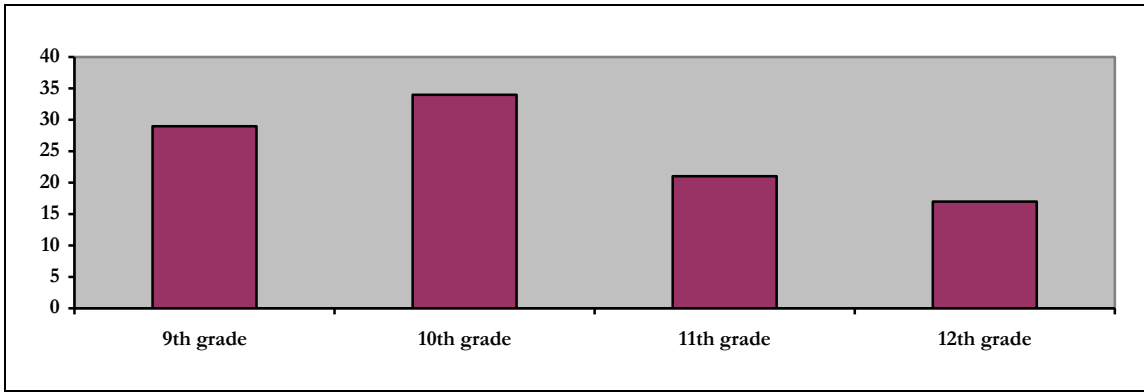
Table 4.3: Combined HS: External Influences by Mean, Median, Mode, and Standard Deviation

| <i>External Influences</i> | <i>Mean</i> | <i>Median</i> | <i>Mode</i> | <i>Standard Deviation</i> |
|-------------------------------|-------------|---------------|-------------|---------------------------|
| Parents | 3.28 | 4.00 | 4.00 | 1.30 |
| Live performance | 3.01 | 3.00 | 4.00 | 1.41 |
| Friends | 2.94 | 3.00 | 4.00 | 1.31 |
| HS orchestra teacher | 2.89 | 3.00 | 1.00 | 1.70 |
| Elem orchestra teacher | 2.82 | 3.00 | 1.00 | 1.51 |
| MS orchestra teacher | 2.71 | 3.00 | 1.00 | 1.60 |
| Elem music teacher | 2.62 | 3.00 | 1.00 | 1.42 |
| Size | 2.55 | 3.00 | 1.00 | 1.37 |
| Tradition | 2.40 | 2.00 | 1.00 | 1.35 |
| MS music teacher | 2.39 | 2.00 | 1.00 | 1.52 |
| Transcript | 2.38 | 2.00 | 1.00 | 1.44 |
| Famous Performer | 2.34 | 2.00 | 1.00 | 1.33 |
| Siblings | 2.30 | 2.00 | 1.00 | 1.43 |
| Other family | 2.29 | 2.00 | 1.00 | 1.27 |
| Travel | 2.23 | 2.00 | 1.00 | 1.33 |
| Availability | 2.18 | 2.00 | 1.00 | 1.29 |
| Other teacher | 2.12 | 2.00 | 1.00 | 1.24 |
| Private lesson teacher | 2.00 | 1.00 | 1.00 | 1.39 |
| TV | 1.98 | 2.00 | 1.00 | 1.15 |
| Cost | 1.78 | 1.00 | 1.00 | 1.01 |
| Relationships | 1.68 | 1.00 | 1.00 | 1.03 |
| Medical reasons | 1.30 | 1.00 | 1.00 | 0.78 |

Demographic Data

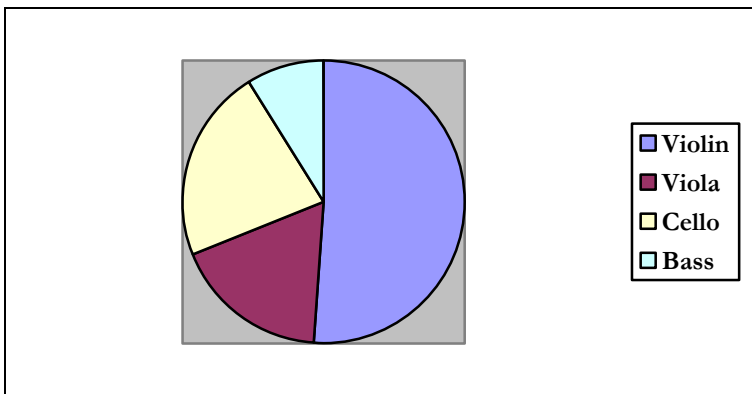
The students surveyed included 89 males (32%) and 188 females (68%). Participating students were currently in the following grades: 9th: 79 (29%), 10th: 95 (34%), 11th: 57 (21%), 12th: 46 (17%). Age distributions were similar for each population.

Figure 4.6: Combined HS: Student Population in population percentage per grade



Students primarily play the violin with 141 students. There are 49 viola students, 62 cello students, and 24 bass students.

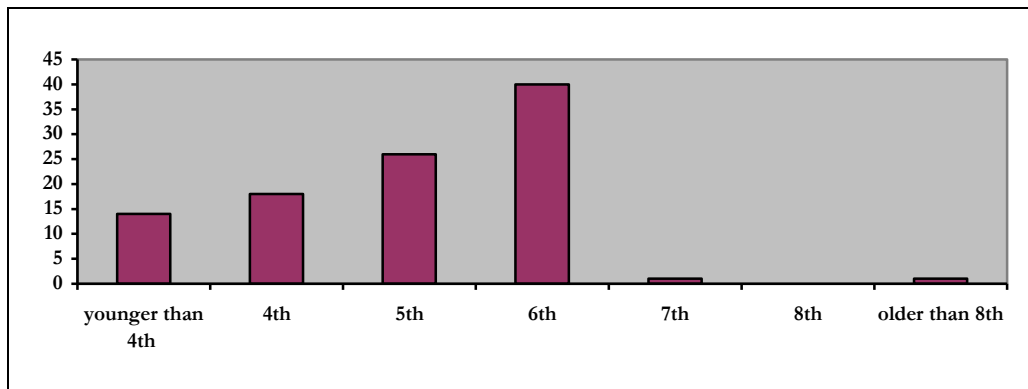
Figure 4.7: Combined HS: Student Population in percentage of primary instrument



Background Data

1) Thirty-eight students (14%) started playing a string instrument younger than 4th grade with the next highest age being 6th grade with 111 students (40%). Other students began in the 5th grade (71 at 26%) and 4th grade (51 at 18%).

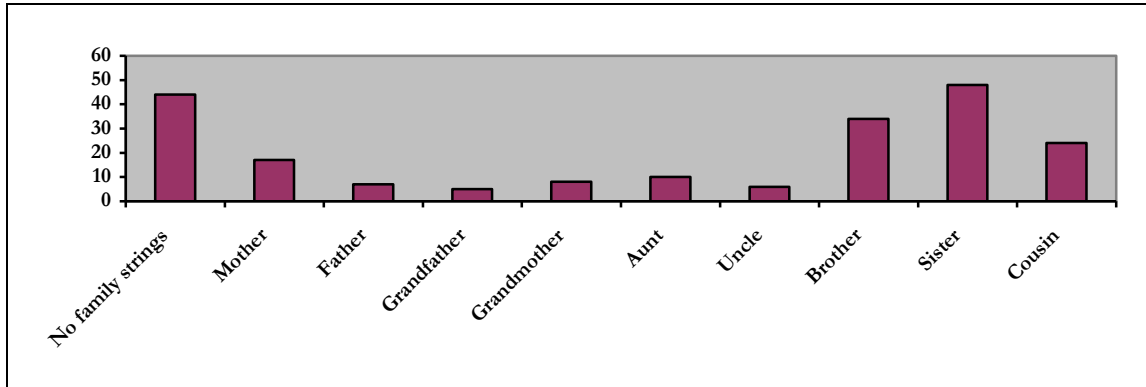
Figure 4.8: Combined HS: Student Population in percentage of students by string instrument starting grade



- 2) On average, students play at least two other instruments, if not more, in addition to their primary string instrument. Fifty-eight percent of the 479 other instruments performed by the 233 students who play a secondary instrument participate in voice. The second highest category represented in the secondary instruments was with piano with 133 participating at 57%. Guitar and folk instruments were together combined for third with 112 students playing them at 48% of the secondary instruments.
- 3) Looking at the larger population, only 51% of the students surveyed participate in other ensembles that meet both during and outside of school. Thirty-four percent of the students who indicated they participate in an outside ensemble participate in a “Youth Symphony.” Following closely behind was School Choir at 33%. When the ensembles are combined by discipline, 76% participate in choir-related activities, 28% participate in band-related activities, and 87% participate in orchestra-related activities.
- 4) One hundred and fifty-six students (56%) reported that they have a relative who also plays a string instrument. There were 249 relatives indicated as playing a string instrument, which tells us that each student who indicated they have a relative who plays a string instrument, marked at least one relative who plays. The relative who represents the highest amount of string instrument participation on the survey is the student’s sister at 48%, the student’s brother at 34%, and cousins third at 24%. The overall ranking varies slightly from the four subpopulations surveyed. The combination shows a greater saturation of family members participating in string

instrument performance within the younger generations. Participants who indicated they have no relatives who play a string instrument were not surprising at 44%.

Figure 4.9: Combined HS: Percentages of family members who were reported to play string instruments



- 5) Students surveyed were not only involved in music, but in many other school and community activities. Students were involved in athletics (44%), clubs (42%), church activities (32%), babysitting/jobs (34%), other activities (29%), other music activities (27%), performing/visual arts (26%), scouts (9%) and student leadership (6%), Students were balancing their lives and diversifying them, whether parentally-influenced or self-influenced.
- 6) When analyzing the combined high school data, the amount of students who regularly attend school and community music events showed more balance between those who do (62%) and do not (38%) attend these events. Of the 171 students who indicated they regularly attend music events, 61% attend musical performances, 56% attend concerts presented by professional popular touring artists, 38% attend other school music performances, 55% attend symphony orchestra performances, 31% attend solo recitals, 26% attend church ensemble performances, 20% attend folk ensemble performances, 19% attend chamber music recitals, and, 11% attend opera performances.

Student Perception of Strength of School and Community String Programs

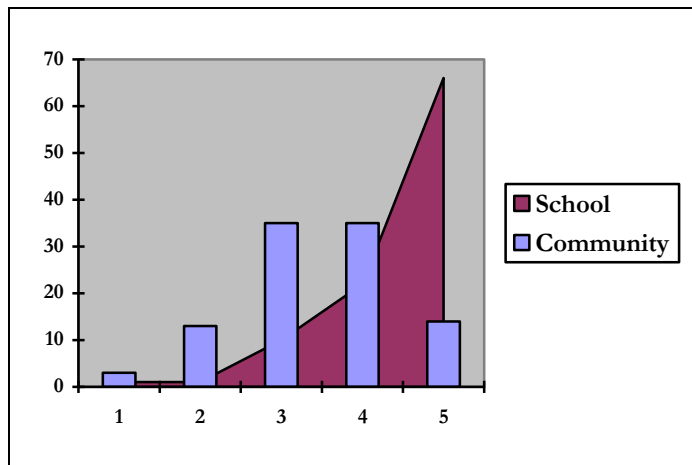
Students were also asked in the survey to give their opinion on the strength of both the school and the community string programs for their community. Students strongly consider the string program at their schools positively, with 66% ranking it at the highest part of the Likert-Type scale with a 5. Perceptions of the strength of the community string programs were considered much less to the high school string students. Students rated the community string programs as a 3 or 4. Students show that they feel the string program at their school is stronger than the programs that are offered in the community.

Table 4.4: Combined HS: Comparison of School and Community String Program strength perception

| <i>Likert-Type Scale</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|--------------------------|----------|----------|----------|----------|----------|
| School | 1% | 1% | 10% | 22% | 66% |
| Community | 3% | 13% | 35% | 35% | 14% |

The above table is further illustrated in the figure below.

Figure 4.10: Combined HS: Comparison of School and Community String Program strength perception in percentage



In addition to the information provided above, the average ranking for the school string community by these students was 4.5 where the average ranking for the string municipal

community was 3.4. In general, students feel that their school string program is stronger than the community string offerings.

Research Questions

Based on the research questions presented by the researcher in Chapter 1, surveys from the combined high schools are answered.

- 1) What are the top three external factors that were the most influential in student's choice to begin string instruction?

The top three external influences using the mean were Parents with a 3.28 followed by Live Performance (3.01) and Friends (2.94).

From 3) and 6) above in the *Background Data* section, students have opportunities to be involved in string playing at school, in the community, and at church; these students are participating in a variety of those musical offerings across the community.

- 2) Are family influences stronger than teacher/friend influences?

Family influences were stronger than teacher influences in that the Parent is the most influential external factor to string instrument choice, in line with all populations surveyed.

- 3) How does the strength of the string community (school and community) affect the beginning string student based on student perceptions of the two communities?

The average ranking for the school string community by these students' perception was 4.5, whereas the average ranking for the string municipal community was 3.4. The overall ranking showed a higher student perception of their school string community as opposed to the community string community.

High School #1

External Factors that Influence String Instrument Choice

The following external factors were listed for the students in the survey instrument. For each item, students were to indicate how influential on a Likert-type scale consisting of *Extremely Non-Influential, Non-Influential, Neutral, Influential, and Extremely Influential*, each of the factors were to their string instrument choice. Below, their responses are shown using

mean, median, mode and standard deviation analyses. The top three external factors for the students in this high school were Parents (3.34), Live performance (3.06), and Elementary orchestra teacher (2.99).

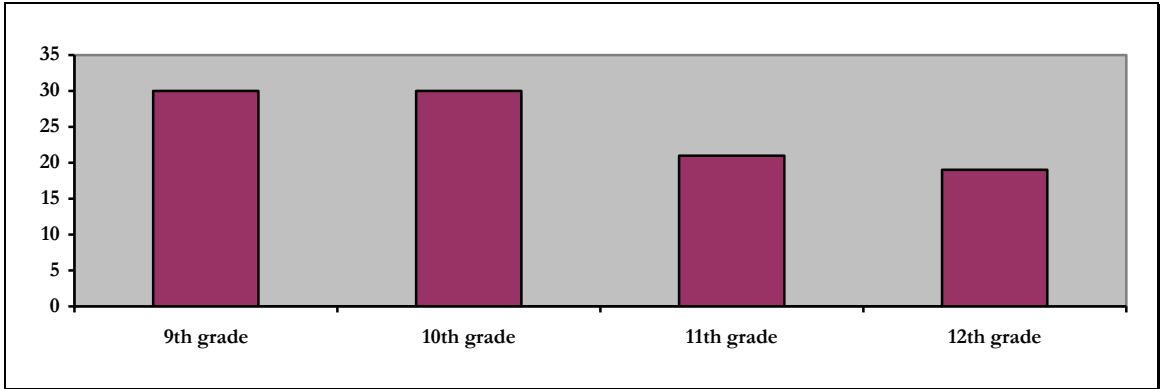
Table 4.5: HS #1: External Factors by Mean, Median, Mode, and Standard Deviation

| <i>External Influences</i> | <i>Mean</i> | <i>Median</i> | <i>Mode</i> | <i>Standard Deviation</i> |
|-------------------------------|-------------|---------------|-------------|---------------------------|
| Parents | 3.34 | 3.50 | 4.00 | 1.28 |
| Live performance | 3.06 | 3.00 | 4.00 | 1.43 |
| Elem orchestra teacher | 2.99 | 3.00 | 4.00 | 1.57 |
| Friends | 2.93 | 3.00 | 4.00 | 1.30 |
| Elem music teacher | 2.83 | 3.00 | 1.00 | 1.45 |
| HS orchestra teacher | 2.70 | 2.00 | 1.00 | 1.72 |
| MS orchestra teacher | 2.50 | 2.00 | 1.00 | 1.60 |
| Siblings | 2.44 | 2.00 | 1.00 | 1.48 |
| Performer | 2.43 | 2.00 | 1.00 | 1.41 |
| Size | 2.40 | 2.00 | 1.00 | 1.32 |
| MS music teacher | 2.38 | 2.00 | 1.00 | 1.57 |
| Transcript | 2.36 | 2.00 | 1.00 | 1.50 |
| Tradition | 2.33 | 2.00 | 1.00 | 1.35 |
| Other family | 2.26 | 2.00 | 1.00 | 1.34 |
| Travel | 2.26 | 2.00 | 1.00 | 1.41 |
| Other teacher | 2.16 | 2.00 | 1.00 | 1.30 |
| Availability | 2.16 | 2.00 | 1.00 | 1.31 |
| TV | 1.99 | 2.00 | 1.00 | 1.13 |
| Private lesson teacher | 1.89 | 1.00 | 1.00 | 1.29 |
| Cost | 1.75 | 1.00 | 1.00 | 0.99 |
| Relationships | 1.60 | 1.00 | 1.00 | 0.98 |
| Med | 1.29 | 1.00 | 1.00 | 0.72 |

Demographic Data

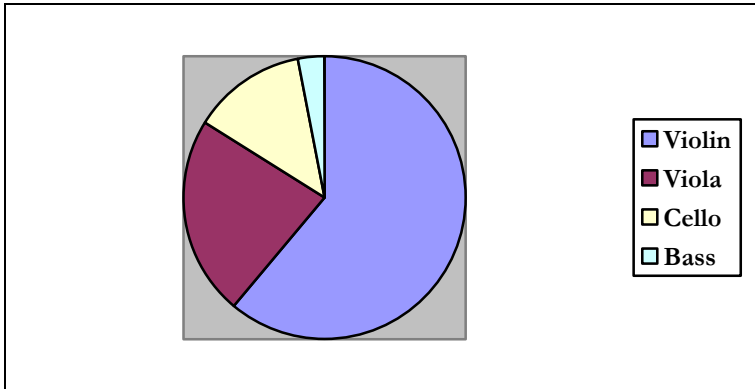
The students included 34 males and 88 females. Participating students were currently in the following grades: 9th: 37 (30%), 10th: 36 (30%), 11th: 26 (21%), 12th: 23 (19%).

Figure 4.11: HS #1: Student Population in population percentage per grade



There were 74 violin students, 28 viola students, 16 cello students, and 4 bass students.

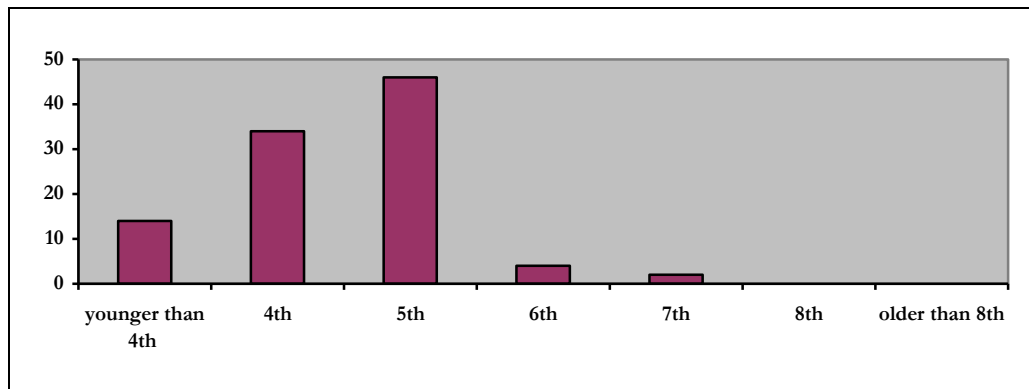
Figure 4.12: HS #1: Student Population in percentage of primary instrument



Background Data

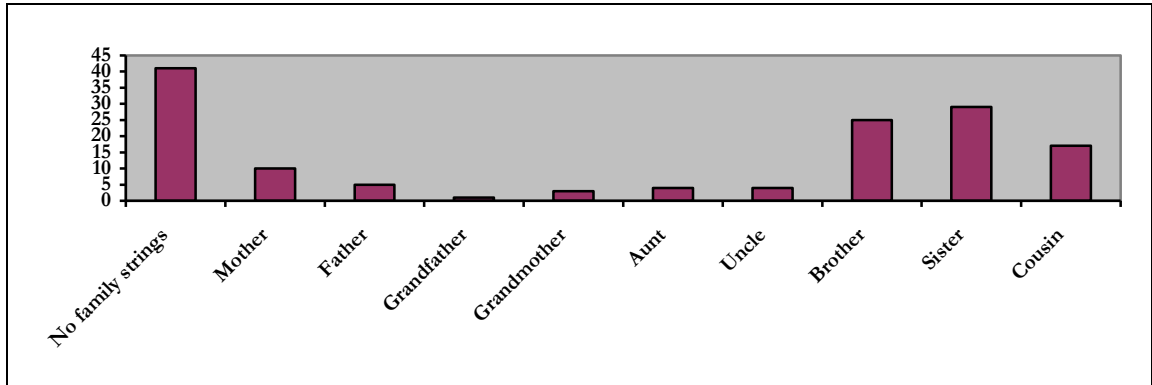
1) Only seventeen students (14%) started playing a string instrument younger than 4th grade with the next highest age being 56 students (46%) who began playing instruments in the 5th grade. Forty-two students (34%) began learning a string instrument in the 4th grade.

Figure 4.13: HS #1: Student Population in percentage of students by string instrument starting grade



- 2) On average, students play at least one, almost two, other instruments in addition to their primary string instrument. The piano comprises 30% percent of the 202 secondary instruments played by the 105 students. The second highest category represented in the secondary instruments was voice with 59 participating at 29%. Guitar and folk instruments were together combined for third with 47 students (23%) of the secondary instruments.
- 3) Forty-eight percent of the students surveyed participate in ensembles that meet both during and outside of school day. Forty-two percent participate in a “youth symphony.” Seventy-nine percent participate in choir-related activities, 36% percent participate in band-related activities, and 108% participate in orchestra-related activities. Students indicated all ensembles that applied to them, therefore, students would be able to be in multiple ensembles.
- 4) Seventy-two students (59%) reported that they have a relative who also plays a string instrument. There were 126 relatives indicated as playing a string instrument, which tells us that each student who indicated they have a relative who plays a string instrument, marked at least one relative who plays. The relative that represents the highest amount of string instrument participation is the student’s sister at 29% followed closely by the student’s brother at 25%. Ranking third are cousins at 17%. Fifty students (41%) did not have family member who play a string instrument.

Figure 4.14: HS #1: Percentages of family members who were reported to play string instruments



- 5) Students surveyed are not only involved in music, but many other school and community activities. Students are mostly involved in clubs (52%), athletics (43%), church (38%), babysitting/jobs (34%), other activities (34%), other music ensembles (25%), performing/visual arts (21%), student leadership (9%), and scouts (7%). Students are balancing their lives and diversifying them, whether parentally-influenced or self-influenced.
- 6) Sixty-one percent of the students indicated that they do attend music events regularly, and 39% do not attend music events regularly. This was a statistic that was somewhat surprising to the researcher considering the proximity of a local university with an active music department, a large school district with an active and administratively-supported fine arts department, and the general culture of the community. Of the 75 students who indicated they regularly attend music events, 69% attend musical performances, 57% attend concerts presented by professional, popular touring artists, 48% attend symphony orchestra performances, 48% attend other school music performances, 35% attend church ensemble performances, 29% attend solo recitals, and 19% attend folk ensemble performances, 9% attend chamber ensemble performances, and 9% attend opera performances.

Student Perception of Strength of School and Community String Programs

Students were also asked in the survey to give their opinion on the strength of both the school and the community string programs for their community. Students strongly consider the

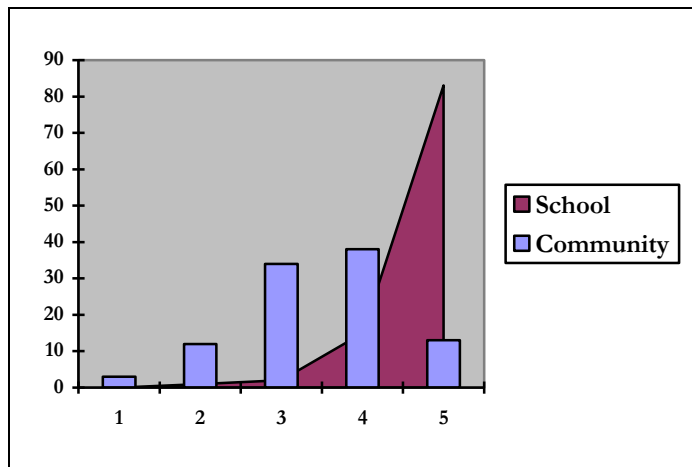
string program at their schools positively, with 83% ranking it at the highest part of the Likert-Type scale with a 5. Perceptions of the strength of the community string programs were considered less to the high school string students. Students rated the community string programs as a 3 or 4, more strongly as a 4. Students show that they perceive that the string program at their school is stronger than the programs that are offered in the community.

Table 4.6: HS #1: Comparison of School and Community String Program strength perception

| <i>Likert-Type Scale</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|--------------------------|----------|----------|----------|----------|----------|
| School | 0% | 1% | 2% | 15% | 83% |
| Community | 3% | 12% | 34% | 38% | 13% |

The above table is further illustrated in the figure below.

Figure 4.15: HS #1: Comparison of School and Community String Program strength perception in percentage



In addition to the information provided above, the average ranking for the school string community by these students was 4.8 whereas the average ranking for the string municipal community was 3.5, the highest average indicated amongst the three schools surveyed.

Research Questions

Based on the research questions presented by the researcher in Chapter 1, below they are answered from the information discovered in the surveys from High School #1.

- 1) What are the top three external factors that were the most influential in student's choice to begin string instruction?

The top three external factors using the mean were Parents with a 3.04, Live Performance with a 3.06 and Elementary Orchestra Teacher with a 2.99.

- 2) How are these factors related to the musical culture of the student including opportunities for participation as well as observations?

From 3) and 6) above in the *Background Data* section, students have opportunities to be involved in string playing at school, in the community, and at church. Contrary to the pilot study, the students from High School #1 are taking full advantage of these opportunities. Of the almost half who were surveyed and participate in other ensembles, students are greatly involved in a divergent focus of ensembles. A slightly greater number of students are also taking advantage of the performances that occur in their locale on a regular basis, up to 61% in this population. I am still surprised that 39% do not attend local performances. This may be due to an increased schedule at the high school level.

- 3) Are family influences stronger than teacher/friend influences?

Family influences were stronger than teacher influences in that the Parent is the most influential external factor to string instrument choice. However, teacher and friend influences were still present and ranked slightly behind that of the Parent.

- 4) How does the strength of the string community (school and community) affect the beginning string student based on student perceptions of the two communities?

The average ranking for the school string community by these students' perception was 4.8 where the average ranking for the string municipal community was 3.5. Combined with the amount of outside of school string ensembles the students reported involvement in, students are being affected by the string communities in both realms at various points in their performance training in order to enhance and supplement their school training.

High School #2

External Factors that Influence String Instrument Choice

The following external factors were listed for the students in the survey instrument. For each item, students were to indicate how influential on a Likert-type scale consisting of *Extremely Non-Influential, Non-Influential, Neutral, Influential, and Extremely Influential*, each of the factors were to their string instrument choice. Below, their responses are shown using mean, median, mode and standard deviation analyses. The top three external factors for this population were Parents (3.23), High school orchestra teacher (3.17), and Friends (3.04).

Table 4.7: HS #2: External Influences by Mean, Median, Mode, and Standard Deviation

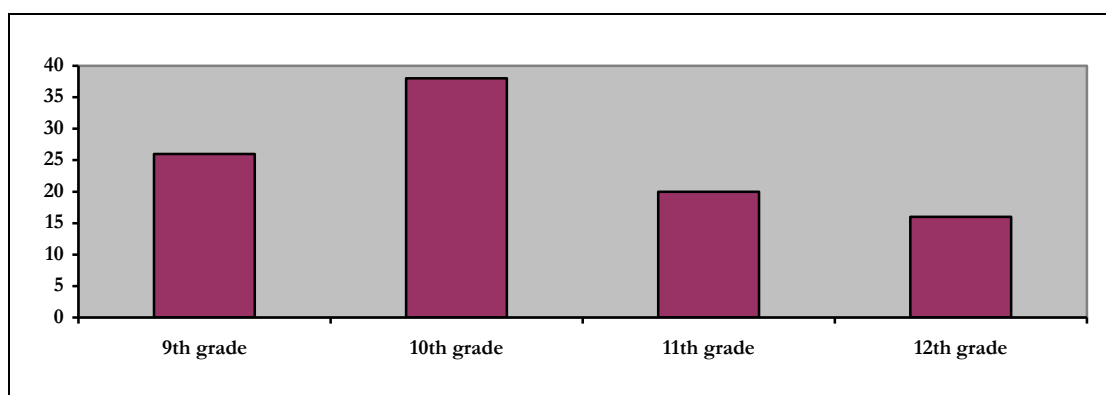
| <i>External Influences</i> | <i>Mean</i> | <i>Median</i> | <i>Mode</i> | <i>Standard Deviation</i> |
|-------------------------------|-------------|---------------|-------------|---------------------------|
| Parents | 3.23 | 3.00 | 4.00 | 1.32 |
| HS orchestra teacher | 3.17 | 4.00 | 5.00 | 1.67 |
| Friends | 3.04 | 3.00 | 4.00 | 1.30 |
| Live performance | 3.02 | 3.00 | 4.00 | 1.38 |
| MS orchestra teacher | 3.00 | 3.00 | 1.00 | 1.58 |
| Elem orchestra teacher | 2.78 | 3.00 | 1.00 | 1.46 |
| Size | 2.72 | 3.00 | 1.00 | 1.40 |
| Transcript | 2.56 | 3.00 | 1.00 | 1.40 |
| Tradition | 2.54 | 2.50 | 1.00 | 1.34 |
| MS music teacher | 2.50 | 2.00 | 1.00 | 1.50 |
| Elem music teacher | 2.48 | 2.00 | 1.00 | 1.36 |
| Performer | 2.32 | 2.00 | 1.00 | 1.26 |
| Other family | 2.31 | 2.00 | 1.00 | 1.22 |
| Travel | 2.28 | 2.00 | 1.00 | 1.28 |
| Availability | 2.25 | 2.00 | 1.00 | 1.31 |
| Siblings | 2.21 | 2.00 | 1.00 | 1.41 |
| Other teacher | 2.16 | 2.00 | 1.00 | 1.21 |
| Private lesson teacher | 2.00 | 1.00 | 1.00 | 1.41 |
| TV | 1.95 | 2.00 | 1.00 | 1.15 |
| Cost | 1.82 | 1.00 | 1.00 | 1.02 |

| | | | | |
|------------------------|------|------|------|------|
| Relationships | 1.80 | 1.00 | 1.00 | 1.11 |
| Medical reasons | 1.34 | 1.00 | 1.00 | 0.86 |

Demographic Data

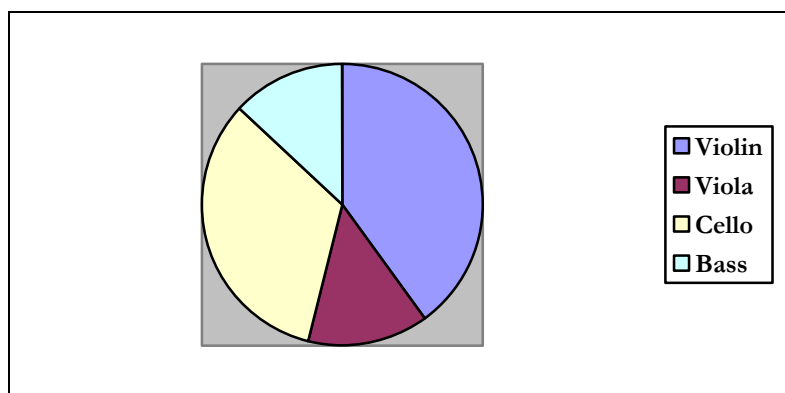
The students surveyed included 47 males and 87 females. Participating students were currently in the following grades: 9th: 35 (26%), 10th: 51 (38%), 11th: 27 (20%), 12th: 21 (16%).

Figure 4.16: HS #2: Student Population in population percentage per grade



Students primarily play the violin with 53 students. There are 18 viola students, 44 cello students, and 18 bass students.

Figure 4.17: HS #2: Student Population in percentage of primary instrument

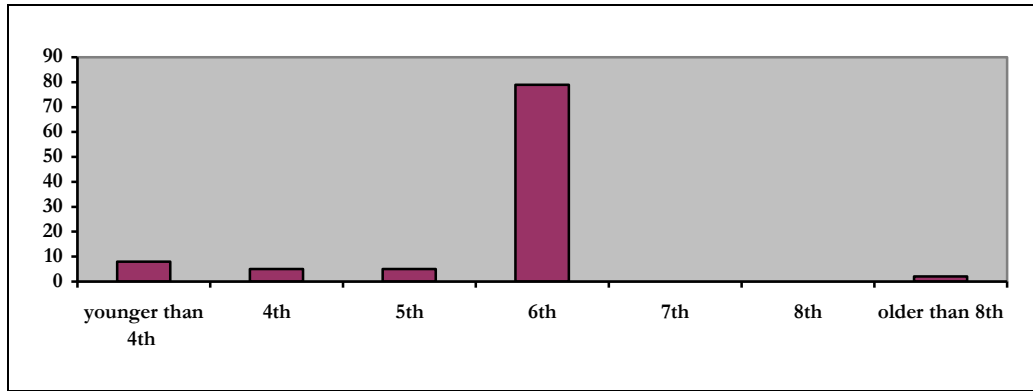


Background Data

1) Only 11 students (8%) started playing a string instrument younger than 4th grade with the highest being 106 students (79%) who began playing instruments in the 6th grade.

Other students began in the 4th grade (7 at 5%) and the 5th grade (also 7 at 5%). Two students began string instruction after the 8th grade representing 1% of the students surveyed.

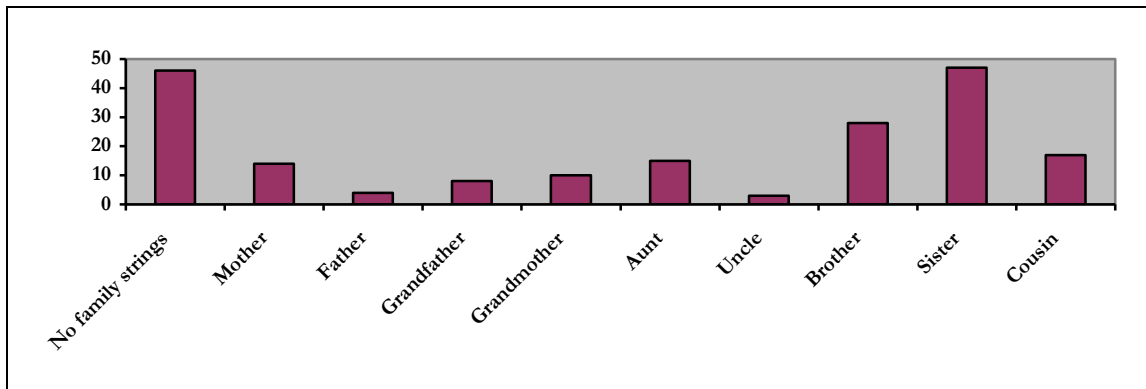
Figure 4.18: HS #2: Student Population in percentage of students by string instrument starting grade



- 2) On average, students play at least two other instruments, if not more, in addition to their primary string instrument. Twenty-nine percent of the 230 other instruments performed by the 108 students that play a secondary instrument participate in voice. The second highest category represented in the secondary instruments was piano with 64 (28%). Guitar and folk instruments were combined together for third with 55 (23%) students playing secondary instruments.
- 3) Only 49% of the students surveyed participate in other ensembles that meet both during and outside of school. The chorale program at this school is very strong and there are great relationships between the fine arts faculty in regards to the sharing of students for the enhancement of their individual music student. Forty-three percent of the students surveyed participate in a school choir. When the ensembles are combined by discipline, 71% participate in choir-related activities, 39% participate in band-related activities, and 112% participate in orchestra-related activities.
- 4) Seventy-two students (54%) reported that they have a relative who also plays a string instrument. There were 105 relatives indicated as playing a string instrument, which tells us that each student that indicated they have a relative that plays a string instrument, marked at least one relative that plays. The relative that represents the

highest amount of string instrument participation on the survey is the student's sister at 47%, followed by the student's brother at 28%, and cousins at 17%. I find it interesting that the parents, who we will discover are the most influential external factor to string instrument choice in this population, for the most part are not the highest ranked relative who plays a string instrument. Also, just as with High School #1, the rank order is the same. Sixty-two students (46%) indicated that they do not have any family members who play a string instrument.

Figure 4.19: HS #2: Percentages of family members who were reported to play string instruments



- 5) Students surveyed are not only involved in music, but in many other school and community activities. Students are involved in athletics (46%), clubs (34%), babysitting/jobs (34%), other music ensembles (31%), performing/visual arts (28%), church ensembles (28%), other activities (25%), scouts (12%), and student leadership (3%). Students are balancing their lives and diversifying them, whether parentally-influenced or self-influenced.
- 6) The most surprising information obtained from the survey was whether the students observed music events on a regular basis. Sixty percent of the students indicated that they do attend music events regularly, and 40% do not attend music events on a regular basis. These results are similar to that of High School #1. This was a statistic that was surprising to the researcher considering proximity of a local university with an active music department, a large school district with an active and administratively-supported fine arts department, and the general culture of the

community. Of the 80 students who indicated they regularly attend music events, 65% attend other school music concerts, 60% attend concerts presented by professional popular touring artists, 49% attend musicals, 45% attend other symphony orchestra performances, 35% attend solo recitals, 28% attend chamber music recitals, and 23% attend folk ensemble performances, 16% attend church ensemble performances, and 15% attend opera performances.

Student Perception of Strength of School and Community String Programs

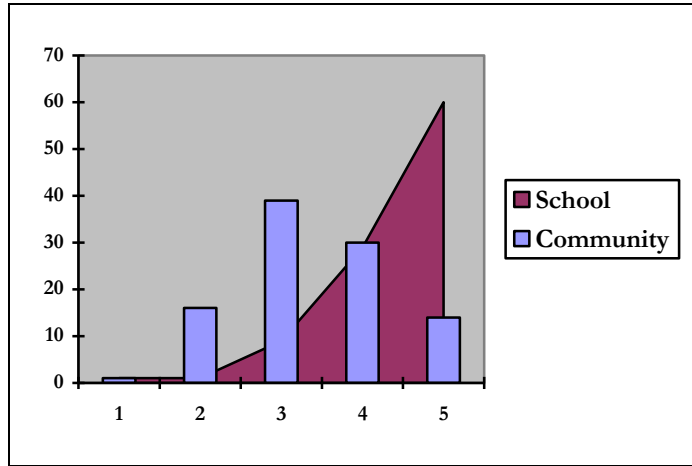
Students were also asked in the survey to give their opinion on the strength of both the school and the community string programs for their community. Students strongly consider the string program at their schools positively, with 60% ranking it at the highest part of the Likert-Type scale with a 5. Perceptions of the strength of the community string programs were considered much less to the high school string students. Students rated the community string programs as a 3 or 4, more strongly as a 3. Students show that they feel the string program at their school is stronger than the programs that are offered in the community.

Table 4.8: HS #2: Comparison of School and Community String Program strength perception

| <i>Likert-Type Scale</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|--------------------------|----------|----------|----------|----------|----------|
| School | 1% | 1% | 9% | 29% | 60% |
| Community | 1% | 16% | 39% | 30% | 14% |

The above table is further illustrated in the figure below.

Figure 4.20: HS #2: Comparison of School and Community String Program strength perception in percentage



In addition to the information provided above, the average ranking for the school string community by these students was 4.5 where the average ranking for the string municipal community was 3.4. These means are very similar to the rankings that the students in High School #1 reported.

Research Questions

Based on the research questions presented by the researcher in Chapter 1, answers from the information discovered in the surveys from High School #2 are below.

- 1) What are the top three external factors that were the most influential in student’s choice to begin string instruction?

The top three external factors using the mean were Parents with a 3.23, HS Orchestra Teacher with a 3.17 and Friends with a 3.04. Other external influences that were ranked highly were that of Live Performance at 3.02 and MS Orchestra Teacher at 3.00.

- 2) How are these factors related to the musical culture of the student including opportunities for participation as well as observations?

From 3) and 6) above in the *Background Data* section, students have opportunities to be involved in string playing at school, in the community, and at church. Contrary to the pilot study but in the same vein as the students from High School #1, the students from High School #2 are taking full advantage of these

opportunities. Of the almost half that were surveyed and participate in other ensembles, students are greatly involved in a divergent focus of ensembles. A slightly greater number of students are also taking advantage of the performances that occur in their locale on a regular basis, up to 60% in this population. I am still surprised that 40% to not attend local performances. This may be due to an increased schedule at the high school level. These results are almost identical from High School #1. Perhaps there is a trend.

- 3) Are family influences stronger than teacher/friend influences?

Family influences were stronger than teacher influences in that the Parent is the most influential external factor to string instrument choice. Nevertheless, teacher and friend influences were still present and ranked slightly behind that of the Parent. It is also interesting to point out, that, just as with the results from those surveyed at High School #1, the ranking of Siblings as an external influence ranked very low; however, the presence of siblings who play string instruments is fairly great.

- 4) How does the strength of the string community (school and community) affect the beginning string student based on student perceptions of the two communities?

The average ranking for the school string community by these students' perception was 4.5 where the average ranking for the string municipal community was 3.4. Obviously, combined with the amount of outside of school string ensembles the students reported involvement in, students are being affected by the string communities in both realms at various points in their performance training in order to enhance and supplement their school training. These results are similar to High School #1.

High School #3

External Factors that Influence String Instrument Choice

The following external factors were listed for the students in the survey instrument. For each item, students were to indicate how influential on a Likert-type scale consisting of *Extremely Non-Influential, Non-Influential, Neutral, Influential, and Extremely Influential*, each of the factors were to their string instrument choice. Below, their responses are shown using mean, median, mode and standard deviation analyses.

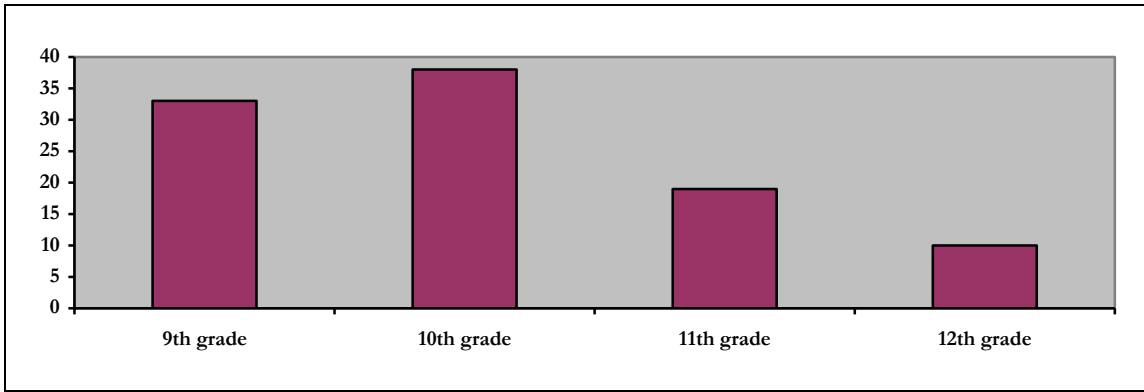
Table 4.9: HS #3: External Influences by Mean, Median, Mode, and Standard Deviation

| <i>External Influence</i> | <i>Mean</i> | <i>Median</i> | <i>Mode</i> | <i>Standard Deviation</i> |
|-------------------------------|-------------|---------------|-------------|---------------------------|
| Parents | 3.29 | 4.00 | 4.00 | 1.28 |
| Live performance | 2.67 | 3.00 | 1.00 | 1.46 |
| Private lesson teacher | 2.57 | 2.00 | 1.00 | 1.65 |
| Friends | 2.43 | 2.00 | 1.00 | 1.33 |
| Other family | 2.29 | 2.00 | 1.00 | 1.20 |
| Elem music teacher | 2.29 | 2.00 | 1.00 | 1.42 |
| Size | 2.24 | 2.00 | 1.00 | 1.27 |
| HS orchestra teacher | 2.14 | 2.00 | 1.00 | 1.28 |
| TV | 2.14 | 2.00 | 1.00 | 1.21 |
| MS orchestra teacher | 2.10 | 2.00 | 1.00 | 1.23 |
| Siblings | 2.00 | 2.00 | 1.00 | 1.20 |
| Elem orchestra teacher | 2.00 | 2.00 | 1.00 | 1.07 |
| Performer | 2.00 | 1.00 | 1.00 | 1.27 |
| Tradition | 1.95 | 1.00 | 1.00 | 1.25 |
| Availability | 1.90 | 2.00 | 2.00 | 0.97 |
| Travel | 1.81 | 1.00 | 1.00 | 1.05 |
| MS music teacher | 1.76 | 1.00 | 1.00 | 1.06 |
| Cost | 1.67 | 1.00 | 1.00 | 0.99 |
| Other teacher | 1.62 | 1.00 | 1.00 | 0.90 |
| Relationships | 1.38 | 1.00 | 1.00 | 0.65 |
| Transcript | 1.38 | 1.00 | 1.00 | 0.84 |
| Medical reasons | 1.19 | 1.00 | 1.00 | 0.50 |

Demographic Data

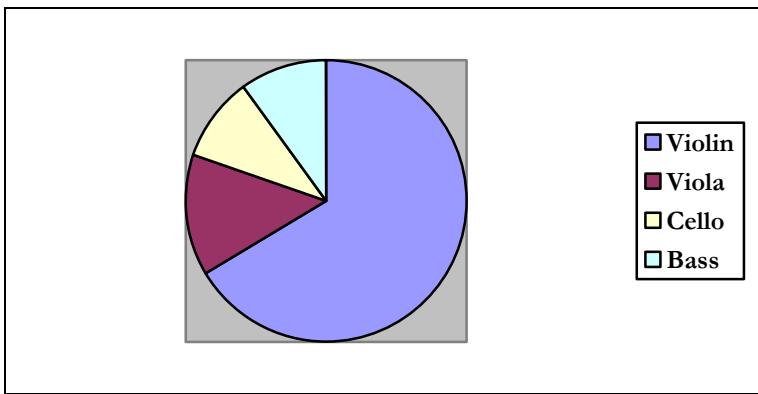
The students surveyed included 8 males and 13 females. Participating students were currently in the following grades: 9th: 7 (33%), 10th: 8 (38%), 11th: 4 (19%), 12th: 2 (10%).

Figure 4.21: HS #3: Student Population in population percentage per grade



Students primarily play the violin with 14 students. There are 3 viola students, 2 cello students, and 2 bass students.

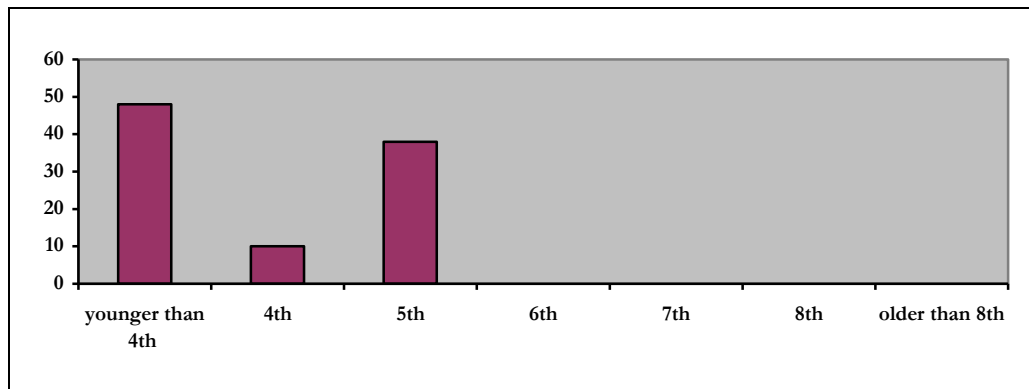
Figure 4.22: HS #3: Student Population in percentage of primary instrument



Background Data

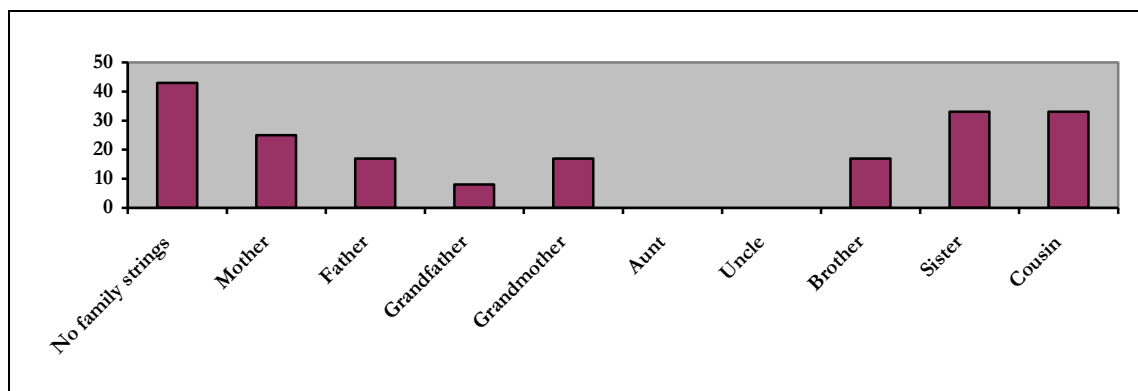
1) Ten students (48%) started playing a string instrument younger than 4th grade with the next highest age being 5th grade with 8 students (38%). Other students began in the 4th grade (2 at 10%).

Figure 4.23: HS #3: Student Population in percentage of students by string instrument starting grade



- 2) On average, students play at least two other instruments, if not more, in addition to their primary string instrument. Fifty-five percent of the 47 other instruments performed by the 20 students who play a secondary instrument participate in voice. The second highest category represented in the secondary instruments was piano with 9 participating at 45%. Guitar and folk instruments were combined for third with 10 students playing them for 50% of the secondary instruments.
- 3) Eighty-one percent of the students surveyed participate in other ensembles that meet both during and outside of school. Seventy-one percent of the students who indicated they participate in an outside ensemble participate in a “youth symphony.” When the ensembles are combined by discipline, 70% participate in choir-related activities, 24% participate in band-related activities, and 89% participate in orchestra-related activities.
- 4) Twelve students (57%) reported that they have a relative who also plays a string instrument. There were 18 relatives indicated as playing a string instrument, which tells us that each student who indicated they have a relative who plays a string instrument, marked almost one relative that plays. The relative that represents highest amount of string instrument participation on the survey is the student’s sister at 33% and tied with the student’s cousin at 33% with the third rank going to mothers at 25%. This statistic varies from the other two high schools surveyed in that the parental ranking rises to the top three spots. Nine students (43%) indicated that they do not have any family members who play a string instrument.

Figure 4.24: HS #3: Percentages of family members who were reported to play string instruments



- 5) Students surveyed are not only involved in music, but many other school and community activities. Students are mostly involved in church activities (48%), clubs (43%), performing/visual arts (38%), athletics (38%), other activities (33%), babysitting/jobs (29%), other music activities (14%), student leadership (14%), and scouts (5%). Students are balancing their lives and diversifying them, whether parentally- influenced or self-influenced.
- 6) A greater percentage of the students surveyed took advantage of their municipal and school music activities than the students at High School #1 and High School #2. Seventy-six percent of the students indicated that they do attend music events regularly; however, 24% do not attend music events on a regular basis. Of the 16 students who indicated they regularly attend music events, 81% attend musical performances, 44% attend symphony orchestra performances, 38% attend other school music performances, 38% attend church ensemble performances, 31% attend concerts presented by professional, popular touring artists, 19% attend chamber music recitals, and 19% attend solo recitals, 13% attend folk ensemble performances, and 0% attend opera performances.

Student Perception of Strength of School and Community String Programs

Students were also asked in the survey to give their opinion on the strength of both the school and the community string programs for their community. Students do not have a strong

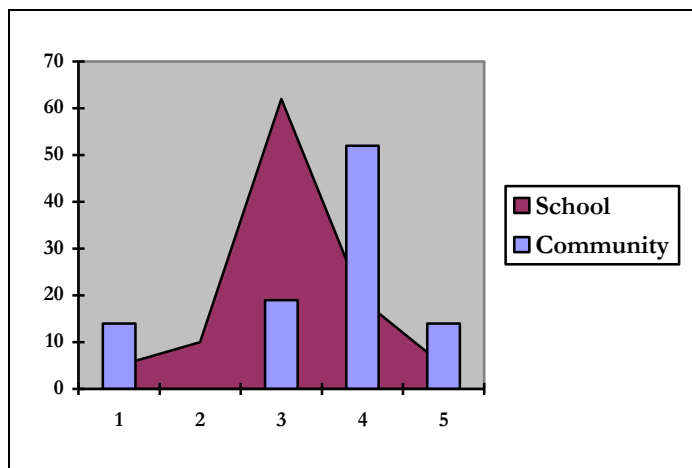
perception of the string program at their school, with 62% ranking it at a 3. Perceptions of the strength of the community string programs were considered greater to the high school string students. Students rated the community string programs as a 4, with 52% marking this level. Students show that they feel the string program in their community is stronger than the programs that are offered in the school. This is very different than the perceptions outlined in the other two schools.

Table 4.10: HS #3: Comparison of School and Community String Program strength perception

| <i>Likert-Type Scale</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|--------------------------|----------|----------|----------|----------|----------|
| School | 5% | 10% | 62% | 19% | 5% |
| Community | 14% | 0% | 19% | 52% | 14% |

The above table is further illustrated in the figure below.

Figure 4.25: HS #3: Comparison of School and Community String Program strength perception in percentage



In addition to the information provided above, the average ranking for the school string community by these students was 3.1 where the average ranking for the string municipal community was 3.5. These means are much lower than both High School #1 and High School #2

for the school string community average, but are similar to the other two schools for the municipal community average.

Research Questions

Based on the research questions presented by the researcher in Chapter 1, information discovered in the surveys from High School #3 are below.

- 1) What are the top three external factors that were the most influential in student's choice to begin string instruction?

The top three external influences using the mean were Parents with a 3.29, Live Performance with a 2.67 and Private lesson teacher with a 2.57. However, the only external factor that was above average was that of the Parent.

- 2) How are these influences related to the musical culture of the student including opportunities for participation as well as observations?

From 3) and 6) above in the *Background Data* section, students have opportunities to be involved in string playing at school, in the community, and at church; these students are participating in a variety of those musical offerings across the community. Eighty-one percent of the students participating in the survey were involved in other ensembles. An even larger number of students at High School #3 are also taking advantage of the performances that occur in their locale on a regular basis, up to 76% in this population, which is greater than the other two high school groups.

- 3) Are family influences stronger than teacher/friend influences?

Family influences were stronger than teacher influences in that the Parent is the most influential external factor to string instrument choice, just as with the other populations surveyed.

- 4) How does the strength of the string community (school and community) affect the beginning string student based on student perceptions of the two communities?

The average ranking for the school string community by these students' perception was 3.1 where the average ranking for the string municipal community was 3.5. The school average was much lower in this population. The population is also much smaller than the other two high schools surveyed. Obviously, combined

with the amount of outside of school string ensembles the students reported involvement in, students are being affected by the string community perhaps in a positive way from the municipal community, but not as strongly in the school community. The municipal community results are similar to High School #1 and High School #2.

Summary

Students were instructed to be honest and truthful with their answers to all of the survey questions. There were times that students did not indicate an answer to each of the external factors. When figuring the results, the missing answers were marked with a “0” in order for the statistical equations to work properly. All data was analyzed using Microsoft® Excel®.

Chapter 5 - Conclusions

The current study focused on the external factors that greatly influence a student to choose to play a string instrument. The researcher examined the perceptions of middle school and high school string students to discover the most prominent external factors that contributed to their string instrument choice. The pilot survey was administered to both middle and high school students who participated in a local youth symphony.

Research Question Analysis

Based on the research questions presented by the researcher in Chapter 1, below is the information discovered to answer them and the analysis of the researcher based on information from the review of the literature from Chapter 2 and the data gathered in this investigation from Chapter 4.

- 1) What are the top 3 external factors that were the most influential in student's choice to begin string instruction?

1. Parents

Parents were much more influential than the researcher originally hypothesized. This raises questions especially since, as the survey showed, the parents for the most part are not string instrument players, yet they are the most influential to the string instrument choice. Also, as indicated from the survey responses, almost half (41%) of the students surveyed in the pilot study and more than a third (38%) of the students surveyed in the core study do not attend music events on a regular basis. As Abeles (2004) presented, students are more apt to choose a profession that is familiar and surrounds them. In this case, a large percentage of the students came to string playing by other means than the research has previously indicated. Abeles (1978) said that parents were more likely to choose a string instrument for their daughters.

2. Live Performances

Students have a chance to observe their potential instrument in action when witness to a live performance. Also involved with this observation is the role that the student's gender plays with the instruments that are acceptable by

their culture and society to play. Griswold and Chroback (1981) determined that sex-stereotyping of instruments and music occupations were related and other researcher carried this information forward as well such as Harrison, 2001 and the many others addressed in Chapter 2. But at the same time, these live performances, and the consistency of viewing them in a large, collegiate municipality gives the students opportunities to observe various personnel roles in the groups and the diversity of the various ensembles male violinists and female double bass players, just as Bruce and Kemp (1993) showed us.

3. Friends

MacKenzie (1991) showed that girls choose to begin a musical instrument in part due to the influence that their friends were also learning to play that musical instrument. Especially with girls, the phenomenon of group decision making, the conclusion is very clear. As discovered by Abeles and Porter (1978), girls have a greater number of choices in instrument selections, whereas the boys are prone to choose those that embody masculine connotations. Many parents hope that their children choose the best friends available to help steer their children into success. The personality of these friends is a large determinant and affects the type of person their child will become. Personality, deeply engrained with gender in the instrument selection by students, can also be a pre-determinate to instrument choice, as many of our British researcher friends are discovering.

One external factor that varied between the populations of the pilot study and the high school studies was the influence of the private lesson teacher. The influence of the private lesson teacher seems to be somewhat after the fact for those students who began in the public school programs. The private lesson teacher is the strongest influence outside of the home, most especially for students who began private instruction as their primary instruction initially rather than in a public school setting. This represents a large percentage of the students surveyed in the pilot study. Many of the students who began instrument instruction prior to 4th grade also began on the piano. The question remains if the private lesson teacher has encouraged the students to also begin string instruction. Private lesson teachers should encourage string instrument switching as the student grows and develops, further enhancing their string learning environment

and increasing the external factor of private lesson teacher to increase with importance. When administering the survey to the core high schools, explicit direction was given to treat the private lesson teacher as a secondary influence if the students had begun string instruction in the public schools and then attained a private lesson teacher, but to view the private lesson teacher as a primary influence if the student had begun in private lessons on their string instrument.

- 2) How are these factors related to the musical culture of the student including opportunities for participation as well as observations?

Students have many opportunities to be involved in the musical culture of the school and community. Only 51% of all of the high school students surveyed indicated that they were involved in non-school orchestra musical ensembles. Within that percentage, only a third of the high school populations are involved in a non-school youth symphony but overall, 87% of the 51% involved in outside activities were involved in other string-related groups. Some students are involved in music ensembles outside of strings as well, which as we know, will greatly foster their overall musical understanding and will develop stronger more diversified musicians. Seventy-six percent of the 51% of outside group participants are involved in choral activities both at school, church, and in the community as well as band-focused ensembles at 28%.

- 3) Are family influences stronger than teacher/friend influences?

For these populations, the parent was the most influential in their student's string instrument choice. Data gathered also reflected that students have many siblings who also receive string instruction. This is encouraged and facilitated by their parents. I find it interesting that as much as public school string teachers work to influence students to begin string instruction with promises of performing "cool" repertoire, traveling to exotic places, and showcasing exciting parties and performance opportunities, the parental influence is still primary. String teachers must focus on recruiting parents, before recruiting the students. Therein lies the most influential external factor for beginning string instrument instruction, which the author hypothesizes as the tradition of the program and the trust of the director.

- 4) How does the strength of the string community (school and community) affect the beginning string student based on student perceptions of the two communities?

Students perceived that the school program was stronger than the community string program, in general. Parents, looking to have their children involved in programs that will be a safe place, a disciplined place, and an enriching place must believe that string instruction will foster all of these things. Overall parent perception and decision on whether to influence their children to begin string instruction is based on the community perception of the string programs both in the schools and in the community. Parents will not be as likely to enroll a student in a program that does not reflect these factors for their children.

Impact Statement

Parents are the most influential external factor in student string instrument choice in the populations of the current study. Depending on the community, students are either beginning string instruction before it is offered in the public schools through private lessons or Suzuki training or in the public schools of the area, which also varies with the beginning grade level. Most public school students are beginning string instruction when it is offered in the public schools. These findings impact the string instrument teachers by showing them that they must find ways to engage the parents of students who are in grades younger than their district starting grade for strings long before the year for string instrument instruction is to begin. Many districts facilitate yearly elementary school concerts as a part of this action. Also, involvement with community activities such as parades and food festivals can exhibit the program to potential students and families well before the students are faced with the opportunity to participate in strings. These activities will show parents the opportunities that exist for their children within the string community and are essential to developing a positive perception of string playing to the community and future string instrument families.

Further Research

Future research is needed to expand the population and sample sizes in more diverse geographic areas and municipal areas. Also, data must be collected from students who choose not to learn a string instrument when given the choice, both those who chose another instrument, perhaps in band, or those who chose to be in choir. It would also be interesting to gather information from people who did not choose any instrument when given the choice in order to discover why they chose not to play. Perhaps the parents of these students could also be surveyed

to determine if those same reasonings exist for both parties. All studies would assist current and future string instrument educators how to best serve the communities that they serve.

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Appendix A-Combined Informed Consent and Assent Form

KANSAS STATE UNIVERSITY

INFORMED CONSENT AND ASSENT FORM

PROJECT TITLE: String Instrument Choice: A Survey on External Factors

APPROVAL DATE OF PROJECT: 22 Nov 2011 EXPIRATION DATE OF PROJECT: 22 Nov 2012

PRINCIPAL INVESTIGATOR: Dr. Phillip Payne, Ph. D.

CO-INVESTIGATOR(S): Blair Williams

CONTACT NAME AND PHONE FOR ANY PROBLEMS/QUESTIONS: Dr. Phillip Payne, Ph. D.
532-5764

IRB CHAIR CONTACT/PHONE INFORMATION:

Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

Jerry Jaax, Associate Vice President for Research Compliance and University Veterinarian, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

SPONSOR OF PROJECT: none

PURPOSE OF THE RESEARCH: This study will gather information on the perceptions of high school string students to discover the most prominent external factors that contributed to their string instrument choice in the public school.

PROCEDURES OR METHODS TO BE USED: A survey will be used to obtain basic demographic information from the students as well as more detailed information about the external factors that contributed to their choice to begin instruction on their string instrument. The survey has been formatted and amended to better attain the information needed in this research study from the Fortney/Boyle/DeGarbo study of 1993. All string students present in the three preselected populations will be asked to complete the survey including one pilot of the survey

which will be given to a youth symphony consisting of string students in grades 5-10. A combination Consent-Assent Form will be sent prior to the researchers arrival on the campuses and will be collected before the students participation in the survey. Students will be notified about the significance and the purposes of the information they will provide. Students will then complete the survey and return it to the researcher. The students will be debriefed about the significance that the data returned will be to professional string music educators across the State of Kansas and potentially across the country as information to better recruit students and the avenues that best attract students into the string instrument community. The researcher will then analyze the data, comparing means between factors using a t-test and looking for significant differences.

ALTERNATIVE PROCEDURES OR TREATMENTS, IF ANY, THAT MIGHT BE ADVANTAGEOUS TO SUBJECT: none

LENGTH OF STUDY: The survey should take the average middle school or high school student no longer than 15 minutes to complete with the guidance of the researcher.

RISKS OR DISCOMFORTS ANTICIPATED: None anticipated.

BENEFITS ANTICIPATED: None anticipated.

EXTENT OF CONFIDENTIALITY: Students will complete the surveys anonymously.

IS COMPENSATION OR MEDICAL TREATMENT AVAILABLE IF INJURY OCCURS: N/A

PARENTAL APPROVAL FOR MINORS: Yes

TERMS OF PARTICIPATION: I understand this project is research, and that my child's participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

Participant/Student's

Name:

Participant/Student's

Guardian Signature:

Date:

Participant/Student's Signature:

Date:

Appendix B-Survey Script

String Instrument Choice: A Survey on External Factors

Survey Script

Good Morning/Afternoon students! I am so pleased that you have chosen to participate in the survey today! I would also like to publicly thank your wonderful string teacher for giving me time in your classroom today. Can you please help me in thanking your teacher!

You have all received a paper survey that you will complete in just a few minutes. Please do not make any marks until you are instructed to do so.

Because of the importance of this survey and its need to be replicated precisely at each school where the survey is to be administered, I will be following a script to be completely precise with instructions and information. Please bear with me as I know this is already starting to sound like the Iowa tests, ACT/SAT tests, and other standardized tests you are all very familiar with. What you will be participating in today is by no means a test! In fact, there is not a grade! I simply need your honest and truthful reflections. So you can all breathe a sigh of relief!

I wanted to give you a little bit of background about myself and what you will be doing today.

My name is Ms. Williams and I am currently a graduate student in Music Education and Orchestral Conducting at Kansas State University. At Kansas State, I assist and conduct the Kansas State Symphony, teach aural skills courses and string techniques courses. Outside of my work for the university, I am the assistant conductor of the Gold Orchestra and teach a large studio of violin, viola, and cello students.

Prior to being a graduate student at Kansas State, I was the Director of Orchestras and Assistant Director of Orchestras for Midway ISD in Waco, Texas for four years. I received my Bachelors of Music Education degree from Baylor University, also located in Waco.

However, I was born and bred in Kansas-near Newton-and attended Newton High School. I started my string career in the 4th grade as a violist in our summer instrumental program. With viola as my primary instrument, I participated in Wichita Youth Symphony, Region Orchestras, State Orchestra 3 years, Solo and Ensemble, and as many other activities as I could to prepare me to be a music educator.

I always found interesting, in talking with my peers and colleagues in the music field, their stories of how they first became aware of the string/woodwind/brass/percussion instruments as children or young adults and what made them choose to play their particular instrument(s). Research has been done on the influences of timbre (or the color of the sound that the instrument makes) to lure a new student to it. Research has also been done on the influence of gender associations, such as the perception that girls play flute or boys play the double bass as it pertains to instrument choice. A very small sampling of research has been done on the external factors that influence instrument choice. I am interested in these external factors, and as a partial fulfillment to completing my Master's degree in May, I am focusing my thesis on just that! As you will see in the survey I am asking you to complete today, I am looking to discover how influential external factors were to YOU in beginning the thoughts of "I want to learn to play that instrument!" You may have to think about those influences a bit.

Now let's look at the survey together. Please do not make any marks yet.

At the beginning of the survey are several questions for me to get a better understanding of your musical/social life. As with the entire survey, answer these honestly and truthfully. If you have a question, please raise your hand and I will come assist you.

Please turn to Question #11-12. These two questions are your opinion. Remember that the surveys are completely anonymous so answer honestly and truthfully.

Please turn to Question #13 with me. Here is the most important section of the survey. When asked to complete the survey, please notate as specified how influential each of the external factors listed were to your choice to play a string instrument.

Extremely Non-Influential means it wasn't even a thought in your mind

Non-Influential means that it was a thought but it didn't really influence you

Neutral means that the influence was present and influences were both positive and negative

Influential means that the factor was a contributing factor in your string instrument choice

Extremely Influential means that the factor was strongly influential in your decision to choose a string instrument

Please make sure to mark each factor with its influential rating. Do not leave any blank. Also, at the end of question #13 there are three (3) blanks that you may add additional factors that may have influenced you to begin study of a string instrument that were not previously included on the list. If you do not have any additional external factors to add, please leave these spaces blank.

One warning in order to not skew results: The Private lesson teacher as an external factor needs to be considered at the beginning stages of your string instrument study. If you witnessed a Private lesson teacher teaching an older sibling as a young child, or there was a Private lesson teacher present at an elementary school where strings were offered that you witnessed teaching lessons before you enrolled in lessons, that Private lesson teacher would be influential to some degree. Otherwise, this person would be considered a secondary influence—where this survey is looking for primary influences.

Please answer honestly and truthfully. The surveys are completely anonymous. Once you have completed the survey, please bring it forward and I will collect them. Then return to your seat and wait quietly and patiently as the others in the class finish.

Are there any questions regarding the survey before we begin?

At this time you may begin the survey.

SURVEY

Ladies and gentleman, thank you again for your time and patience today! Based on the findings from these surveys I hope to assist all music teachers in finding advanced manners of influencing future string students to begin instruction on a string instrument. As the numbers of string students across the country continue to increase, it will be in partial thanks to you!!

It has been a pleasure to work with you today!

Best wishes to each of you!

Appendix C-Survey Instrument

Included in this Appendix is the Survey Instrument from which data was collected.

String Instrument Choice Survey

The purpose of this survey is to discover why you chose to play a string instrument. Consider each question and answer it as honestly as you possibly can. Please respond by checking the appropriate box and/or fill in the blanks when asked.

1. Gender: Male Female

2. Grade: 4th 5th 6th 7th 8th 9th 10th 11th 12th

3. What string instrument do you currently play primarily?
 Violin Viola Cello Double Bass Harp

4. In what grade did you begin playing a stringed instrument?
 younger than 4th grade 4th 5th 6th 7th 8th older than 8th grade

5. Do you currently play or have you played any other instruments (including voice)?
 Yes No

If yes, what instruments from the list do you currently or have you also played?

(Mark all that apply)

- | | | |
|--------------------------------------|------------------------------------|---|
| <input type="checkbox"/> Violin | <input type="checkbox"/> Flute | <input type="checkbox"/> French Horn |
| <input type="checkbox"/> Viola | <input type="checkbox"/> Oboe | <input type="checkbox"/> Trumpet |
| <input type="checkbox"/> Cello | <input type="checkbox"/> Clarinet | <input type="checkbox"/> Trombone |
| <input type="checkbox"/> Double Bass | <input type="checkbox"/> Bassoon | <input type="checkbox"/> Euphonium/Tuba |
| <input type="checkbox"/> Piano | <input type="checkbox"/> Saxophone | <input type="checkbox"/> Percussion |
| <input type="checkbox"/> Voice | <input type="checkbox"/> Guitar | <input type="checkbox"/> Other folk instrument(s) |

6. A) What is the earliest grade that you began any instrument instruction?

younger than 4th grade 4th 5th 6th 7th 8th older than 8th grade

B) What instrument was your initial instruction on?

- | | | |
|--------------------------------------|------------------------------------|---|
| <input type="checkbox"/> Violin | <input type="checkbox"/> Flute | <input type="checkbox"/> French Horn |
| <input type="checkbox"/> Viola | <input type="checkbox"/> Oboe | <input type="checkbox"/> Trumpet |
| <input type="checkbox"/> Cello | <input type="checkbox"/> Clarinet | <input type="checkbox"/> Trombone |
| <input type="checkbox"/> Double Bass | <input type="checkbox"/> Bassoon | <input type="checkbox"/> Euphonium/Tuba |
| <input type="checkbox"/> Piano | <input type="checkbox"/> Saxophone | <input type="checkbox"/> Percussion |
| <input type="checkbox"/> Voice | <input type="checkbox"/> Guitar | <input type="checkbox"/> Other folk instrument(s) |

7. Do you perform in music ensembles outside of your school orchestra?

- Yes No

If yes, what ensembles best describe the ensembles you participate in?

(Mark all that apply)

- | | | |
|--|--|--|
| <input type="checkbox"/> Youth Choir | <input type="checkbox"/> Concert Band | <input type="checkbox"/> Youth Symphony |
| <input type="checkbox"/> School Choir | <input type="checkbox"/> Marching Band | <input type="checkbox"/> Community Orchestra |
| <input type="checkbox"/> Church Choir | <input type="checkbox"/> Jazz Band | <input type="checkbox"/> Church Orchestra |
| <input type="checkbox"/> Show Choir | <input type="checkbox"/> Community Band | <input type="checkbox"/> "Garage" Band |
| <input type="checkbox"/> Hand Bell Choir | <input type="checkbox"/> Folk Music Ensemble | <input type="checkbox"/> Chamber Ensemble |

8. Other than yourself, has anyone in your family ever participated in a school string orchestra?

- Yes No

If yes, please select those family members from the list below:

- | | | |
|--------------------------------------|--------------------------------------|------------------------------------|
| <input type="checkbox"/> Mother | <input type="checkbox"/> Father | <input type="checkbox"/> Guardian |
| <input type="checkbox"/> Grandfather | <input type="checkbox"/> Grandmother | <input type="checkbox"/> Aunt |
| <input type="checkbox"/> Uncle | <input type="checkbox"/> Brother(s) | <input type="checkbox"/> Sister(s) |
| <input type="checkbox"/> Cousin(s) | | |

9. What other school/after school activities are you involved in? Check all that apply

- Other music ensembles (band, choir)
- Other performing and visual arts (theater, art)
- Student leadership (STUCO, organization offices)
- Athletics
- Clubs
- Church
- Boy scouts/Girl scouts
- Babysitting/other jobs
- Other

10. Do you attend music events outside of your own performances regularly?

- Yes
- No

If yes, what types of music events? Check all that apply

- Symphony Orchestra (collegiate, professional)
- Chamber Music (string quartets, etc.)
- Solo recitals
- Performing artist music concerts (i.e., Justin Bieber)
- Folk music festivals (i.e., bluegrass)
- Other school ensemble performances
- Musicals
- Opera
- Church Ensemble performances

11. In your opinion, how strong, with 1 being the least and 5 being the most, is the string program tradition at your school?

- 1
- 2
- 3
- 4
- 5

12. In your opinion, how strong, with 1 being the least and 5 being the most, is the string program tradition in your municipal community?

- 1 2 3 4 5

13. How influential were the following external factors in your decision to choose to play a string instrument:

| | (1) | (2) | (3) | (4) | (5) |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Extremely | | | | Extremely |
| | <u>Non-influential</u> | <u>Non-influential</u> | <u>Neutral</u> | <u>Influential</u> | <u>Influential</u> |
| Parents/Guardians | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Siblings (if applicable) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other family members | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Friends | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Relationships (i.e. "to meet girls/boys") | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Elementary music teacher | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Middle school music teacher | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other teacher's advice | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Elementary orchestra teacher | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Middle school orchestra teacher | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| High school orchestra teacher | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Private lesson teacher | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Tradition of the string program | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Travel opportunities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Diversification of HS transcript | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Famous string instrument performer | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I saw it on T.V. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Saw a live orchestra performance | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Medical reasons (asthma, etc.) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cost of the instrument | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Size of the instrument | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Availability of the instrument | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Other external factor(s) not listed:

| | | | | | |
|-------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| _____ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| _____ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| _____ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

14. On a scale of 1-5 with 1 being the least amount of enjoyment and 5 being the most, how much do you enjoy playing your string instrument?

1 2 3 4 5

Thank you for participating in this survey. I greatly appreciate your assistance.

Ms. Blair A. Williams

Graduate Student

Kansas State University